Your Global Automation Partner

TURCK

# Sensors Catalog
# Proximity

# A Global Leader in Industrial Automation

Turck's sensors, connectivity, and fieldbus technology products are built to be the best. As one of the most **prominent** sensor manufacturers **in the world**, we even back our sensors with a **lifetime warranty**. Turck works by bringing **rugged engineering** solutions to your industrial automation applications.

**85,000+** SOLUTIONS

**50+** YEARS OF INNOVATION

**2,000+** EXPERIENCED SALES REPRESENTATIVES

Pioneer in non-contact **sensing** technology

Developed innovative **connectivity** solutions in response to our customers' needs

Recognized the need for advanced **I/O solutions** in harsh duty environments

**SUPPORT & DEDICATED SERVICE**

**EXTENSIVE WARRANTY**

**4,000+** APPLICATION EXPERTS

RESPOND and SOLVE over **1,200** inquiries per day

Strategically placed manufacturing facilities in the **USA** with **28** GLOBAL SUBSIDIARIES

**GLOBAL BUT LOCAL...**

**60** representations worldwide

# Innovative Sensing Solutions

At Turck, we understand that every application is unique, which is why we dedicate ourselves to finding the optimal engineered solution for all applications. Whether you need a sensor, cordset, or network I/O, Turck's range of innovative manufacturing capabilities and engineering expertise allows us to work beyond the scope of our competitors. We utilize the most up-to-date manufacturing processes, including EDM, molding, and laser trimming, ensuring that our products not only survive, but thrive in the harshest of conditions.

## Complimentary Sensor Audits

We consider it our job to help our customers decrease failures and reduce operation downtime, which is why we offer a complimentary audit program. The audit helps to identify, evaluate, and solve problem areas where sensors and cordsets are continually damaged or destroyed. This reduction in downtime will reduce your costs and ensure you get the most value out of your production processes.

## Lifetime Warranty

We have the utmost confidence in our products, and you should, too! Solutions from Turck are not only built to work, but built to last. All of our products come with extensive warranties, and many of our sensors have an optional lifetime warranty against sensor failure, so you can rest easy knowing that you have invested in a dependable solution.

### GLOBAL LEADERS

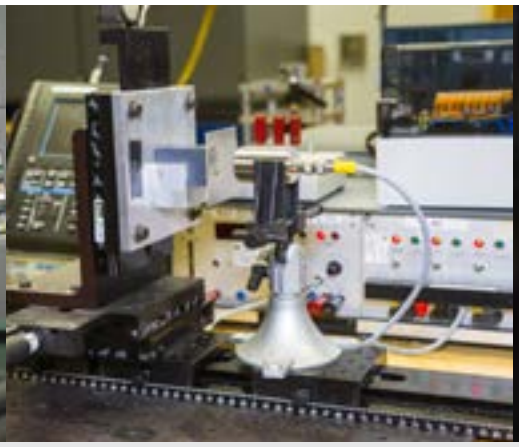
PROVIDING CUSTOMERS WITH SENSING SOLUTIONS

- Sensing ranges from .08 – 100 mm
- Overmolds
- Custom designed sensor housings
- Pigtails / Mold-ons
- Mating cordsets
- Free software and support
- Wide range of accessories
- Kitting

### MATERIALS

BUILT TO LAST IN THE HARSHEST ENVIRONMENTS

- Stainless steel
- Overmolds
- Viton
- PUR/TPU/TPE
- Armored Cable
- PTFE and Weldguard coating
- FDA Approved Washdown



### SHIPPING

SHIP ONE-TO-ONE MILLION, WITH NO LIMIT

We understand that some applications require less parts, which is why we offer flexible minimum orders to ensure you only receive the number of parts you need.

### TESTING

OUR PRODUCTS UNDERGO EXTENSIVE TESTING

To continuously deliver solutions of only the highest quality, Turck products undergo a rigorous set of tests. These tests are in accordance to national and international standards, such as IEC and UL. Our products meet and exceed industry standards, ensuring their survivability and dependability in all applications.

### INVENTORY

USE TURCKS VAST NETWORK OF DISTRIBUTORS, OR...

Get immediate access to your Turck products with your own on-site Turck vending machine. Convenient access to your most used products can help save money and reduce downtime.

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# Rectangular Inductive Sensor Selection Guide

| Rectangular Style Sensors | | | | | |
|---|---|---|---|---|---|
| | | | | | |
| **Housing** | 4.7 mm | 5.5 mm | 6 mm | 8 mm | 10 mm |
| **Sensing Range** | 2 mm | 2 - 3.5 mm | 3 mm | 5 - 8 mm | 2 - 5 mm |
| **Pages** | A11 | A11 | A11 | A13 - 16 | A17 |
| **Features** | | | | Uprox+ | Uprox+ |

| Rectangular Style Sensors | | | | | |
|---|---|---|---|---|---|
| | | | | | |
| **Housing** | Variable, with pigtail | 10 mm | 12 mm | 14 mm | 20 mm |
| **Sensing Range** | 2 - 7 mm | 2 - 4 mm | 2 - 5 mm | 10 - 20 mm | 15 - 25 mm |
| **Pages** | A19 | A21 | A23 | A25 | A27 - 30 |
| **Features** | | | Uprox+ | | |

| Rectangular Style Sensors | | | | | |
|---|---|---|---|---|---|
| | | | | | |
| **Housing** | 18 mm | 25 mm | 30 mm | 40 mm | 40 mm |
| **Sensing Range** | 5 - 10 mm | 10 mm | 15 mm | 20 mm | 15 - 50 mm |
| **Pages** | A31 | A31 | A31 | A33 | A35 - 40 |
| **Features** | | | | Uprox+ | Uprox+ |

| Rectangular Style Sensors | | | | | |
|---|---|---|---|---|---|
| | | | | | IS |
| **Housing** | 40 mm | 80 mm | 80 mm | 90 mm | Variable |
| **Sensing Range** | 15 - 50 mm | 40 - 75 mm | 50 - 75 mm | 60 - 100 mm | 2 - 50 mm |
| **Pages** | A41 - 46 | A47 - 50 | A51 | A53 | A55 - 58 |
| **Features** | Uprox+ | Uprox+ | Uprox+ | | Intrinsically Safe |

We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensor Part Number Key

| B | i | 15 | | - | Q | 20 | | - | A | P | 6 | X2 | Wiring Option* | Special Option Code** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

**Mounting**
B = embeddable
N = nonembeddable

**Principle of Operation**
i = inductive

**Rated Operating Distance (mm)**

**Sensing Characteristics**
S = side sensing on Q10S sensor
U = Uprox® Sensor

**Housing Style**
**Rectangular**
K = smooth
Q = metal or plastic, various rectangular styles
**Limit Switch**
CA = Stubby®, short aluminum housing, connector
CK = Stubby, short plastic housing, connector
CP = Combiprox®, plastic housing, terminal chamber base with removable sensor

**Housing Height (mm)**

**Number of LEDs**
(blank) = no LEDs
X = 1 LED
X2 = 2 LEDs

**Voltage Range**
**AC/DC: (No SCP**)**
3 = 20-250 VAC, 10-300 VDC
31 = 20-250 VAC, 10-300 VDC, plastic barrel
**AC/DC: (Latched SCP)**
30 = 20-250 VAC, 10-300 VDC 400 mA
32 = 20-250 VAC, 10-300 VDC 400 mA
**DC:**
4 = 10-65 VDC, polarity protected, pulsed SCP**
6 = 10-30 VDC, polarity protected, pulsed SCP
**SCP = short-circuit and overload protection

**Output**
D = 2-wire DC (transistor output)
DZ = 2-wire AC/DC, (power MOSFET output)
N = NPN transistor (current sinking)
P = PNP transistor (current sourcing)
Z = 2-wire AC or 2-wire AC/DC

**Output Function**
A = normally open (N.O.)
F = connection programmable (N.O. or N.C.)
V = complementary outputs: one N.O., one N.C.
Y0 = NAMUR output, requires switching amplifier
Y1 = NAMUR output, requires switching amplifier/ATEX approved

**Secondary Housing Modifier**
SR = straight terminal chamber

**NOTE:**
Part number keys are to assist in identification only.
Verify new part numbers with factory; some configurations are not possible.

## Wiring Options*

**A. Connectorized Sensor**

**Bi15 - Q20 - AN6X2 - H1 1 4 1**

**Connector Family**
B1 = Minifast®, Metal, Male
B2 = Minifast, Plastic, Male
B3 = Microfast®, Metal, Male
H1 = Eurofast®, Metal or Plastic, Male
V1 = Picofast®, Metal, Male
V2 = Picofast, Snap and M8x1, Male (Q08 Only)

**Connector/Sensor Transition**
1 = straight

**Wiring Configuration**
**Example:**
1 = Standard
3 = N.C. DC Output on Pin 4 (for US)

**Number of Pins**

**B. Potted Cable**

**Bi15 - Q20 - AN6X2 - 7M**

**Cable Length**
Blank = 2 meter cable
7M = 7 meter cable

## Special Option Codes**

**Bi - 5 - Q08 - AN6XS /S34**

**Option Code**
**Example:**
/S34 = Weld Field Immune
/S97 = -40 °C (-40 °F) Operating Temperature
/S100 = +100 °C (+212 °F) Operating Temperature
/S1590 = CK/CA40 sensors with Weldguard laminate
/S1591 = CA40 sensors with Weldguard and Armorguard

We reserve the right to make technical alterations without prior notice.

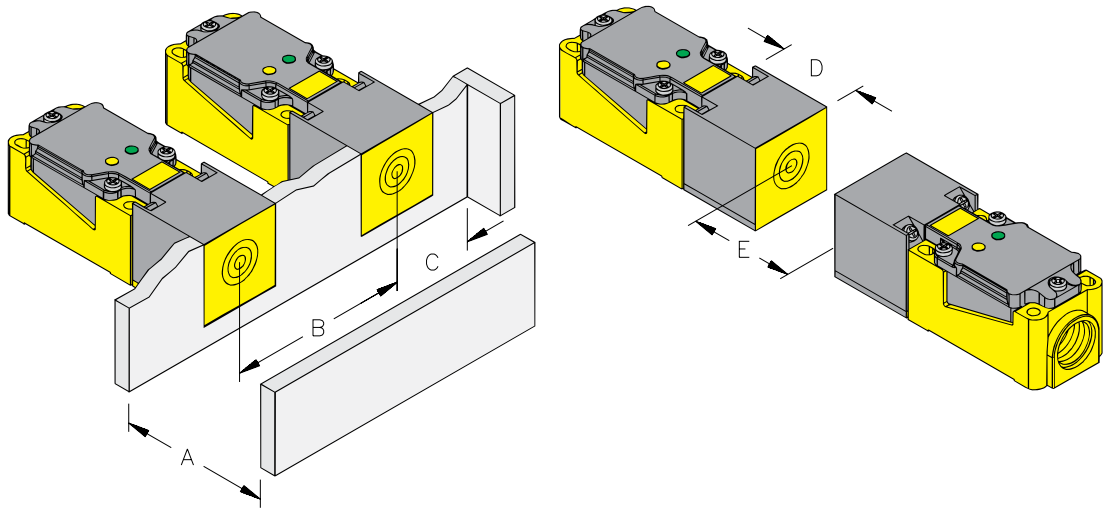
# Rectangular Inductive Sensors

## Mounting

Turck inductive proximity sensors are manufactured with a shielded coil, designated by "Bi" in the part number, and a nonshielded coil, designated by "Ni" in the part number (see page A2). Embeddable (shielded) units may be safely flush-mounted in metal. Nonembeddable (nonshielded) units require a metal free area around the sensing face. Because of possible interference of the electromagnetic fields generated by the oscillators, minimum spacing is required between adjacent or opposing sensors.

It is good engineering practice to mount sensors horizontally or with the sensing face looking down. Avoid sensors that look up wherever possible, especially if metal filings and chips are present.

## Embeddable Mounting Characteristics - Rectangular Housings




### Flush Mountable - CK40 and CP40

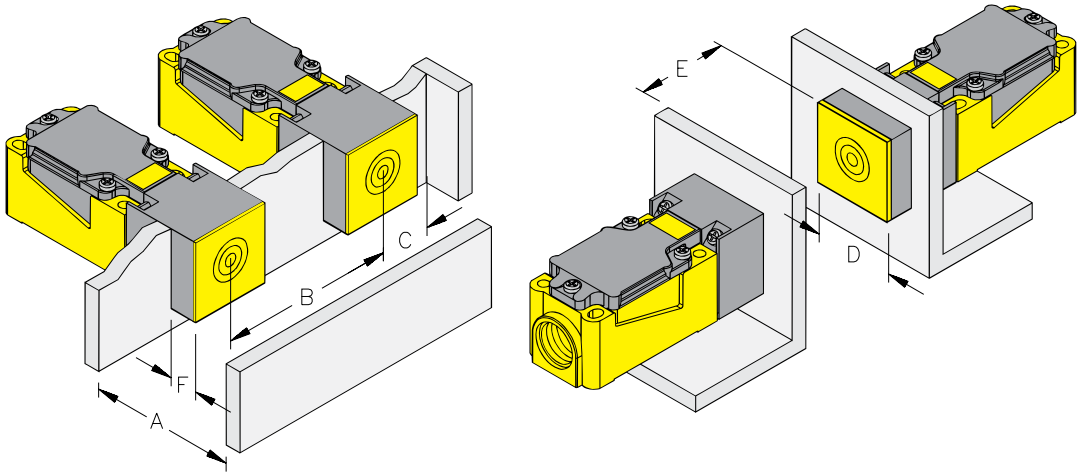
| Housing Type | Sensor Type | A | B | C | D | E |
|---|---|---|---|---|---|---|
| CP40/CK40 | Bi15U | 45.00 | 80.00 | 40.00 | 40.00 | 90.00 |
| CP40/CK40 | Bi15 | 45.00 | 80.00 | 40.00 | 40.00 | 90.00 |
| CP40/CK40/CA40 | Bi20U | 60.00 | 80.00 | 40.00 | 40.00 | 120.00 |
| CP40 | Bi20 | 60.00 | 80.00 | 40.00 | 40.00 | 120.00 |
| CP40/CK40 | Bi30U | 90.00 | 80.00 | 40.00 | 40.00 | 180.00 |

Dimensions are in mm.

We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors

## Nonembeddable Mounting Characteristics - Rectangular Housings

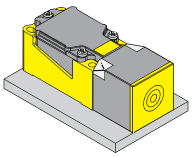



### Non - Flush Mountable - CA25, CK40, and CP40

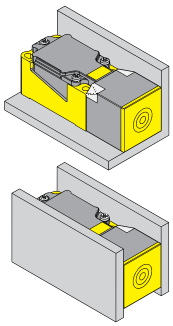
| Housing Type | Sensor Type | A | B | C | D | E | F | 1-Side | 2-Side | 3-Side | 4-Side |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CP/CK40 | Ni20 | 60.00 | 120.00 | 60.00 | 40.00 | 120.00 | 20.00 | | | | |
| CP/CK40 | Ni25U | 75.00 | 240.00 | 60.00 | 40.00 | 150.00 | 30.00 | Sr=22 mm* | Sr=20 mm* | Sr=17 mm* | Sr=13 mm* |
| CP/CK40 | Ni25 | 75.00 | 120.00 | 60.00 | 40.00 | 150.00 | 40.00 | | | | |
| CP/CK40 | Ni35U | 105.00 | 240.00 | 60.00 | 40.00 | 210.00 | 30.00 | Sr=28 mm* | Sr=24 mm* | Sr=19 mm* | |
| CP/CK40 | Ni35 | 105.00 | 180.00 | 60.00 | 40.00 | 210.00 | 40.00 | | | | |
| CP/CK40 | Ni40U | 120.00 | 240.00 | 60.00 | 40.00 | 240.00 | 30.00 | | | | |
| CP/CK40 | Ni40 | 120.00 | 180.00 | 60.00 | 40.00 | 240.00 | 40.00 | | | | |
| CP/CK40 | Ni50U | 105.00 | 240.00 | 60.00 | 40.00 | 240.00 | 30.00 | Sr=35 mm* | Sr=25 mm* | Sr=20 mm* | Sr=15 mm* |

Dimensions are in mm.
*Uprox Non-embeddable flush mounting guidelines. The above Uprox Ni sensors with DC ouptuts can be flush mounted because the sensor automatically compensates for metal alongside its sensing face by decreasing the sensing range, preventing the output from locking on.

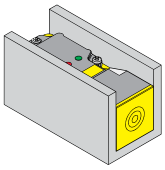
**1-Side**



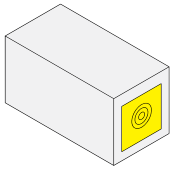
**2-Side**



**3-Side**

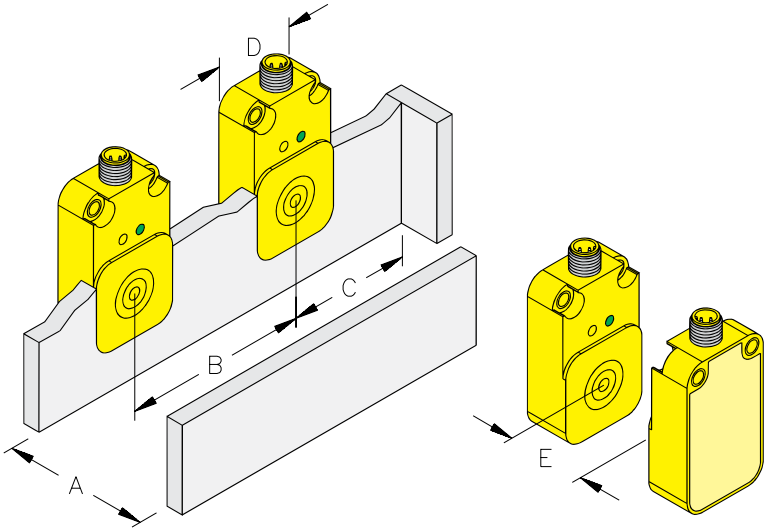


**4-Side**



We reserve the right to make technical alterations without prior notice.

## Embeddable Mounting Characteristics - Rectangular Housings




### Flush Mountable

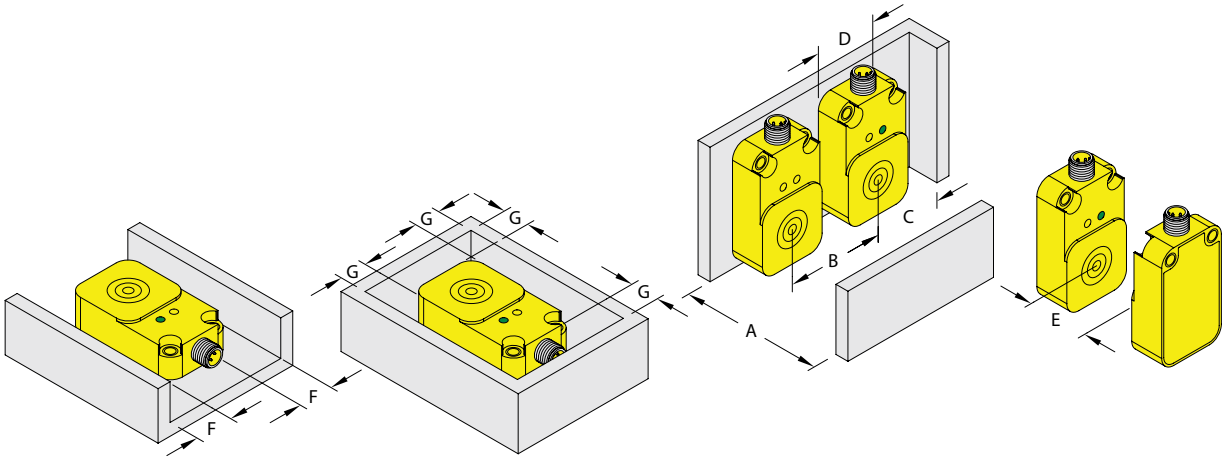
| Housing Type | Sensor Type | A | B | C | D | E |
|---|---|---|---|---|---|---|
| **Q4.7** | **Bi2** | 6.00 | 16.00 | 12.00 | 8.00 | 12.00 |
| **Q5.5** | **Bi2** | 6.00 | 16.00 | 8.00 | 8.00 | 12.00 |
| **Q06** | **Bi3** | 9.00 | 35.00 | 17.00 | 17.30 | 18.00 |
| **Q08** | **Bi5** | 15.00 | 40.00 | 20.00 | 20.00 | 30.00 |
| **Q08** | **Bi5U** | 15.00 | 40.00 | 20.00 | 20.00 | 30.00 |
| **Q08** | **Bi7** | 21.00 | 40.00 | 20.00 | 20.00 | 42.00 |
| **Q10** | **Bi8** | 24.00 | 50.00 | 25.00 | 25.00 | 48.00 |
| **Q10** | **Bi8U** | 24.00 | 50.00 | 25.00 | 25.00 | 48.00 |
| **Q14** | **Bi10** | 30.00 | 45.00 | 30.00 | 30.00 | 60.00 |
| **Q14** | **Bi10U** | 30.00 | 45.00 | 30.00 | 30.00 | 60.00 |
| **Q20** | **Bi15** | 45.00 | 60.00 | 40.00 | 40.00 | 90.00 |
| **Q20** | **Bi15U** | 45.00 | 60.00 | 40.00 | 40.00 | 90.00 |
| **CP80** | **Bi40** | 120.00 | 160.00 | 80.00 | 80.00 | 240.00 |
| **Q80** | **Bi50U** | 150.00 | 240.00 | 80.00 | 80.00 | 300.00 |

Dimensions are in mm.

We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors

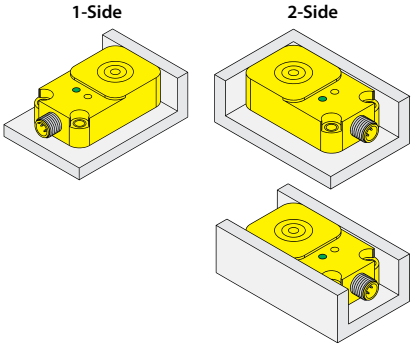
## Embeddable Mounting Characteristics - Rectangular Housings




### Non-flush Mountable - Minimum Distances - Q5.5, Q14, Q20, CP80, Q80 and K90

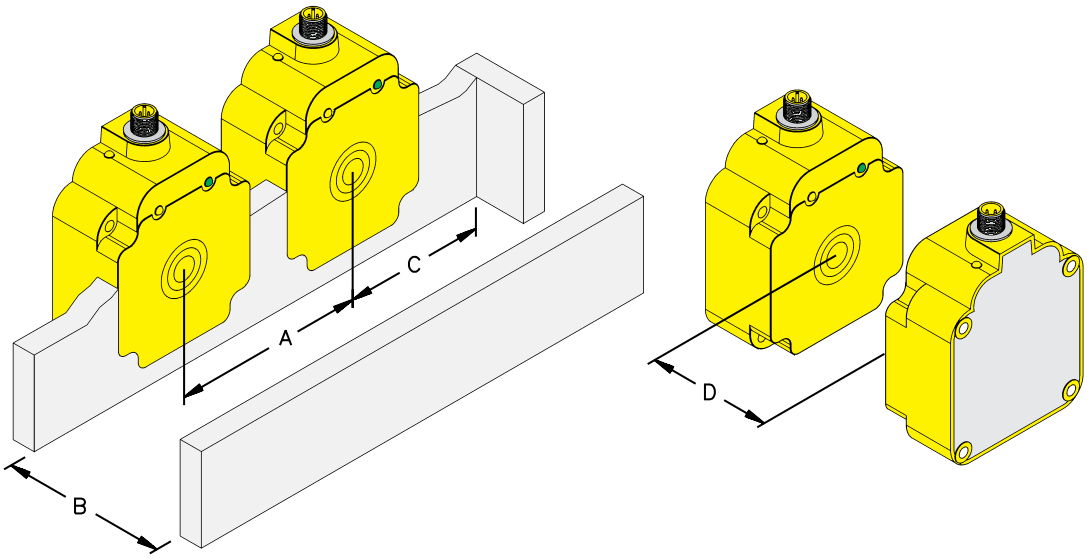
| Housing Type | Sensor Type | A | B | C | D | E | F | G | 1-Side | 2-Side | 3 & 4-Side |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Q5.5 | Ni3.5 | 11.00 | 24.00 | 12.00 | 8.00 | 21.00 | 4.00 | 8.00 | | | |
| Q14 | Ni20 | 60.00 | 90.00 | 45.00 | 30.00 | 120.00 | 20.00 | 40.00 | | | |
| Q20 | Ni25 | 75.00 | 120.00 | 60.00 | 40.00 | 150.00 | 25.00 | 50.00 | | | |
| CP80 | Ni40 | 120.00 | 240.00 | 120.00 | 80.00 | 240.00 | 80.00 | 80.00 | | | |
| Q80 | Ni75U | 225.00 | 240.00 | 60.00 | 80.00 | 450.00 | 80.00 | 80.00 | Sr=50 mm* | Sr=45 mm* | Sr=40 mm* |
| CP80 | Ni75U | 225.00 | 240.00 | 120.00 | 80.00 | 450.00 | 80.00 | 80.00 | | | |
| K90 | Ni60 | 180.00 | 270.00 | 135.00 | 90.00 | 360.00 | 60.00 | 90.00 | | | |
| K90SR | Ni100U | 300.00 | 270.00 | 90.00 | 90.00 | 600.00 | 100.00 | 200.00 | Sr=70 mm* | | |

Dimensions are in mm.
*Uprox Non-embeddable flush mounting guidelines. The above Uprox Ni sensors with DC ouputs can be flush mounted because the sensor automatically compensates for metal alongside its sensing face by decreasing the sensing range, preventing the output from locking on.




We reserve the right to make technical alterations without prior notice.

## Embeddable Mounting Characteristics

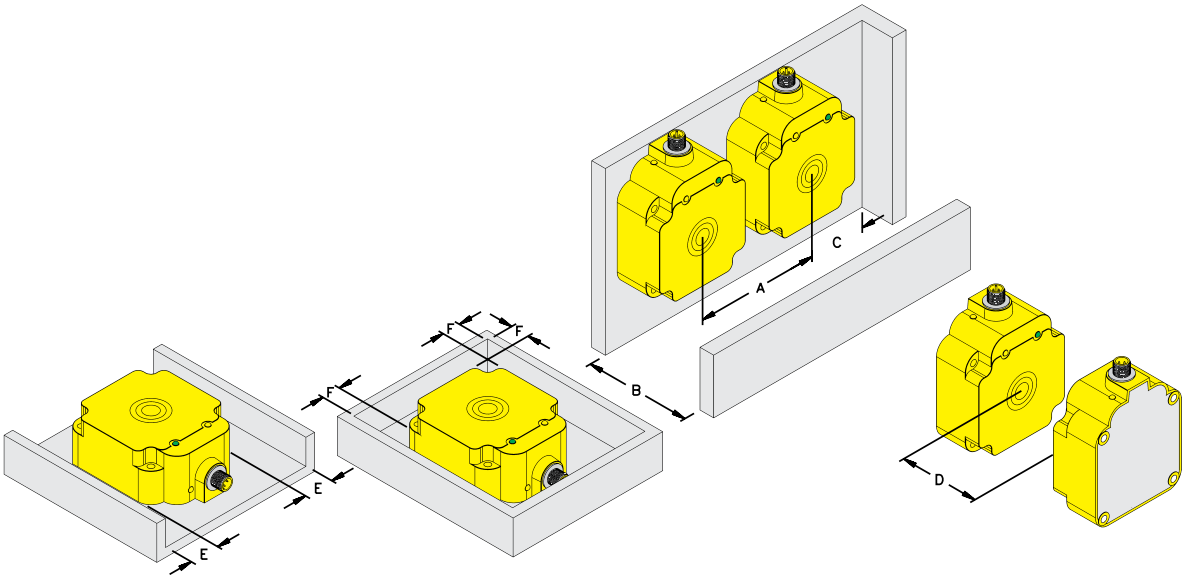



### Embeddable, Square Sensors

| Part Number | A | B | C | D |
|---|---|---|---|---|
| Bi50U-Q80 | 240.00 | 150.00 | 80.00 | 300.00 |

Dimensions are in mm.

## Nonembeddable Mounting Characteristics




### Nonembeddable, Square Sensors

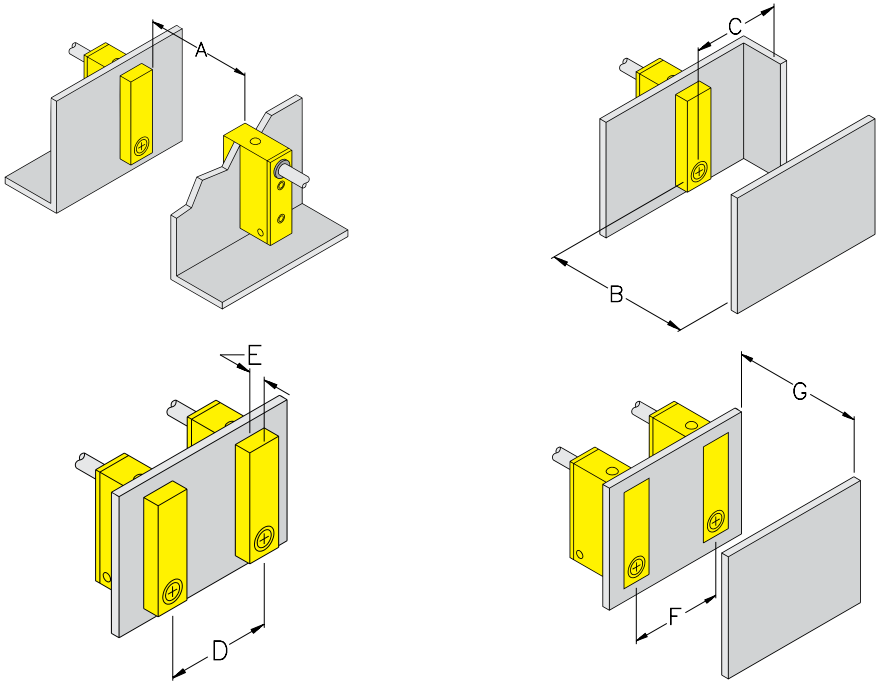
| Part Number | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| Ni75U-Q80 | 240.00 | 225.00 | 60.00 | 450.00 | 80.00 | 80.00 |

Dimensions are in mm.

We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors

## Embeddable Mounting Characteristics - Rectangular Housings




### Flush Mountable

| Housing Type | Sensor Type | Housing | A | C | F | G |
|---|---|---|---|---|---|---|
| Q6.5 | Bi1 | 6.50 | 6.00 | 7.00 | 13.00 | 3.00 |
| Q10S | Bi2 | 10.00 | 12.00 | 10.00 | 20.00 | 6.00 |
| Q12 | Bi2 | 12.00 | 12.00 | 12.00 | 24.00 | 6.00 |

Dimensions are in mm.

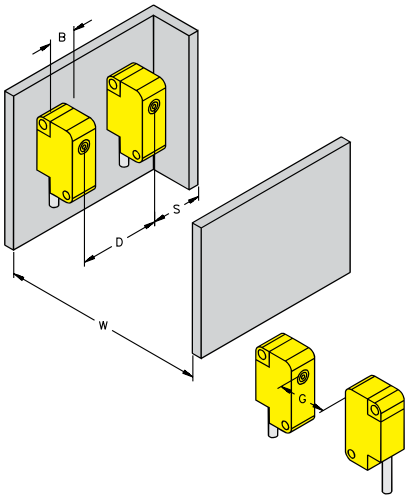
### Non-Flush Mountable

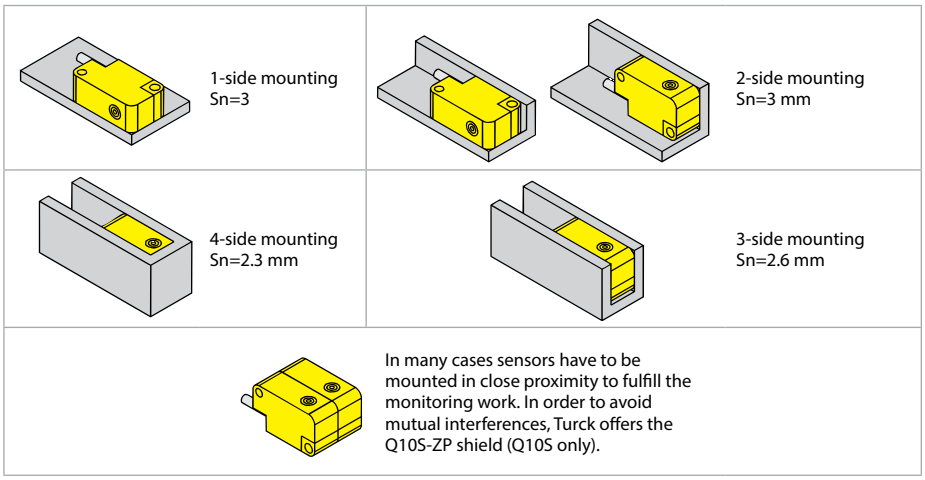
| Housing Type | Sensor Type | Housing | A | B | C | D | E |
|---|---|---|---|---|---|---|---|
| Q6.5 | Ni2 | 6.50 | 12.00 | 6.00 | 10.00 | 20.00 | 4.00 |
| Q9.5 | Ni2 | 9.50 | 12.00 | 6.00 | 14.00 | 19.00 | 4.00 |
| Q12 | Ni4 | 12.00 | 24.00 | 12.00 | 18.00 | 24.00 | 8.00 |
| Q25 | Ni10 | 25.00 | 60.00 | 30.00 | 38.00 | 75.00 | 20.00 |
| Q30 | Ni15 | 30.00 | 90.00 | 45.00 | 45.00 | 90.00 | 30.00 |

Dimensions are in mm.

We reserve the right to make technical alterations without prior notice.

## Embeddable Mounting Characteristics

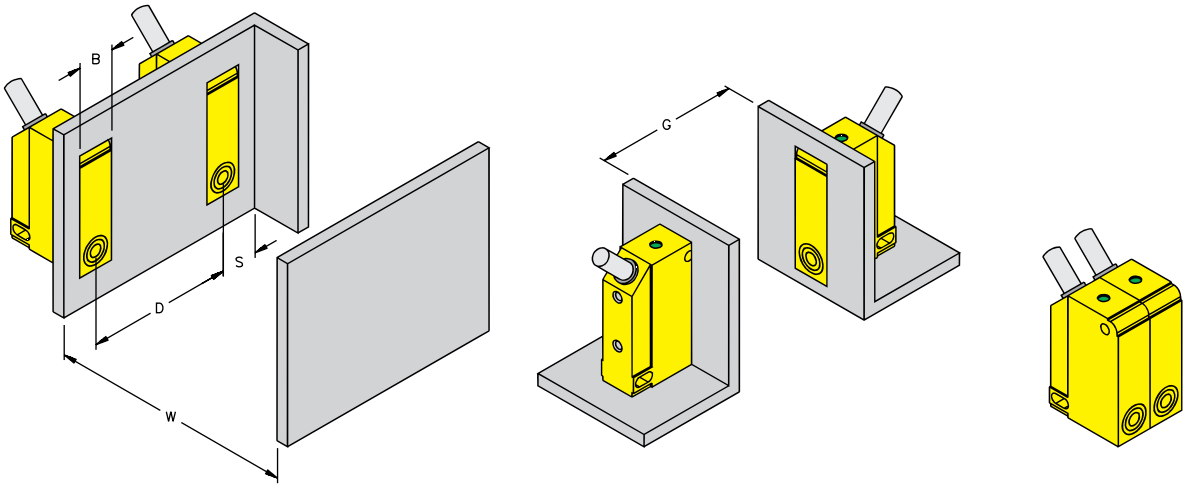



### Nonembeddable, Square Sensors

| Part Number | D | W | S | G | B Width of Active Face |
|---|---|---|---|---|---|
| **Ni5U-Q10S** | 31.00 | 15.00 | 15.30 | 30.00 | 10.20 |

Dimensions are in mm.




### Embeddable, Square Sensors

| Part Number | D | W | S | G | B Width of Active Face |
|---|---|---|---|---|---|
| **Bi5U-Q12** | 48.00 | 25.00 | 12.00 | 50.00 | 12.00 |

Dimensions are in mm.

We reserve the right to make technical alterations without prior notice.

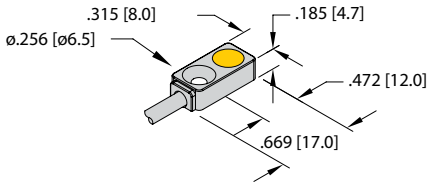
Notes

# Rectangular Inductive Sensors | Q4.7, Q5.5, & Q06

## Top Sensing Subminiature Qpak Housing

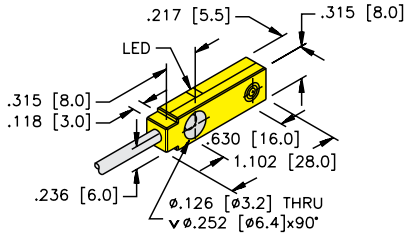
| Housing Style | Dimension Drawings |
|---|---|

A



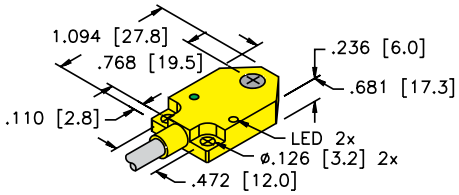

4.7 mm - Embeddable, Potted-In Cable

B




5.5 mm - Embeddable/Nonembeddable, Potted-In Cable

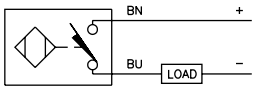
C



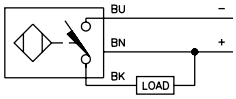

6.0 mm - Embeddable, Potted-In Cable

### Wiring Diagrams/Mating Cordsets

1




2

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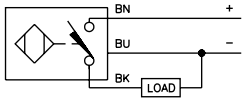



### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥170 mA on 150 mA Load Current | Temperature Drift: | ≤±10% |
| | ≥120 mA on 100 mA Load Current | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| No-Load Current: | ≤15 mA (Ferrite, Uprox, Rectangular) | Repeatability: | ≤2% of Rated Operating Distance |
| | ≤20 mA (Uprox+, Uprox 3) | | |
| Time Delay Before Availability: | ≤8 ms | | |

We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | Q4.7, Q5.5, & Q06

## Top Sensing Subminiature Qpak Housing

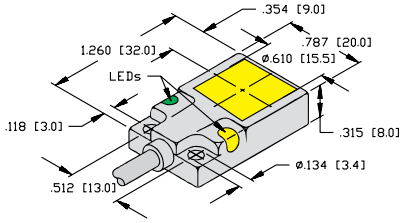
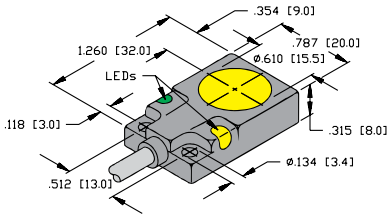
| Part Number/ ID Number | Features | Embeddable | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Front Cap/Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi2-Q4.7-AN6X** 1614001 | | • | 2 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤100 | 0 to +85 | IP67 | Zinc | PA | N/A | YE | 2M/TPU | A | 2 | A4 |
| **Bi2-Q4.7-AP6X** 1614000 | | • | 2 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤100 | 0 to +85 | IP67 | Zinc | PA | N/A | YE | 2M/TPU | A | 3 | A4 |
| **Bi2-Q5.5-AG6X** 1613108 | | • | 2 | 2-wire DC | 10-30 VDC | 1000 | ≤50 | -25 to +70 | IP67 | PP | PP | N/A | YE | 2M/TPU | B | 1 | A2 |
| **Bi2-Q5.5-AN6X** 1613100 | | • | 2 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤150 | -25 to +85 | IP67 | PP | PP | N/A | YE | 2M/TPU | B | 2 | A4 |
| **Bi2-Q5.5-AN6X/S34** 1613101 | WFI | • | 2 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤150 | -25 to +70 | IP67 | PP | PP | N/A | YE | 2M/TPU | B | 2 | A4 |
| **Ni3.5-Q5.5-AN6X** 4613610 | | | 3.5 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤150 | -25 to +70 | IP67 | PP | PP | N/A | YE | 2M/TPU | B | 2 | A4 |
| **Bi2-Q5.5-AP6X** 1613000 | | • | 2 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤150 | -25 to +85 | IP67 | PP | PP | N/A | YE | 2M/TPU | B | 3 | A4 |
| **Bi2-Q5.5-AP6X/S34** 1613001 | WFI | • | 2 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤150 | -25 to +70 | IP67 | PP | PP | N/A | YE | 2M/TPU | B | 3 | A4 |
| **Ni3.5-Q5.5-AP6X** 4613601 | | | 3.5 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤150 | -25 to +70 | IP67 | PP | PP | N/A | YE | 2M/TPU | B | 3 | A4 |
| **Bi3-Q06-AN6X2** 1620150 | | • | 3 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | PBT | PA | GN | YE | 2M/TPU | C | 2 | A4 |
| **Bi3-Q06-AP6X2** 1620100 | | • | 3 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | PBT | PA | GN | YE | 2M/TPU | C | 3 | A4 |



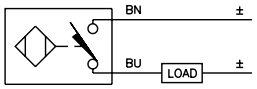
We reserve the right to make technical alterations without prior notice.

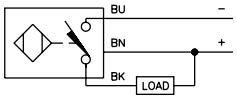
# Rectangular Inductive Sensors | Q08

## Top Sensing Qpak Housing with Potted-in Cable

| Housing Style | Dimension Drawings |
|---|---|
| | A   8.0 mm - Embeddable, Potted-In Cable |
| B   8.0 mm - Embeddable, Potted-In Cable | |

### Wiring Diagrams/Mating Cordsets

1



2
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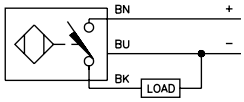
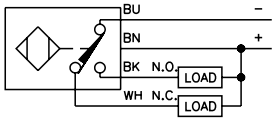



4
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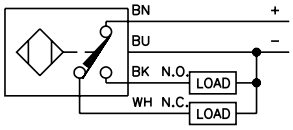



### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥170 mA on 150 mA Load Current | Temperature Drift: | ≤±10% |
| | ≥120 mA on 100 mA Load Current | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| No-Load Current: | ≤15 mA (Ferrite, Uprox, Rectangular) | Repeatability: | ≤2% of Rated Operating Distance |
| | ≤20 mA (Uprox+, Uprox 3) | | |
| Time Delay Before Availability: | ≤8 ms | | |

We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | Q08

## Top Sensing Qpak Housing with Potted-in Cable

| Part Number/ ID Number | Features | Embeddable | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Front Cap/Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi5U-Q08-AN6X2** 1608911 | Uprox | • | 5 | 3-wire DC NPN | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP67 | Zinc | PA 12 | GN | YE | 2M/TPU | B | 2 | A4 |
| **Bi5U-Q08-AP6X2** 1608901 | Uprox | • | 5 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP67 | Zinc | PA 12 | GN | YE | 2M/TPU | B | 3 | A4 |
| **Bi5-Q08-AD4X/S34** 4414550 | WFI | • | 5 | 2-wire DC | 10-65 VDC | 50 | ≤100 | -25 to +70 | IP67 | Zinc | PA 12 | N/A | YE | 2M/TPU | B | 1 | A2 |
| **Bi5-Q08-VN6X2** 1600200 | Comp. Outputs | • | 5 | 4-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | Zinc | PA 12 | GN | YE | 2M/TPU | B | 4 | A4 |
| **Bi5-Q08-VP6X2** 1600100 | Comp. Outputs | • | 5 | 4-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | Zinc | PA 12 | GN | YE | 2M/TPU | B | 5 | A4 |
| **Bi7-Q08-AN6X2** 1601620 | Ext. Range | • | 7 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | Zinc | PA 12 | GN | YE | 2M/TPU | B | 2 | A4 |
| **Bi7-Q08-AP6X2** 1601600 | Ext. Range | • | 7 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | Zinc | PA 12 | GN | YE | 2M/TPU | B | 3 | A4 |
| **Bi7-Q08-VN6X2** 1600920 | Ext. Range | • | 7 | 4-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | Zinc | PA 12 | GN | YE | 2M/TPU | B | 4 | A4 |
| **Bi7-Q08-VP6X2** 1600900 | Ext. Range | • | 7 | 4-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | Zinc | PA 12 | GN | YE | 2M/TPU | B | 5 | A4 |
| **Bi8U-Q08-AN6X2** 1662007 | Uprox+ | • | 8 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | Zinc | PA12 | GN | YE | 2M/TPU | A | 2 | A4 |
| **Bi8U-Q08-AP6X2** 1662006 | Uprox+ | • | 8 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | Zinc | PA12 | GN | YE | 2M/TPU | A | 3 | A4 |



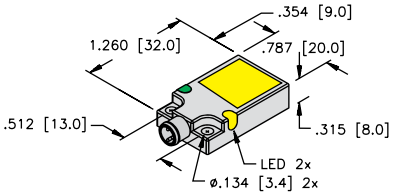
We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | Q08

## Top Sensing Qpak Housing with Integral Connector

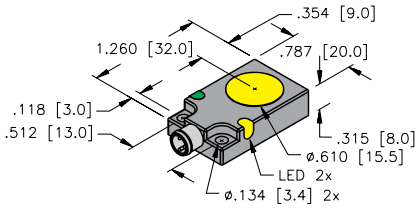
| Housing Style | Dimension Drawings |
|---|---|

A



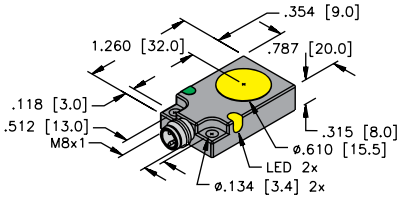

8.0 mm - Embeddable, Picofast Connector

B




8.0 mm - Embeddable, M8 snap-on Picofast Connector

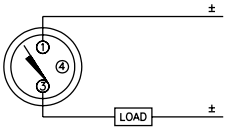
C




8.0 mm - Embeddable, M8 thread-on Picofast Connector

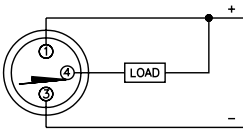
### Wiring Diagrams/Mating Cordsets

1



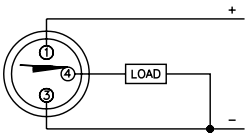

Mating Cordset: PKG 3Z-*; PKG 3M-*

2



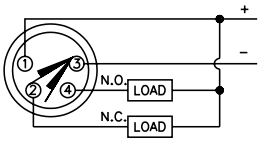

Mating Cordset: PKG 3Z-*; PKG 3M-*

3



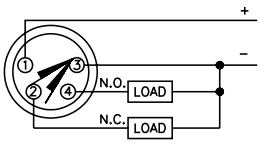

Mating Cordset: PKG 3Z-*; PKG 3M-*

4




Mating Cordset: PKG 4Z-*

5




Mating Cordset: PKG 4Z-*

### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥170 mA on 150 mA Load Current | Temperature Drift: | ≤±10% |
| | ≥120 mA on 100 mA Load Current | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| No-Load Current: | ≤15 mA (Ferrite, Uprox, Rectangular) | Repeatability: | ≤2% of Rated Operating Distance |
| | ≤20 mA (Uprox+, Uprox 3) | | |
| Time Delay Before Availability: | ≤8 ms | | |

We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | Q08

## Top Sensing Qpak Housing with Integral Connector

| Part Number/ ID Number | Features | Embeddable | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Front Cap/Face | Power LED | Output LED | Mating Cord | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi5U-Q08-AN6X2-V1131** 1608910 | Uprox | • | 5 | 3-wire DC NPN | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP67 | Zinc | PA 12 | GN | YE | PKG 3Z-* | B | 2 | A4 |
| **Bi5U-Q08-AP6X2-V1131** 1608900 | Uprox | • | 5 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP67 | Zinc | PA 12 | GN | YE | PKG 3Z-* | B | 3 | A4 |
| **Bi5U-Q08-AN6X2-V2131** 1608904 | Uprox | • | 5 | 3-wire DC NPN | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP67 | Zinc | PA 12 | GN | YE | PKG 3M-* | C | 2 | A4 |
| **Bi5U-Q08-AP6X2-V2131** 1608905 | Uprox | • | 5 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP67 | Zinc | PA 12 | GN | YE | PKG 3M-* | C | 3 | A4 |
| **Bi5-Q08-AD4X-V1130** 4414551 | | • | 5 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | Zinc | PA 12 | N/A | YE | PKG 3Z-* | B | 1 | A2 |
| **Bi5-Q08-AN6X2-V1131** 1600600 | | • | 5 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | Zinc | PA 12 | GN | YE | PKG 3Z-* | B | 2 | A4 |
| **Bi5-Q08-AP6X2-V1131** 1600500 | | • | 5 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | Zinc | PA 12 | GN | YE | PKG 3Z-* | B | 3 | A4 |
| **Bi5-Q08-VN6X2-V1141** 1600400 | Comp. Outputs | • | 5 | 4-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | Zinc | PA 12 | GN | YE | PKG 4Z-* | B | 4 | A4 |
| **Bi5-Q08-VP6X2-V1141** 1600300 | Comp. Outputs | • | 5 | 4-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | Zinc | PA 12 | GN | YE | PKG 4Z-* | B | 5 | A4 |
| **Bi5-Q08-AD4X-V2130** 4414553 | | • | 5 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | Zinc | PA 12 | N/A | YE | PKG 3M-* | C | 1 | A2 |
| **Bi5-Q08-AN6X2-V2131** 1600602 | | • | 5 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | Zinc | PA 12 | GN | YE | PKG 3M-* | C | 2 | A4 |
| **Bi5-Q08-AP6X2-V2131** 1600502 | | • | 5 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | Zinc | PA 12 | GN | YE | PKG 3M-* | C | 3 | A4 |
| **Bi7-Q08-AN6X2-V1131** 1601622 | Ext. Range | • | 7 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | Zinc | PA 12 | GN | YE | PKG 3Z-* | B | 2 | A4 |
| **Bi7-Q08-AP6X2-V1131** 1601602 | Ext. Range | • | 7 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | Zinc | PA 12 | GN | YE | PKG 3Z-* | B | 3 | A4 |
| **Bi7-Q08-AN6X2-V2131** 1601623 | Ext. Range | • | 7 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | Zinc | PA 12 | GN | YE | PKG 3M-* | C | 2 | A4 |
| **Bi7-Q08-AP6X2-V2131** 1601603 | Ext. Range | • | 7 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | Zinc | PA 12 | GN | YE | PKG 3M-* | C | 3 | A4 |
| **Bi7-Q08-VN6X2-V1141** 1600922 | Ext. Range | • | 7 | 4-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | Zinc | PA 12 | GN | YE | PKG 4Z-* | B | 4 | A4 |
| **Bi7-Q08-VP6X2-V1141** 1600902 | Ext. Range | • | 7 | 4-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | Zinc | PA 12 | GN | YE | PKG 4Z-* | B | 5 | A4 |
| **Bi8U-Q08-AN6X2-V1131** 1662008 | Uprox+ | • | 8 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | Zinc | PA 12 | GN | YE | PKG 3Z-* | A | 2 | A4 |
| **Bi8U-Q08-AP6X2-V1131** 1662005 | Uprox+ | • | 8 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | Zinc | PA 12 | GN | YE | PKG 3Z-* | A | 3 | A4 |

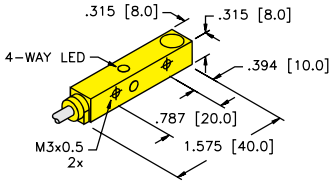
We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | Q8SE & Q10S

## Side Sensing Qpak Housing

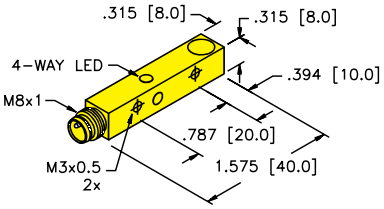
| Housing Style | Dimension Drawings |
|---|---|

A



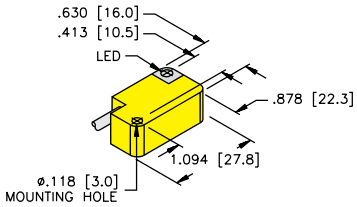

8.0 mm - Nonembeddable, Potted-In Cable

B




8.0 mm - Nonembeddable, M8 Picofast Connector

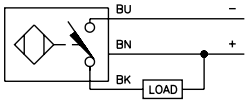
C




10 mm - Embeddable/Nonembeddable, Potted-In Cable

### Wiring Diagrams/Mating Cordsets

1

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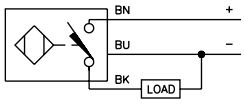


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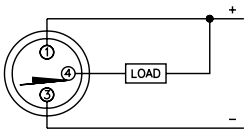
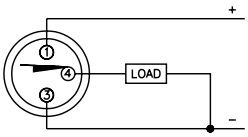


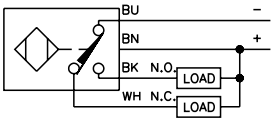

Mating Cordset: PKG 3Z-*

4




Mating Cordset: PKG 3Z-*

5

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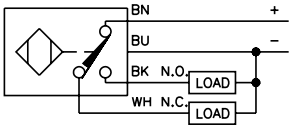
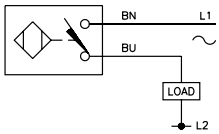



7




### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current |
| | ≥170 mA on 150 mA Load Current |
| | ≥120 mA on 100 mA Load Current |
| Off-State (Leakage) Current: | ≤0.1 mA |
| No-Load Current: | ≤15 mA (Ferrite, Uprox, Rectangular) |
| | ≤20 mA (Uprox+, Uprox 3) |
| Time Delay Before Availability: | ≤8 ms |
| Power-On Effect: | Per IEC 947-5-2 |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Transient Protection: | Per EN 60947-5-2 |
| Temperature Drift: | ≤±10% |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

### A6 — 2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | Q8SE & Q10S

## Side Sensing Qpak Housing

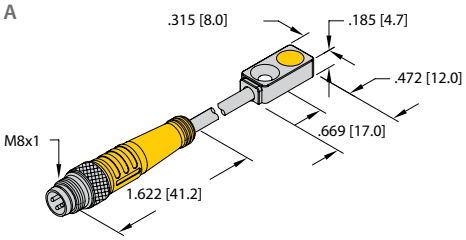
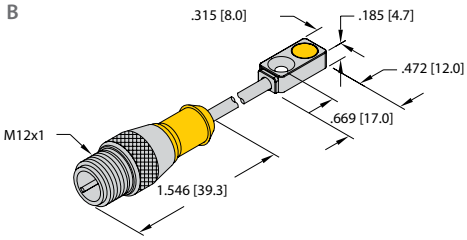
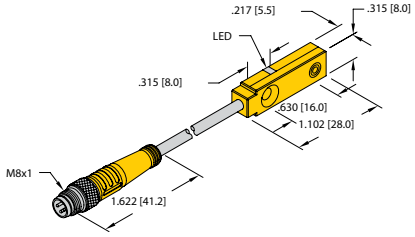
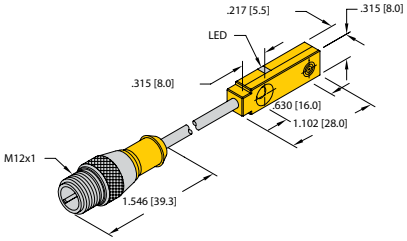
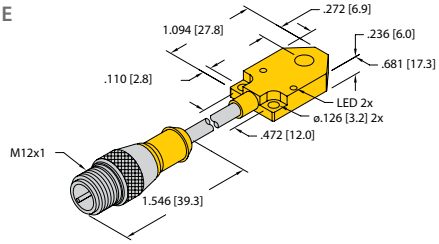
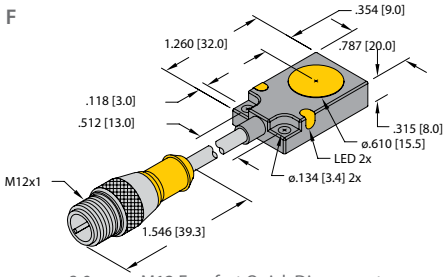
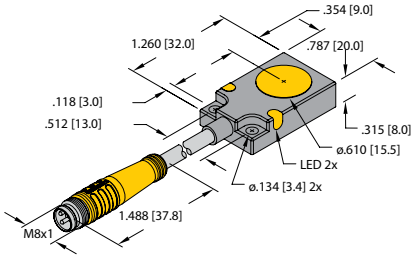
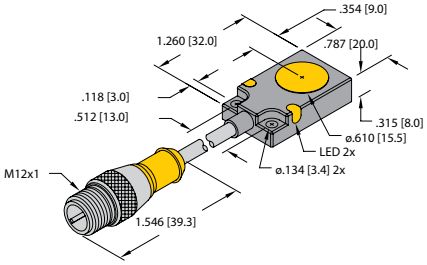
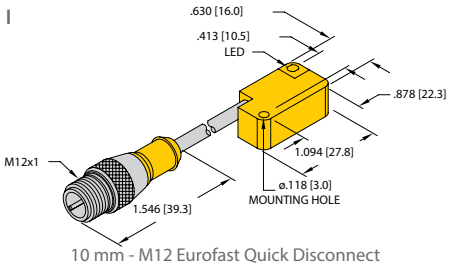
| Part Number/ ID Number | Features | Embeddable | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Front Cap/Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni4U-Q8SE-AN6X** 4635809 | Uprox+ | | 4 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤150 | -30 to +85 | IP68 | PP | PP | N/A | YE | 2M/TPU | A | 1 | A4 |
| **Ni4U-Q8SE-AP6X** 4635807 | Uprox+ | | 4 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤150 | -30 to +85 | IP68 | PP | PP | N/A | YE | 2M/TPU | A | 2 | A4 |
| **Ni4U-Q8SE-AN6X-V1131** 4635810 | Uprox+ | | 4 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤150 | -30 to +85 | IP68 | PP | PP | N/A | YE | - - | B | 3 | A4 |
| **Ni4U-Q8SE-AP6X-V1131** 4635808 | Uprox+ | | 4 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤150 | -30 to +85 | IP68 | PP | PP | N/A | YE | - - | B | 4 | A4 |
| **Bi2-Q10S-AN6X** 1619310 | | • | 2 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤150 | -25 to +70 | IP67 | PP-GF20 | PP | N/A | YE | 2M/TPU | C | 1 | A4 |
| **Bi2-Q10S-AP6X** 1609360 | | • | 2 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤150 | -25 to +70 | IP67 | PP-GF20 | PP | N/A | YE | 2M/TPU | C | 2 | A4 |
| **Bi2-Q10S-VN6X** 1609341 | Comp. Outputs | • | 2 | 4-wire DC NPN | 10-30 VDC | 2000 | ≤150 | -25 to +70 | IP67 | PP-GF20 | PP | N/A | YE | 2M/TPU | C | 5 | A4 |
| **Bi2-Q10S-VP6X** 1609340 | Comp. Outputs | • | 2 | 4-wire DC PNP | 10-30 VDC | 2000 | ≤150 | -25 to +70 | IP67 | PP-GF20 | PP-GF20 | N/A | YE | 2M/TPU | C | 6 | A4 |
| **Bi2-Q10S-AZ31X** 1309100 | | • | 2 | 2-wire AC | 20-250 VAC/10-300 VDC | 60 | ≤100 | -25 to +70 | IP67 | PP-GF20 | PP-GF20 | N/A | RD | 2M/TPU | C | 7 | A6 |
| **Ni5U-Q10S-AN6X** 1609365 | Uprox+ | | 5 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤150 | -30 to +85 | IP68 | PP-GF20 | PP-GF20 | N/A | YE | 2M/TPU | C | 1 | A4 |
| **Ni5U-Q10S-AP6X** 1609364 | Uprox+ | | 5 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤150 | -30 to +85 | IP68 | PP-GF20 | PP-GF20 | N/A | YE | 2M/TPU | C | 2 | A4 |



We reserve the right to make technical alterations without prior notice.

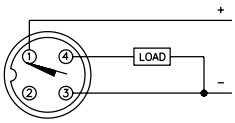
# Rectangular Inductive Sensors | Small Rectangular

**Sensor with Molded Connector**

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   4.7 mm - M8 Picofast Quick Disconnect | B   4.7 mm - M12 Eurofast Quick Disconnect |
| C   5.5 mm - M8 Picofast Quick Disconnect | D   5.5 mm - M12 Eurofast Quick Disconnect | E   6.0 mm - M12 Eurofast Quick Disconnect |
| F   8.0 mm - M12 Eurofast Quick Disconnect | G   8.0 mm - M8 Picofast Quick Disconnect | H   8.0 mm - M12 Eurofast Quick Disconnect |
| I   10 mm - M12 Eurofast Quick Disconnect | | |

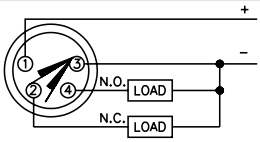
**Wiring Diagrams/Mating Cordsets**

1




Mating Cordset: RK 4T-*

2




Mating Cordset: PKG 3M-*

**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current |
| | ≥170 mA on 150 mA Load Current |
| | ≥120 mA on 100 mA Load Current |
| Off-State (Leakage) Current: | ≤0.1 mA |
| No-Load Current: | ≤15 mA (Ferrite, Uprox, Rectangular) |
| | ≤20 mA (Uprox+, Uprox 3) |
| Time Delay Before Availability: | ≤8 ms |
| Power-On Effect: | Per IEC 947-5-2 |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Transient Protection: | Per EN 60947-5-2 |
| Temperature Drift: | ≤±10% |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | Small Rectangular

## Sensor with Molded Connector

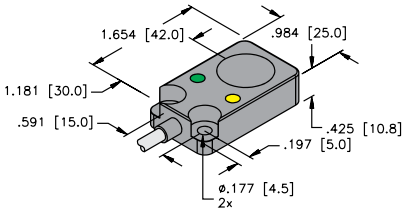
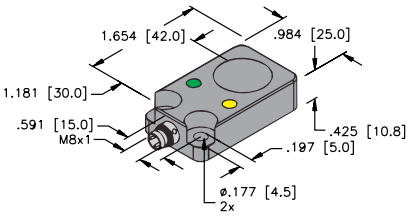
| Part Number/ ID Number | Features | Embeddable | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Front Cap/Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi2-Q4.7-AP6X-0.3-PSG3M** 1614000 | | • | 2 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤100 | 0 to +85 | IP67 | Zinc | PA | N/A | YE | 0.3M/TPU | A | 2 | A4 |
| **Bi2-Q4.7-AP6X-0.3-RS4T** 16140024 | | • | 2 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤100 | 0 to +85 | IP67 | Zinc | PA | N/A | YE | 0.3M/TPU | B | 1 | A4 |
| **Bi2-Q5.5-AP6X-0.2-PSG3M** 1613099 | | • | 2 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤150 | -25 to +85 | IP67 | PP | PP | N/A | YE | 0.2M/TPU | C | 2 | A4 |
| **Bi2-Q5.5-AP6X-0.2-RS4T** 1613094 | | • | 2 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤150 | -25 to +85 | IP67 | PP | PP | N/A | YE | 0.2M/TPU | D | 1 | A4 |
| **Bi3-Q06-AP6X2-0.2-RS4T** 1620193 | | • | 3 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | PBT | PA | GN | YE | 0.2M/TPU | E | 1 | A4 |
| **Bi5U-Q08-AP6X2-0.2-RS4T** 1608990 | Uprox | • | 5 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP67 | Zinc | PA 12 | GN | YE | 0.2M/TPU | F | 1 | A4 |
| **Bi5-Q08-AP6X2-0.2-PSG3F** 1600592 | | • | 5 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP67 | Zinc | PA 12 | GN | YE | 0.2M/TPU | G | 2 | A4 |
| **Bi7-Q08-AP6X2-0.2-RS4T** 1601683 | | • | 7 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | Zinc | PA 12 | GN | YE | 0.2M/TPU | H | 1 | A4 |
| **Bi2-Q10S-AP6X-0.2-RS4T** 1609390 | | • | 2 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤150 | -25 to +70 | IP67 | PP-GF20 | PP | N/A | YE | 0.2M/TPU | I | 1 | A4 |



We reserve the right to make technical alterations without prior notice.

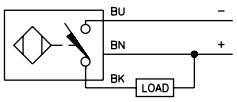
# Rectangular Inductive Sensors | Q10

## Top Sensing Qpak Housing

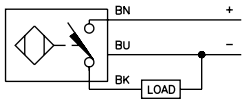
| Housing Style | Dimension Drawings |
|---|---|
| | A   10 mm - Embeddable, Potted-In Cable |
| B   10 mm - Embeddable, M8 Picofast Connector | |

### Wiring Diagrams/Mating Cordsets

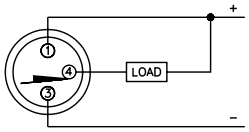
1




2

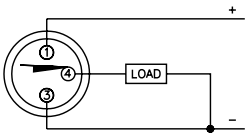



3



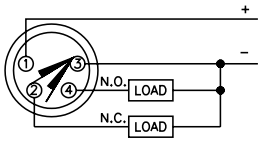

Mating Cordset: PKG 3Z-*

4



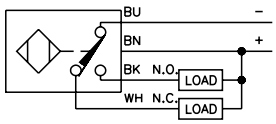

Mating Cordset: PKG 3Z-*

5

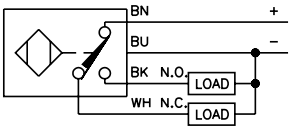



Mating Cordset: PKG 4Z-*

6




7




### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current |
| | ≥170 mA on 150 mA Load Current |
| | ≥120 mA on 100 mA Load Current |
| Off-State (Leakage) Current: | ≤0.1 mA |
| No-Load Current: | ≤15 mA (Ferrite, Uprox, Rectangular) |
| | ≤20 mA (Uprox+, Uprox 3) |
| Time Delay Before Availability: | ≤8 ms |
| Power-On Effect: | Per IEC 947-5-2 |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Transient Protection: | Per EN 60947-5-2 |
| Temperature Drift: | ≤±10% |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | Q10

## Top Sensing Qpak Housing

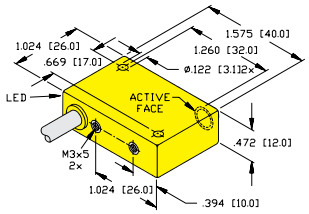
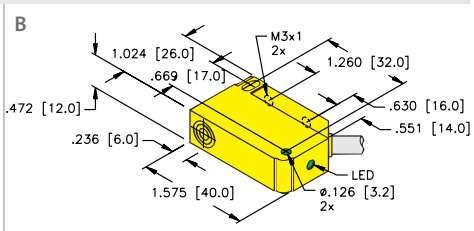
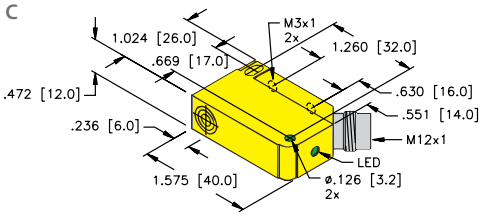
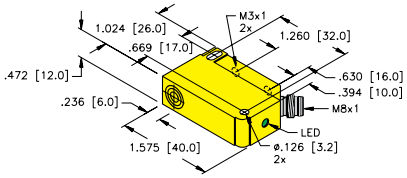
| Part Number/ ID Number | Features | Embeddable | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Front Cap/Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi8U-Q10-AN6X2** 1662003 | Uprox | • | 8 | 3-wire DC NPN | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP67 | PBT | PBT | GN | YE | 2M/TPU | A | 1 | A4 |
| **Bi8U-Q10-AP6X2** 1662001 | Uprox | • | 8 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP67 | PBT | PBT | GN | YE | 2M/TPU | A | 2 | A4 |
| **Bi8U-Q10-AN6X2-V1131** 1662004 | Uprox | • | 8 | 3-wire DC NPN | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP67 | PBT | PBT | GN | YE | - - | B | 3 | A4 |
| **Bi8U-Q10-AP6X2-V1131** 1662002 | Uprox | • | 8 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP67 | PBT | PBT | GN | YE | - - | B | 4 | A4 |
| **Bi8-Q10-VN6X2** 4616410 | Comp. Outputs | • | 8 | 4-wire DC NPN | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | 2M/TPU | A | 6 | A4 |
| **Bi8-Q10-VP6X2** 4616401 | Comp. Outputs | • | 8 | 4-wire DC PNP | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | 2M/TPU | A | 7 | A4 |
| **Bi8-Q10-VP6X2-V1141** 4616402 | Comp. Outputs | • | 8 | 4-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | - - | B | 5 | A4 |



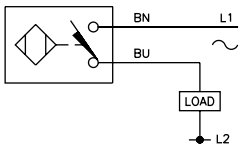
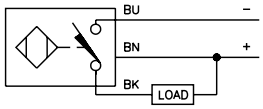
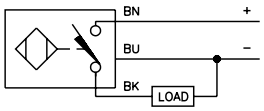
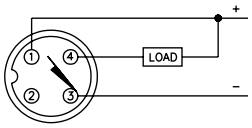
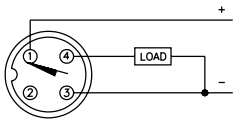
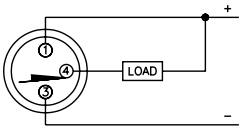
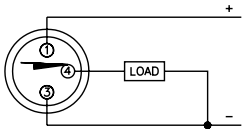
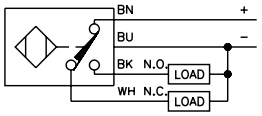
We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | Q12

## Side Sensing Qpak Housing

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   12 mm - Embeddable/Nonembeddable, Potted-In Cable | B   12 mm - Embeddable, Potted-In Cable |
| C   12 mm - Embeddable, M12 Eurofast Connection | D   12 mm - Embeddable, M8 Picofast Connection | |

### Wiring Diagrams/Mating Cordsets

| | | |
|---|---|---|
| 1   | 2   | 3   |
| 4   Mating Cordset: RK 4T-* | 5   Mating Cordset: RK 4T-* | 6   Mating Cordset: PKG 3Z-* |
| 7   Mating Cordset: PKG 3Z-* | 8   | |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥170 mA on 150 mA Load Current | Temperature Drift: | ≤±10% |
| | ≥120 mA on 100 mA Load Current | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| No-Load Current: | ≤15 mA (Ferrite, Uprox, Rectangular) | Repeatability: | ≤2% of Rated Operating Distance |
| | ≤20 mA (Uprox+, Uprox 3) | | |
| Time Delay Before Availability: | ≤8 ms | | |

### A6 — 2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Power-On Effect: | Per IEC 947-5-2 |
| | AC: ≤100 mA; DC: ≤100 mA | Transient Protection: | Per EN 60947-5-2 |
| Off-State (Leakage) Current: | ≤1.7 mA | Shock: | 30 g, 11 ms |
| Minimum Load Current: | ≥3.0 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | Q12

## Side Sensing Qpak Housing

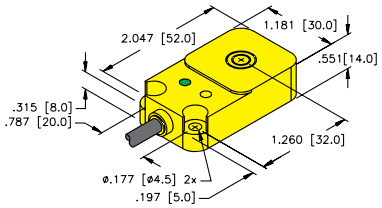
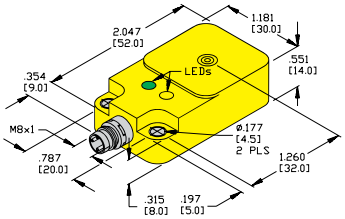
| Part Number/ ID Number | Features | Embeddable | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Front Cap/Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi2-Q12-AZ31X** 13100 | | • | 2 | 2-wire AC | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | PBT | PBT | N/A | YE | 2M/ PVC | A | 1 | A6 |
| **Ni4-Q12-AZ31X** 13102 | | | 4 | 2-wire AC | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | PBT | PBT | N/A | YE | 2M/ PVC | A | 1 | A6 |
| **Bi5U-Q12-AN6X2** 1635523 | Uprox+ | • | 5 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP68 | PA 12-GF30 | LCP | GN | YE | 2M/ TPU | B | 2 | A4 |
| **Bi5U-Q12-AP6X2** 1635522 | Uprox+ | • | 5 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP68 | PA 12-GF30 | LCP | GN | YE | 2M/ TPU | B | 3 | A4 |
| **Bi5U-Q12-VP6X2** 1635533 | Uprox+ | • | 5 | 4-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP68 | PA 12-GF30 | PA 12-GF30 | GN | YE | 2M/ TPU | B | 8 | A4 |
| **Bi5U-Q12-AN6X2-H1141** 1635527 | Uprox+ | • | 5 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP68 | PA 12-GF30 | LCP | GN | YE | - - | C | 4 | A4 |
| **Bi5U-Q12-AP6X2-H1141** 1635526 | Uprox+ | • | 5 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP68 | PA 12-GF30 | LCP | GN | YE | - - | C | 5 | A4 |
| **Bi5U-Q12-AN6X2-V1131** 1635525 | Uprox+ | • | 5 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP68 | PA 12-GF30 | LCP | GN | YE | - - | D | 6 | A4 |
| **Bi5U-Q12-AP6X2-V1131** 1635524 | Uprox+ | • | 5 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP68 | PA 12-GF30 | LCP | GN | YE | - - | D | 7 | A4 |



We reserve the right to make technical alterations without prior notice.

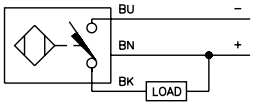
# Rectangular Inductive Sensors | Q14

## Top Sensing Qpak Housing

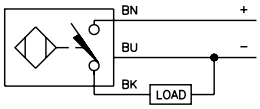
| Housing Style | Dimension Drawings |
|---|---|
| | A   14 mm - Potted-In Cable |
| B   14 mm - Embeddable/Nonembeddable, M8 Picofast Connector | |

### Wiring Diagrams/Mating Cordsets

1




2

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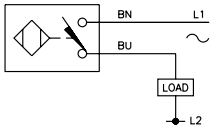
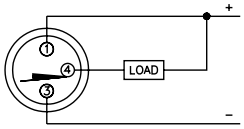
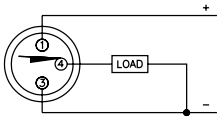



4




Mating Cordset: PKG 3M-*

5




Mating Cordset: PKG 3M-*

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥170 mA on 150 mA Load Current | Temperature Drift: | ≤±10% |
| | ≥120 mA on 100 mA Load Current | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| No-Load Current: | ≤15 mA (Ferrite, Uprox, Rectangular) | Repeatability: | ≤2% of Rated Operating Distance |
| | ≤20 mA (Uprox+, Uprox 3) | | |
| Time Delay Before Availability: | ≤8 ms | | |

### A5 — 2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Minimum Load Current: | ≥3.0 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Inrush Current: | ≤3.0 A (≤20 ms, max 5 Hz) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | Power-On Effect: | Per IEC 947-5-2 |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA | Transient Protection: | Per EN 60947-5-2 |
| | AC: ≥120 mA; DC: ≥120 mA | Shock: | 30 g, 11 ms |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | AC: ≤100 mA; DC: ≤100 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Off-State (Leakage) Current: | ≤1.7 mA (AC) | | |
| | ≤1.5 mA (DC) | | |

We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | Q14

## Top Sensing Qpak Housing

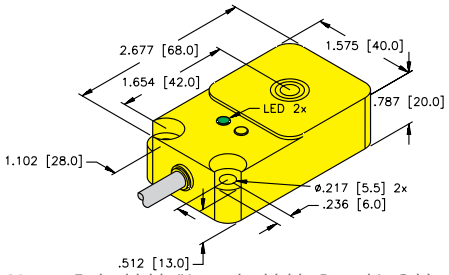
| Part Number/ ID Number | Features | Embeddable | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Front Cap/Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi10U-Q14-AN6X2** 1608710 | Uprox | • | 10 | 3-wire DC NPN | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP67 | PBT | PBT | GN | YE | 2M/ TPU | A | 1 | A4 |
| **Bi10U-Q14-AP6X2** 1608700 | Uprox | • | 10 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP67 | PBT | PBT | GN | YE | 2M/ TPU | A | 2 | A4 |
| **Bi10U-Q14-AN6X2-V1131** 1608510 | Uprox | • | 10 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP67 | PBT | PBT | GN | YE | - - | B | 4 | A4 |
| **Bi10U-Q14-AP6X2-V1131** 1608500 | Uprox | • | 10 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP67 | PBT | PBT | GN | YE | - - | B | 5 | A4 |
| **Bi10-Q14-AN6X2** 1608320 | | • | 10 | 3-wire DC NPN | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | 2M/ TPU | A | 1 | A4 |
| **Bi10-Q14-AP6X2** 1608720 | | • | 10 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | 2M/ TPU | A | 2 | A4 |
| **Bi10-Q14-ADZ32X2** 4256220 | | • | 10 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | PBT | PBT | GN | RD | 2M/ TPU | A | 3 | A5 |
| **Bi10-Q14-ADZ32X2/S34** 4256225 | WFI | • | 10 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | PBT | PBT | GN | RD | 2M/ TPU | A | 3 | A5 |
| **Bi10-Q14-AP6X2-V1131** 1608530 | | • | 10 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | - - | B | 5 | A4 |
| **Ni20-Q14-AP6X2-V1131** 4690210 | | | 20 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | - - | B | 5 | A4 |
| **Ni20-Q14-AN6X2** 4690220 | | | 20 | 3-wire DC NPN | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | 2M/ TPU | A | 1 | A4 |
| **Ni20-Q14-AP6X2** 4690205 | | • | 20 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | 2M/ TPU | A | 2 | A4 |
| **Ni20-Q14-ADZ32X2** 4205410 | | • | 20 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | PBT | PBT | GN | RD | 2M/ TPU | A | 3 | A5 |



We reserve the right to make technical alterations without prior notice.

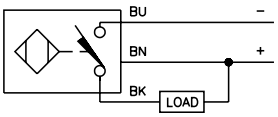
# Rectangular Inductive Sensors | Q20

## Top Sensing Qpak Housing with Potted-in Cable

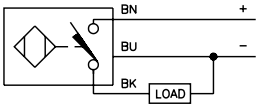
| Housing Style | Dimension Drawings |
|---|---|
| | A   20 mm - Embeddable/Nonembeddable, Potted-In Cable |

### Wiring Diagrams/Mating Cordsets

1




2

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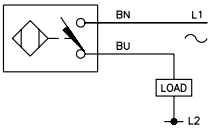



### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current |
| | ≥170 mA on 150 mA Load Current |
| | ≥120 mA on 100 mA Load Current |
| Off-State (Leakage) Current: | ≤0.1 mA |
| No-Load Current: | ≤15 mA (Ferrite, Uprox, Rectangular) |
| | ≤20 mA (Uprox+, Uprox 3) |
| Time Delay Before Availability: | ≤8 ms |
| Power-On Effect: | Per IEC 947-5-2 |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Transient Protection: | Per EN 60947-5-2 |
| Temperature Drift: | ≤±10% |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

### A5 — 2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA |
| | AC: ≥120 mA; DC: ≥120 mA |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA (AC) |
| | ≤1.5 mA (DC) |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤3.0 A (≤20 ms, max 5 Hz) |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | Q20

## Top Sensing Qpak Housing with Potted-in Cable

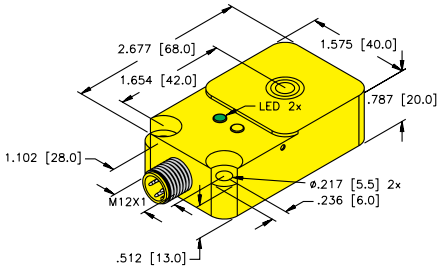
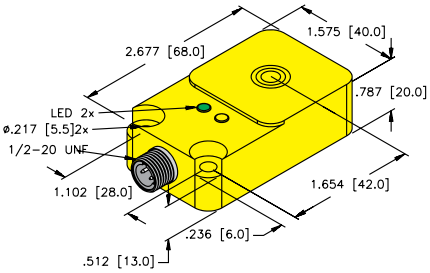
| Part Number/ ID Number | Features | Embeddable | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Front Cap/Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi15U-Q20-AN6X2** 1608810 | Uprox | • | 15 | 3-wire DC NPN | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP67 | PBT | PBT | GN | YE | 2M/TPU | A | 1 | A4 |
| **Bi15U-Q20-AP6X2** 1608800 | Uprox | • | 15 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP67 | PBT | PBT | GN | YE | 2M/TPU | A | 2 | A4 |
| **Bi15-Q20-AP6X2** 1608300 | | • | 15 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | 2M/TPU | A | 2 | A4 |
| **Bi15-Q20-ADZ32X2** 4256250 | | • | 15 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | PBT | PBT | GN | YE | 2M/TPU | A | 3 | A5 |
| **Ni25-Q20-AN6X2** 1602800 | | | 25 | 3-wire DC NPN | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | 2M/TPU | A | 1 | A4 |
| **Ni25-Q20-AP6X2** 1602700 | | | 25 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | 2M/TPU | A | 2 | A4 |



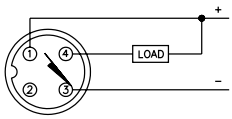
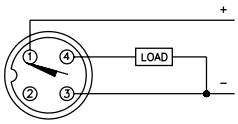
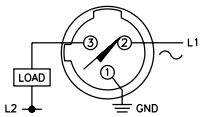
We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | Q20

## Top Sensing Qpak Housing with Integral Connector

| Housing Style | Dimension Drawings |
|---|---|
| | A   20 mm - Embeddable/Nonembeddable, M12 Eurofast Connector |
| B   20 mm - Embeddable, 1/2-20UNF Microfast Connector | |

### Wiring Diagrams/Mating Cordsets

| 1 | 2 | 3 |
|---|---|---|
|   |   |   |
| Mating Cordset: RK 4T-* | Mating Cordset:RK 4T-* | Mating Cordset: KB 3T-* |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥170 mA on 150 mA Load Current | Temperature Drift: | ≤±10% |
| | ≥120 mA on 100 mA Load Current | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| No-Load Current: | ≤15 mA (Ferrite, Uprox, Rectangular) | Repeatability: | ≤2% of Rated Operating Distance |
| | ≤20 mA (Uprox+, Uprox 3) | | |
| Time Delay Before Availability: | ≤8 ms | | |

### A5 — 2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Minimum Load Current: | ≥3.0 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Inrush Current: | ≤3.0 A (≤20 ms, max 5 Hz) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | Power-On Effect: | Per IEC 947-5-2 |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA | Transient Protection: | Per EN 60947-5-2 |
| | AC: ≥120 mA; DC: ≥120 mA | Shock: | 30 g, 11 ms |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | AC: ≤100 mA; DC: ≤100 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Off-State (leakage) Current: | ≤1.7 mA (AC) | | |
| | ≤1.5 mA (DC) | | |

We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | Q20

## Top Sensing Qpak Housing with Integral Connector

| Part Number/ ID Number | Features | Embeddable | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Front Cap/Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi15U-Q20-AN6X2-H1141** 1608610 | Uprox | • | 15 | 3-wire DC NPN | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP67 | PBT | PBT | GN | YE | A | 1 | A4 |
| **Bi15U-Q20-AP6X2-H1141** 1608600 | Uprox | • | 15 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP67 | PBT | PBT | GN | YE | A | 2 | A4 |
| **Bi15-Q20-AN6X2-H1141** 1608315 | | • | 15 | 3-wire DC NPN | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A4 |
| **Bi15-Q20-AP6X2-H1141** 1608305 | | • | 15 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 2 | A4 |
| **Bi15-Q20-ADZ32X2-B3131** 4256251 | | • | 15 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | PBT | PBT | GN | YE | B | 3 | A5 |
| **Ni25-Q20-AN6X2-H1141** 1602802 | | | 25 | 3-wire DC NPN | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A4 |
| **Ni25-Q20-AP6X2-H1141** 1602702 | | | 25 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 2 | A4 |



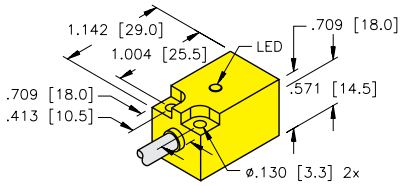
We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | Q18, Q25, & Q30

## Side Sensing Qpak Housing

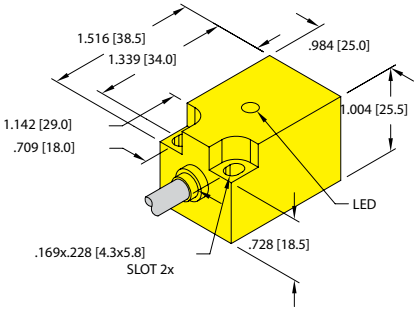
| Housing Style | Dimension Drawings |
|---|---|

A



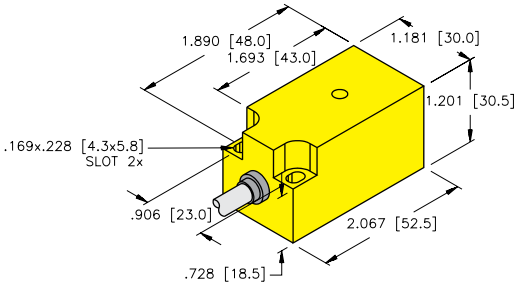

18 mm - Nonembeddable, Potted-In Cable

B




25 mm - Nonembeddable, Potted-In Cable

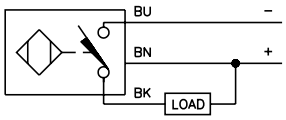
C




30 mm - Nonembeddable, Potted-In Cable

### Wiring Diagrams/Mating Cordsets

1

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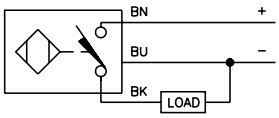



### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current |
| | ≥170 mA on 150 mA Load Current |
| | ≥120 mA on 100 mA Load Current |
| Off-State (Leakage) Current: | ≤0.1 mA |
| No-Load Current: | ≤15 mA (Ferrite, Uprox, Rectangular) |
| | ≤20 mA (Uprox+, Uprox 3) |
| Time Delay Before Availability: | ≤8 ms |
| Power-On Effect: | Per IEC 947-5-2 |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Transient Protection: | Per EN 60947-5-2 |
| Temperature Drift: | ≤±10% |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | Q18, Q25, & Q30

## Side Sensing Qpak Housing

| Part Number/ ID Number | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Front Cap/Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni5-Q18-AN6X** 4614607 | 5 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PBT | PBT | N/A | YE | 2M/PVC | A | 1 | A4 |
| **Ni5-Q18-AP6X** 4614606 | 5 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PBT | PBT | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Ni10-Q25-AN6X** 4652330 | 10 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PBT | PBT | N/A | YE | 2M/PVC | B | 1 | A4 |
| **Ni10-Q25-AP6X** 4652225 | 10 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PBT | PBT | N/A | YE | 2M/PVC | B | 2 | A4 |
| **Ni15-Q30-AN6X** 4659330 | 15 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PBT | PBT | N/A | YE | 2M/PVC | C | 1 | A4 |
| **Ni15-Q30-AP6X** 4659325 | 15 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PBT | PBT | N/A | YE | 2M/PVC | C | 2 | A4 |



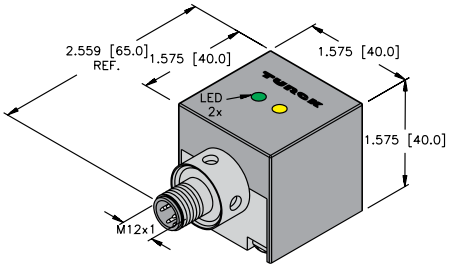
We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | CA40

**Rotatable Sensing Head with Metal Housing**

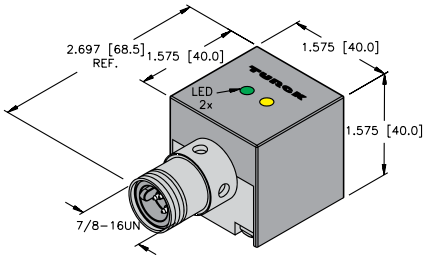
| Housing Style | Dimension Drawings |
|---|---|

A



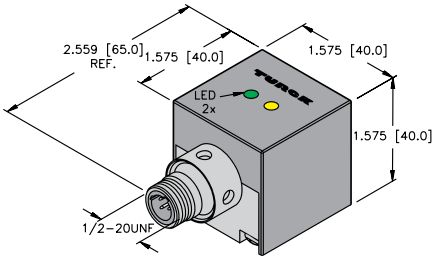

CA40 - Embeddable, Eurofast Connector

B




CA40 - Embeddable, Minifast Connector

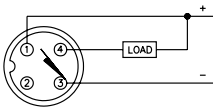
C




CA40 - Embeddable, Microfast Connector

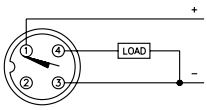
## Wiring Diagrams/Mating Cordsets

1



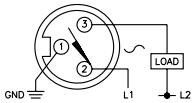

Mating Cordset: RK 4T-*

2



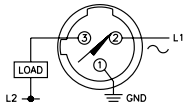

Mating Cordset: RK 4T-*

3




Mating Cordset: RKM 30-*M

4




Mating Cordset: KB 3T-*

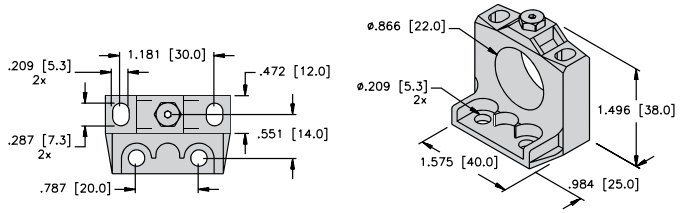
## A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current |
| | ≥170 mA on 150 mA Load Current |
| | ≥120 mA on 100 mA Load Current |
| Off-State (Leakage) Current: | ≤0.1 mA |
| No-Load Current: | ≤15 mA (Ferrite, Uprox, Rectangular) |
| | ≤20 mA (Uprox+, Uprox 3) |
| Time Delay Before Availability: | ≤8 ms |
| Power-On Effect: | Per IEC 947-5-2 |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Transient Protection: | Per EN 60947-5-2 |
| Temperature Drift: | ≤±10% |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

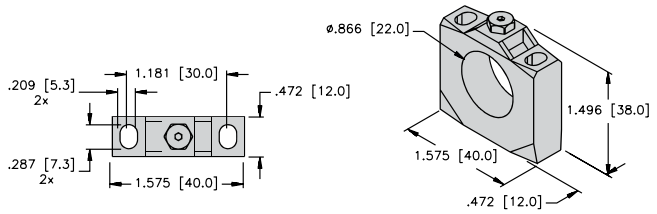
## A5 — 2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA |
| | AC: ≥120 mA; DC: ≥120 mA |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (leakage) Current: | ≤1.7 mA (AC) |
| | ≤1.5 mA (DC) |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤3.0 A (≤20 ms, max 5 Hz) |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

**BS 2.1 Mounting Bracket**




**BS 2.0 Mounting Bracket**




We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | CA40

## Rotatable Sensing Head with Metal Housing

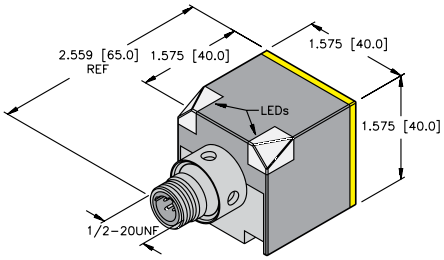
| Part Number/ ID Number | Features | Embeddable | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Front Cap/Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi20U-CA40-AN6X2-H1141 W/BS2.1** 1627390 | Uprox | • | 20 | 3-wire DC NPN | 10-30 VDC | 250 | ≤200 | 0 to +70 | IP67 | AL | TP | GN | YE | A | 1 | A4 |
| **Bi20U-CA40-AP6X2-H1141 W/BS2.1** 1627290 | Uprox | • | 20 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | 0 to +70 | IP67 | AL | TP | GN | YE | A | 2 | A4 |
| **Bi20U-CA40-AP6X2-H1141/S1590 W/BS2.0** 1627297 | Weldguard® | • | 20 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | 0 to +70 | IP67 | AL | WG | GN | YE | A | 2 | A4 |
| **Bi20U-CA40-ADZ30X2-B1131 W/BS2.1** 4283290 | Uprox | • | 20 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP67 | AL | TP | GN | YE | B | 3 | A5 |
| **Bi20U-CA40-ADZ30X2-B3131 W/BS2.1** 4283292 | Uprox | • | 20 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP67 | AL | TP | GN | YE | C | 4 | A5 |



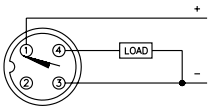
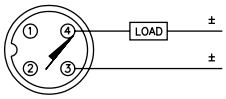
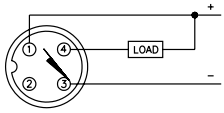
We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | CK40

**Rotatable Sensing Head with 2 and 3-wire DC Outputs**

| Housing Style | Dimension Drawings |
|---|---|
| | A   CK40 - Embeddable/Nonembeddable, Eurofast Connector |

**Wiring Diagrams/Mating Cordsets**

| 1 | 2 | 3 |
|---|---|---|
|   |   |   |
| Mating Cordset: RK 4T-* | Mating Cordset: RK 4.2T-* | Mating Cordset: RK 4T-* |

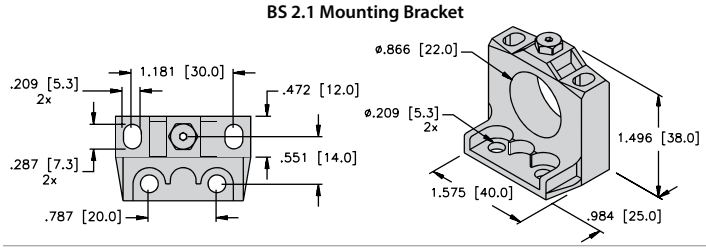
**A2 — 2-wire DC - (AD, RD, AG)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

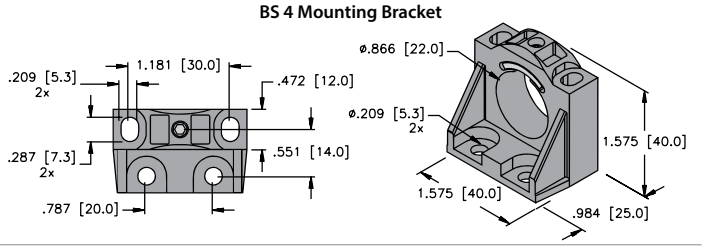
**A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥170 mA on 150 mA Load Current | Temperature Drift: | ≤±10% |
| | ≥120 mA on 100 mA Load Current | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| No-Load Current: | ≤15 mA (Ferrite, Uprox, Rectangular) | Repeatability: | ≤2% of Rated Operating Distance |
| | ≤20 mA (Uprox+, Uprox 3) | | |
| Time Delay Before Availability: | ≤8 ms | | |

**BS 2.1 Mounting Bracket**




**BS 4 Mounting Bracket**




We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | CK40

## Rotatable Sensing Head with 2 and 3-wire DC Outputs

| Part Number/ ID Number | Features | Embeddable | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Front Cap/Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi15U-CK40-AN6X2-H1141 W/BS2.1** 1625690 | Uprox | • | 15 | 3-wire DC NPN | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP68 | PBT | PBT | GN | YE | A | 3 | A4 |
| **Bi15U-CK40-AP6X2-H1141 W/BS2.1** 1625689 | Uprox | • | 15 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP68 | PBT | PBT | GN | YE | A | 1 | A4 |
| **Bi15-CK40-AN6X2-H1141 W/BS2.1** 1625190 | | • | 15 | 3-wire DC NPN | 10-30 VDC | 150 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 3 | A4 |
| **Bi15-CK40-AP6X2-H1141 W/BS2.1** 1625090 | | • | 15 | 3-wire DC PNP | 10-30 VDC | 150 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A4 |
| **Bi15-CK40-AD4X-H1141 W/BS2.1** 4465090 | | • | 15 | 2-wire DC | 10-65 VDC | 150 | ≤100 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 2 | A2 |
| **Bi20U-CK40-AN6X2-H1141** 1627231 | Uprox+ | • | 20 | 3-wire DC NPN | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP68 | PBT | PBT | GN | YE | A | 3 | A4 |
| **Bi20U-CK40-AP6X2-H1141 W/BS2.1** 1627288 | Uprox+ | • | 20 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP68 | PBT | PBT | GN | YE | A | 1 | A4 |
| **Bi30U-CK40-AN6X2-H1141** 1625820 | Uprox+ | • | 30 | 3-wire DC NPN | 10-30 VDC | 250 | ≤200 | -10 to +60 | IP68 | PBT | PBT | GN | YE | A | 3 | A4 |
| **Bi30U-CK40-AP6X2-H1141** 1625829 | Uprox+ | • | 30 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -10 to +60 | IP68 | PBT | PBT | GN | YE | A | 1 | A4 |
| **Ni20-CK40-AN6X2-H1141 W/BS2.1** 1625390 | | | 20 | 3-wire DC NPN | 10-30 VDC | 150 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 3 | A4 |
| **Ni20-CK40-AP6X2-H1141 W/BS2.1** 1625290 | | | 20 | 3-wire DC PNP | 10-30 VDC | 150 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A4 |
| **Ni20-CK40-AD4X-H1141 W/BS2.1** 4465290 | | | 20 | 2-wire DC | 10-65 VDC | 200 | ≤100 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 2 | A2 |
| **Ni25U-CK40-AN6X2-H1141 W/BS2.1** 1625789 | Uprox | | 25 | 3-wire DC NPN | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP68 | PBT | PBT | GN | YE | A | 3 | A4 |
| **Ni25U-CK40-AP6X2-H1141 W/BS2.1** 1625790 | Uprox | | 25 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP68 | PBT | PBT | GN | YE | A | 1 | A4 |
| **Ni35U-CK40-AP6X2-H1141** 1625800 | Uprox | | 35 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP67 | PBT | PBT | GN | YE | A | 1 | A4 |
| **Ni35U-CK40-AN6X2-H1141** 1625810 | Uprox | | 35 | 3-wire DC NPN | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP67 | PBT | PBT | GN | YE | A | 3 | A4 |
| **Ni50U-CK40-AN6X2-H1141** 1625823 | Uprox+ | | 50 | 3-wire DC NPN | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP68 | PBT | PBT | GN | YE | A | 3 | A4 |
| **Ni50U-CK40-AP6X2-H1141** 1625868 | Uprox+ | | 50 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP68 | PBT | PBT | GN | YE | A | 1 | A4 |



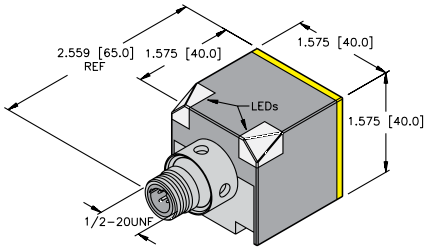
We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | CK40

**Rotatable Sensing Head with Complementary Outputs**

| Housing Style | Dimension Drawings |
|---|---|

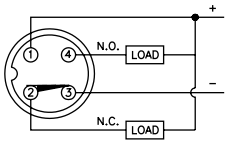
A




CK40 - Embeddable/Nonembeddable, Eurofast Connector

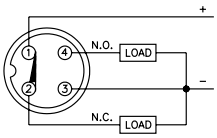
**Wiring Diagrams/Mating Cordsets**

1




Mating Cordset: RK 4.4T-*

2



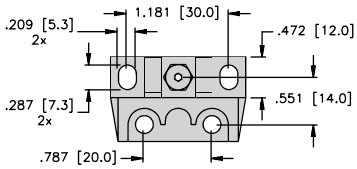

Mating Cordset: RK 4.4T-*

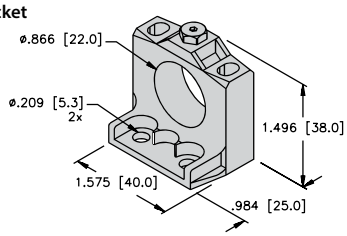
**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current |
| | ≥170 mA on 150 mA Load Current |
| | ≥120 mA on 100 mA Load Current |
| Off-State (Leakage) Current: | ≤0.1 mA |
| No-Load Current: | ≤15 mA (Ferrite, Uprox, Rectangular) |
| | ≤20 mA (Uprox+, Uprox 3) |
| Time Delay Before Availability: | ≤8 ms |

| | |
|---|---|
| Power-On Effect: | Per IEC 947-5-2 |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Transient Protection: | Per EN 60947-5-2 |
| Temperature Drift: | ≤±10% |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

**BS 2.1 Mounting Bracket**




We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | CK40

## Rotatable Sensing Head with Complementary Outputs

| Part Number/ ID Number | Features | Embeddable | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Front Cap/Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi15-CK40-VN4X2-H1141 W/BS2.1** 1550190 | Comp. Outputs | • | 15 | 4-wire DC NPN | 10-65 VDC | 250 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A4 |
| **Bi15-CK40-VP4X2-H1141 W/BS2.1** 1550091 | Comp. Outputs | • | 15 | 4-wire DC PNP | 10-65 VDC | 250 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 2 | A4 |
| **Ni20-CK40-VN4X2-H1141 W/BS2.1** 1550390 | Comp. Outputs | | 20 | 4-wire DC NPN | 10-65 VDC | 250 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A4 |
| **Ni20-CK40-VP4X2-H1141 W/BS2.1** 1550290 | Comp. Outputs | | 20 | 4-wire DC PNP | 10-65 VDC | 250 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 2 | A4 |
| **Ni35U-CK40-VP6X2-H1141** 1625815 | Uprox, Comp. Outputs | | 35 | 4-wire DC PNP | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 2 | A4 |
| **Ni50U-CK40-VN4X2-H1141** 1625806 | Uprox+, Comp. Outputs | | 50 | 4-wire DC NPN | 10-65 VDC | 250 | ≤200 | -25 to +70 | IP68 | PBT | PBT | GN | YE | A | 1 | A4 |
| **Ni50U-CK40-VP4X2-H1141** 1538302 | Uprox+, Comp. Outputs | | 50 | 4-wire DC PNP | 10-65 VDC | 250 | ≤200 | -25 to +70 | IP68 | PBT | PBT | GN | YE | A | 2 | A4 |



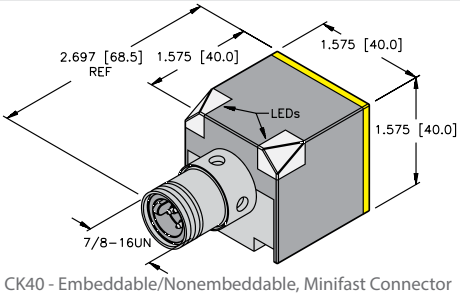
We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | CK40

**Rotatable Sensing Head with AC/DC Outputs**

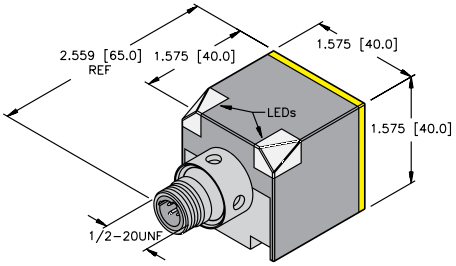
| Housing Style | Dimension Drawings |
|---|---|

A




CK40 - Embeddable/Nonembeddable, Minifast Connector

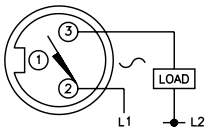
B




CK40 - Embeddable/Nonembeddable, Microfast Connector

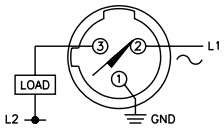
## Wiring Diagrams/Mating Cordsets

1




Mating Cordset: RKM 30-*M

2




Mating Cordset: KB 3T-*

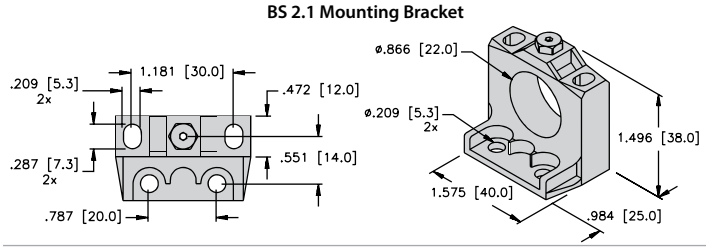
## A5 — 2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA |
| | AC: ≥120 mA; DC: ≥120 mA |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA (AC) |
| | ≤1.5 mA (DC) |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤3.0 A (≤20 ms, max 5 Hz) |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

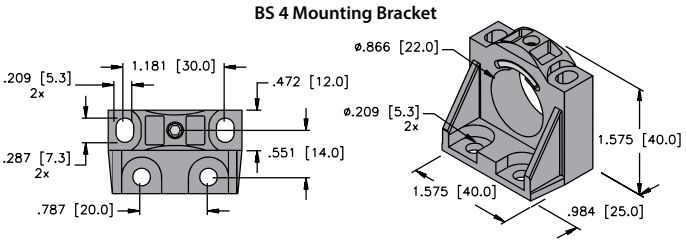
## A6 — 2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

**BS 2.1 Mounting Bracket**




**BS 4 Mounting Bracket**




We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | CK40

## Rotatable Sensing Head with AC/DC Outputs

| Part Number/ ID Number | Features | Embeddable | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Front Cap/Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi15U-CK40-ADZ30X2-B1131 W/BS2.1** 4280090 | Uprox | • | 15 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP68 | PBT | PBT | GN | YE | A | 1 | A5 |
| **Bi15U-CK40-ADZ30X2-B3131 W/B 2.1** 4280091 | Uprox | • | 15 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP68 | PBT | PBT | GN | YE | B | 2 | A5 |
| **Bi15-CK40-AZ3X2-B1131 W/BS2.1** 1335091 | | • | 15 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A5 |
| **Bi15-CK40-AZ3X2-B3131 W/BS2.1** 1335095 | | • | 15 | 2-wire AC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | B | 2 | A6 |
| **Ni20-CK40-AZ3X2-B1131 W/BS2.1** 1335291 | | | 20 | 2-wire AC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A6 |
| **Ni20-CK40-AZ3X2-B3131 W/BS2.1** 1335290 | | | 20 | 2-Wire AC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | B | 2 | A6 |
| **Ni25U-CK40-ADZ30X2-B1131 W/BS2.1** 4280290 | Uprox | | 25 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP67 | PBT | PBT | GN | YE | A | 1 | A5 |
| **Ni25U-CK40-ADZ30X2-B3131 W/BS2.1** 4280291 | Uprox | | 25 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP67 | PBT | PBT | GN | YE | B | 2 | A5 |
| **Ni35U-CK40-ADZ30X2-B1131** 4280410 | Uprox | | 35 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP68 | PBT | PBT | GN | YE | A | 1 | A5 |



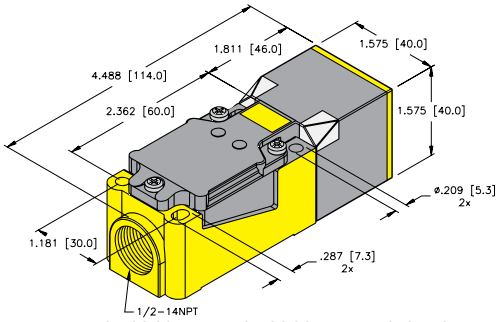
We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | CP40

**Rotatable Sensing Head with 2 and 3-wire DC Outputs and Terminal Chamber**

| Housing Style | Dimension Drawings |
|---|---|

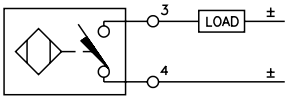
A




CP40 - Embeddable/Nonembeddable, Terminal Chamber

**Wiring Diagrams/Mating Cordsets**

1

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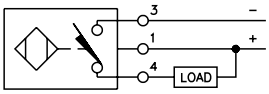


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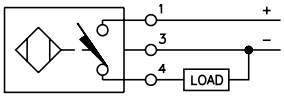



**A2 — 2-wire DC - (AD, RD, AG)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

**A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥170 mA on 150 mA Load Current | Temperature Drift: | ≤±10% |
| | ≥120 mA on 100 mA Load Current | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| No-Load Current: | ≤15 mA (Ferrite, Uprox, Rectangular) | Repeatability: | ≤2% of Rated Operating Distance |
| | ≤20 mA (Uprox+, Uprox 3) | | |
| Time Delay Before Availability: | ≤8 ms | | |

We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | CP40

**Rotatable Sensing Head with 2 and 3-wire DC Outputs and Terminal Chamber**

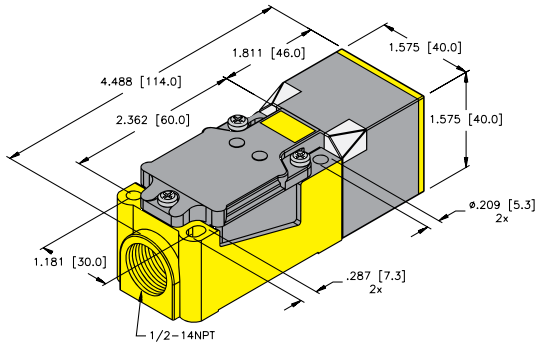
| Part Number/ ID Number | Features | Embeddable | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Front Cap/Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi15U-CP40-AP6X2** 1623502 | Uprox | • | 15 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP68 | PBT | PBT | GN | YE | A | 3 | A4 |
| **Bi15-CP40-AN6X2** 1623000 | | • | 15 | 3-wire DC NPN | 10-30 VDC | 150 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 2 | A4 |
| **Bi15-CP40-AN6X2/S10-S97** 1623001 | Low Temp. -40 °C | • | 15 | 3-wire DC NPN | 10-30 VDC | 250 | ≤200 | -40 to +70 | IP67 | PBT | PBT | GN | YE | A | 2 | A4 |
| **Bi15-CP40-AP6X2/S10** 16030 | | • | 15 | 3-Wire DC PNP | 10-30 VDC | 150 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 3 | A4 |
| **Bi15-CP40-AD4X/S10** 44770 | | • | 15 | 2-wire DC | 10-65 VDC | 150 | ≤100 | -25 to +70 | IP67 | PBT | PBT | N/A | YE | A | 1 | A2 |
| **Bi20U-CP40-AP6X2/S10** 1625826 | Uprox+ | • | 20 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP68 | PBT | PBT | GN | YE | A | 3 | A4 |
| **Bi30U-CP40-AP6X2/S10** 1625825 | Uprox+ | • | 30 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -10 to +60 | IP68 | PBT | PBT | GN | YE | A | 3 | A4 |
| **Ni20-CP40-AP6X2/S10** 16031 | | | 20 | 3-wire DC PNP | 10-30 VDC | 150 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 3 | A4 |
| **Ni20-CP40-AD4X/S10** 44771 | | | 20 | 2-wire DC | 10-65 VDC | 150 | ≤100 | -25 to +70 | IP67 | PBT | PBT | N/A | YE | A | 1 | A2 |
| **Ni25U-CP40-AP6X2/S10** 1623701 | Uprox | | 25 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP67 | PBT | PBT | GN | YE | A | 3 | A4 |
| **Ni40U-CP40-AP6X2/S10** 1623602 | Uprox | | 40 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP68 | PBT | PBT | GN | YE | A | 3 | A4 |
| **Ni50U-CP40-AN6X2/S10** 1625824 | Uprox+ | | 50 | 3-wire DC NPN | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP68 | PBT | PBT | GN | YE | A | 2 | A4 |
| **Ni50U-CP40-AP6X2/S10** 1625842 | Uprox+ | | 50 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP68 | PBT | PBT | GN | YE | A | 3 | A4 |



We reserve the right to make technical alterations without prior notice.

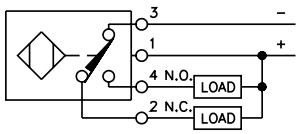
# Rectangular Inductive Sensors | CP40

**Rotatable Sensing Head with Complementary Outputs and Terminal Chamber**

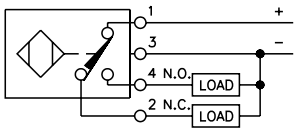
| Housing Style | Dimension Drawings |
|---|---|
| | A   CP40 - Embeddable/Nonembeddable, Terminal Chamber |

**Wiring Diagrams/Mating Cordsets**

1




2




**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥170 mA on 150 mA Load Current | Temperature Drift: | ≤±10% |
| | ≥120 mA on 100 mA Load Current | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| No-Load Current: | ≤15 mA (Ferrite, Uprox, Rectangular) | Repeatability: | ≤2% of Rated Operating Distance |
| | ≤20 mA (Uprox+, Uprox 3) | | |
| Time Delay Before Availability: | ≤8 ms | | |

We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | CP40

**Rotatable Sensing Head with Complementary Outputs and Terminal Chamber**

| Part Number/ ID Number | Features | Embeddable | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Front Cap/Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi15U-CP40-VN4X2/S10** 1540511 | Uprox | • | 15 | 4-wire DC NPN | 10-65 VDC | 250 | ≤200 | -30 to +85 | IP68 | PBT | PBT | GN | YE | A | 1 | A4 |
| **Bi15U-CP40-VP4X2/S10** 1540501 | Uprox | • | 15 | 4-wire DC PNP | 10-65 VDC | 250 | ≤200 | -30 to +85 | IP67 | PBT | PBT | GN | YE | A | 2 | A4 |
| **Bi15-CP40-VN4X2/S100** 15250 | Comp. Outputs | • | 15 | 4-wire DC NPN | 10-65 VDC | 150 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A4 |
| **Bi15-CP40-VN4X2/S100-S10** 15144 | High Temp. 100 °C | • | 15 | 4-wire DC NPN | 10-65 VDC | 150 | ≤200 | -25 to +100 | IP67 | PBT | PBT | GN | YE | A | 1 | A4 |
| **Bi15-CP40-VP4X2/S10** 15010 | Comp. Outputs | • | 15 | 4-wire DC PNP | 10-65 VDC | 150 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 2 | A4 |
| **Bi15-CP40-VP4X2/S100-S10** 15019 | High Temp. 100 °C | • | 15 | 4-wire DC PNP | 10-65 VDC | 150 | ≤200 | -25 to +100 | IP67 | PBT | PBT | GN | YE | A | 2 | A4 |
| **Bi20-CP40-VN4X2/S10** 1579221 | Ext. Range | • | 20 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A4 |
| **Bi20-CP40-VP4X2/S10** 15012 | Ext. Range | • | 20 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 2 | A4 |
| **Ni20-CP40-VN4X2/S10** 15251 | Comp. Outputs | | 20 | 4-wire DC NPN | 10-65 VDC | 150 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A4 |
| **Ni20-CP40-VP4X2/S10** 15011 | Comp. Outputs | | 20 | 4-wire DC PNP | 10-65 VDC | 150 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 2 | A4 |
| **Ni20-CP40-VP4X2/S100-S10** 15020 | High Temp. 100 °C | | 20 | 4-wire DC PNP | 10-65 VDC | 150 | ≤200 | -25 to +100 | IP67 | PBT | PBT | GN | YE | A | 2 | A4 |
| **Ni35-CP40-VN4X2/S10** 15254 | Comp. Outputs | | 35 | 4-wire DC NPN | 10-65 VDC | 150 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A4 |
| **Ni35-CP40-VP4X2/S10** 15014 | Comp. Outputs | | 35 | 4-wire DC PNP | 10-65 VDC | 150 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 2 | A4 |
| **Ni40U-CP40-VN4X2/S10** 1540611 | Uprox, Ext. Range | | 40 | 4-wire DC NPN | 10-65 VDC | 250 | ≤200 | -30 to +85 | IP68 | PBT | PBT | GN | YE | A | 1 | A4 |
| **Ni40U-CP40-VP4X2/S10** 1540601 | Uprox, Ext. Range | | 40 | 4-wire DC PNP | 10-65 VDC | 250 | ≤200 | -30 to +85 | IP68 | PBT | PBT | GN | YE | A | 2 | A4 |
| **Ni50U-CP40-VN4X2/S10** 1625807 | Uprox+ | | 50 | 4-wire DC NPN | 10-65 VDC | 250 | ≤200 | -30 to +85 | IP68 | PBT | PBT | GN | YE | A | 1 | A4 |
| **Ni50U-CP40-VP4X2** 1538303 | Uprox+ | | 50 | 4-wire DC PNP | 10-65 VDC | 250 | ≤200 | -30 to +85 | IP68 | PBT | PBT | GN | YE | A | 2 | A4 |



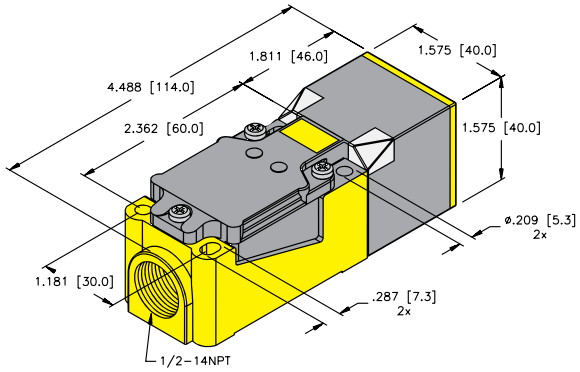
We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | CP40

**Rotatable Sensing Head with AC/DC Outputs and Terminal Chamber**

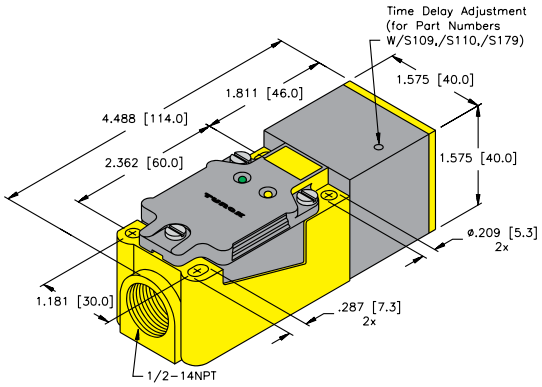
| Housing Style | Dimension Drawings |
|---|---|

A




CP40 - Embeddable/Nonembeddable, Terminal Chamber

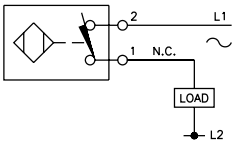
B



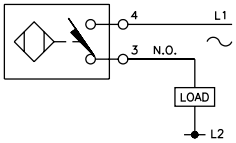

CP40 - Embeddable/Nonembeddable, Terminal Chamber

## Wiring Diagrams/Mating Cordsets

1




–OR–




## A5 — 2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA |
| | AC: ≥120 mA; DC: ≥120 mA |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA (AC) |
| | ≤1.5 mA (DC) |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤3.0 A (≤20 ms, max 5 Hz) |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

## A6 — 2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | CP40

## Rotatable Sensing Head with AC/DC Outputs and Terminal Chamber

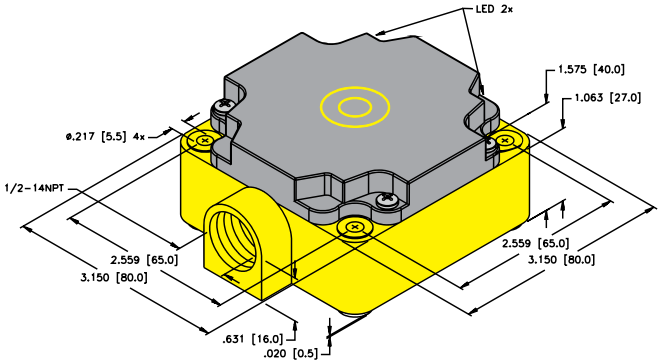
| Part Number/ ID Number | Features | Embeddable | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Front Cap/Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi15U-CP40-FDZ30X2** 4280601 | Uprox | • | 15 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP67 | PBT | PBT | GN | YE | A | 1 | A5 |
| **Bi15-CP40-FDZ30X2/S10** 42241 | Prog. Outputs | • | 15 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 60 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A5 |
| **Bi15-CP40-FDZ30X2/S10-S97** 42266 | Low Temp. -40 °C | • | 15 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 60 | ≤400/300 | -40 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A5 |
| **Bi15-CP40-FZ3X2/S109-S10** 13737 | Time Delay | • | 15 | 2-wire AC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | B | 1 | A6 |
| **Bi15-CP40-FZ3X2/S110-S10** 13735 | Time Delay | • | 15 | 2-wire AC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | B | 1 | A6 |
| **Bi15-CP40-FZ3X2/S10** 13410 | Prog. Outputs | • | 15 | 2-wire AC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A6 |
| **Bi15-CP40-FZ3X2/S10-S97** 1341010 | Low Temp. -40 °C | • | 15 | 2-wire AC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -40 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A6 |
| **Bi15-CP40-FZ3X2/S100-S10** 13776 | High Temp. 100 °C | • | 15 | 2-wire AC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +100 | IP67 | PBT | PBT | GN | YE | A | 1 | A6 |
| **Ni20-CP40-FDZ30X2/S10** 42242 | Prog. Outputs | | 20 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 60 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A5 |
| **Ni20-CP40-FZ3X2/S100** 13411 | Prog. Outputs | | 20 | 2-wire AC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A6 |
| **Ni20-CP40-FZ3X2/S100-S10** 13775 | High Temp. 100 °C | | 20 | 2-wire AC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +100 | IP67 | PBT | PBT | GN | YE | A | 1 | A6 |
| **Ni20-CP40-FZ3X2/S110-S10** 13746 | Time Delay | | 20 | 2-wire AC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | B | 1 | A6 |
| **Ni30-CP40-FZ3X2/S109-S10** 13747 | Time Delay | | 30 | 2-wire AC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | B | 1 | A6 |
| **Ni30-CP40-FZ3X2/S110-S10** 13744 | Time Delay | | 30 | 2-wire AC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | B | 1 | A6 |
| **Ni35-CP40-FDZ30X2/S10** 42245 | Prog. Outputs | | 35 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 60 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A5 |
| **Ni35-CP40-FZ3X2/S10** 13413 | Prog. Outputs | | 35 | 2-wire AC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A6 |
| **Ni40U-CP40-FDZ30X2/S10** 4280801 | Uprox | | 40 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP68 | PBT | PBT | GN | YE | A | 1 | A5 |
| **Ni40-CP40-FZ3X2/S100-S10** 1374802 | High Temp. 100 °C | | 40 | 2-wire AC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +100 | IP67 | PBT | PBT | GN | YE | A | 1 | A6 |



We reserve the right to make technical alterations without prior notice.

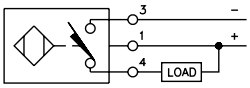
# Rectangular Inductive Sensors | CP80

## Top Sensing with 3 and 4-Wire DC Outputs and Terminal Chamber

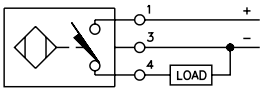
| Housing Style | Dimension Drawings |
|---|---|
| | A   CP80 - Embeddable/Nonembeddable, Terminal Chamber |

### Wiring Diagrams/Mating Cordsets

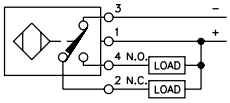
1




2




3

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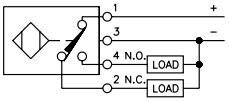



### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current |
| | ≥170 mA on 150 mA Load Current |
| | ≥120 mA on 100 mA Load Current |
| Off-State (Leakage) Current: | ≤0.1 mA |
| No-Load Current: | ≤15 mA (Ferrite, Uprox, Rectangular) |
| | ≤20 mA (Uprox+, Uprox 3) |
| Time Delay Before Availability: | ≤8 ms |
| Power-On Effect: | Per IEC 947-5-2 |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Transient Protection: | Per EN 60947-5-2 |
| Temperature Drift: | ≤±10% |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | CP80

## Top Sensing with 3 and 4-Wire DC Outputs and Terminal Chamber

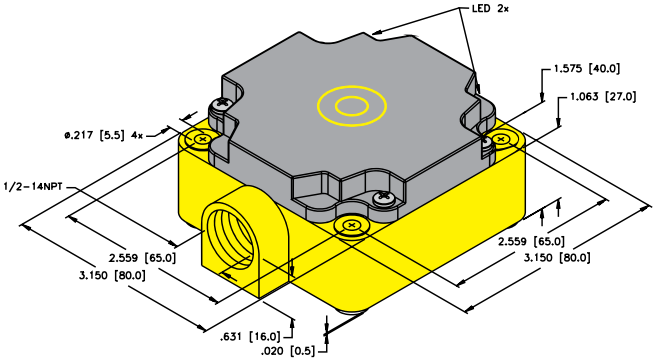
| Part Number/ ID Number | Features | Embeddable | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Front Cap/Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi40-CP80-VN4X2/S10** 1579800 | Comp. Outputs | • | 40 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 3 | A4 |
| **Bi40-CP80-VP4X2/S10** 15698 | Comp. Outputs | • | 40 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 4 | A4 |
| **Ni40-CP80-VP4X2/S10** 15015 | Comp. Outputs | | 40 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 4 | A4 |
| **Ni50-CP80-VN4X2/S10** 15256 | Comp. Outputs | | 50 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 3 | A4 |
| **Ni50-CP80-VP4X2/S10** 15016 | Comp. Outputs | | 50 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 4 | A4 |
| **Ni75U-CP80-AN6X2/S10** 1623811 | Uprox | | 75 | 3-wire DC NPN | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP67 | PBT | PBT | GN | YE | A | 1 | A4 |
| **Ni75U-CP80-AP6X2/S10** 1623801 | Uprox | | 75 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP67 | PBT | PBT | GN | YE | A | 2 | A4 |
| **Ni75U-CP80-VN4X2/S10** 1540811 | Uprox | | 75 | 4-wire DC NPN | 10-65 VDC | 250 | ≤200 | -30 to +85 | IP67 | PBT | PBT | GN | YE | A | 3 | A4 |
| **Ni75U-CP80-VP4X2/S10** 1540801 | Uprox | | 75 | 4-wire DC PNP | 10-65 VDC | 250 | ≤200 | -30 to +85 | IP67 | PBT | PBT | GN | YE | A | 4 | A4 |



We reserve the right to make technical alterations without prior notice.

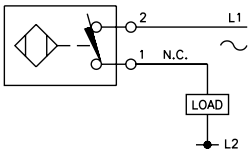
# Rectangular Inductive Sensors | CP80

## Top Sensing with AC/DC Outputs and Terminal Chamber

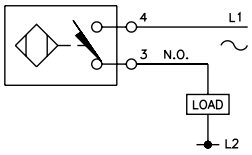
| Housing Style | Dimension Drawings |
|---|---|
| | A   CP80 - Embeddable/Nonembeddable, Terminal Chamber |

### Wiring Diagrams/Mating Cordsets

1




–OR–




### A5 — 2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA |
| | AC: ≥120 mA; DC: ≥120 mA |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (leakage) Current: | ≤1.7 mA (AC) |
| | ≤1.5 mA (DC) |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤3.0 A (≤20 ms, max 5 Hz) |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

### A6 — 2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | CP80

## Top Sensing with AC/DC Outputs and Terminal Chamber

| Part Number/ ID Number | Features | Embeddable | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Front Cap/Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi40-CP80-FDZ30X2/S10** 4230901 | Prog. Outputs | • | 40 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A5 |
| **Bi40-CP80-FZ3X2/S10** 1340401 | Prog. Outputs | • | 40 | 2-wire AC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A6 |
| **Ni40-CP80-FZ3X2/S100** 13415 | Prog. Outputs | | 40 | 2-wire AC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A6 |
| **Ni40-CP80-FZ3X2/S100-S10** 13453 | High Temp. 100 °C | | 40 | 2-wire AC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +100 | IP67 | PBT | PBT | GN | YE | A | 1 | A6 |
| **Ni50-CP80-FZ3X2/S10** 13410 | Prog. Outputs | | 50 | 2-wire AC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A6 |
| **Ni50-CP80-FDZ30X2/S100** 42321 | Prog. Outputs | | 50 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A5 |
| **Ni50-CP80-FDZ30X2/S100-S10** 42290 | High Temp. 100 °C | | 50 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +100 | IP67 | PBT | PBT | GN | YE | A | 1 | A5 |
| **Ni75U-CP80-FDZ30X2/S10** 4280901 | Uprox | | 75 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP67 | PBT | PBT | GN | YE | A | 1 | A5 |



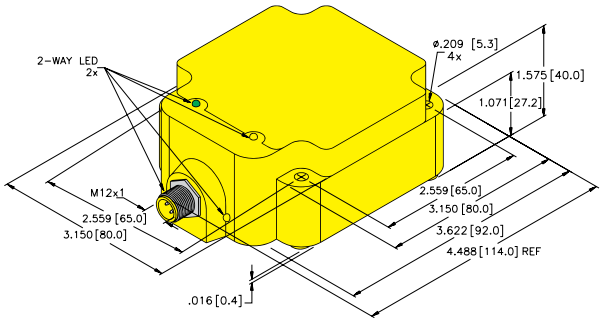
We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | Q80

**Top Sensing with 3 and 4-Wire DC or AC/DC Outputs**

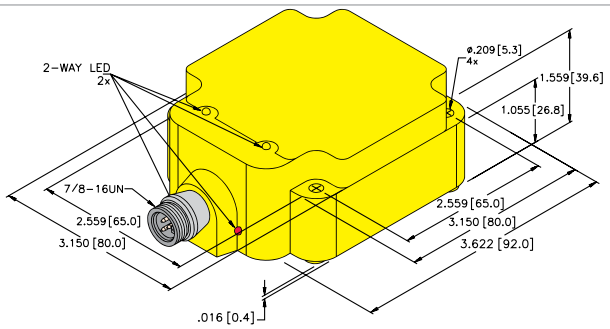
| Housing Style | Dimension Drawings |
|---|---|

A



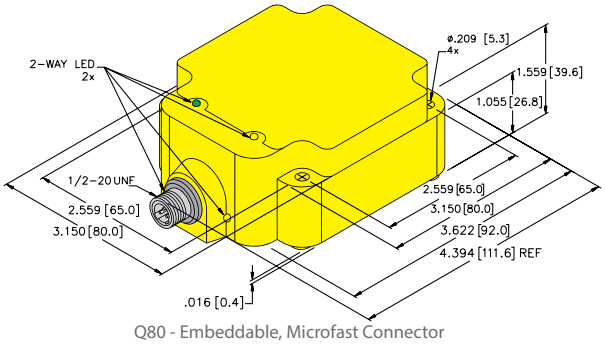

Q80 - Embeddable/Nonembeddable, Eurofast Connector

B




Q80 - Embeddable, Minifast Connector

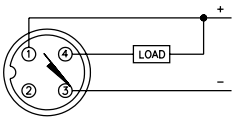
C




Q80 - Embeddable, Microfast Connector

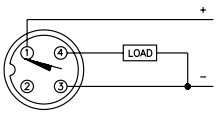
## Wiring Diagrams/Mating Cordsets

1



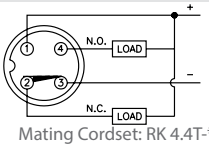

Mating Cordset: RK 4T-*

2



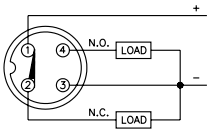

Mating Cordset: RK 4T-*

3



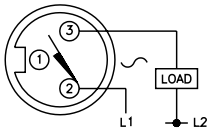

Mating Cordset: RK 4.4T-*

4



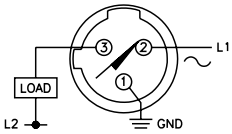

Mating Cordset: RK 4.4T-*

5




Mating Cordset: RKM 30-*M

6




Mating Cordset: KB 3T-*

## A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current |
| | ≥170 mA on 150 mA Load Current |
| | ≥120 mA on 100 mA Load Current |
| Off-State (Leakage) Current: | ≤0.1 mA |
| No-Load Current: | ≤15 mA (Ferrite, Uprox, Rectangular) |
| | ≤20 mA (Uprox+, Uprox 3) |
| Time Delay Before Availability: | ≤8 ms |
| Power-On Effect: | Per IEC 947-5-2 |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Transient Protection: | Per EN 60947-5-2 |
| Temperature Drift: | ≤±10% |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

## A5 — 2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA |
| | AC: ≥120 mA; DC: ≥120 mA |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA (AC) |
| | ≤1.5 mA (DC) |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤3.0 A (≤20 ms, max 5 Hz) |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | Q80

## Top Sensing with 3 and 4-Wire DC or AC/DC Outputs

| Part Number/ ID Number | Features | Embeddable | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Front Cap/Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi50U-Q80-AP6X2-H1141** 1608940 | Uprox+ | • | 50 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP68 | PBT | PBT | GN | YE | A | 2 | A4 |
| **Bi50U-Q80-VN4X2-H1141** 1562001 | Uprox+, Comp. Outputs | • | 50 | 4-wire DC NPN | 10-65 VDC | 250 | ≤200 | -25 to +70 | IP68 | PBT | PBT | GN | YE | A | 3 | A4 |
| **Bi50U-Q80-VP4X2-H1141** 15620 | Uprox+, Comp. Outputs | • | 50 | 4-wire DC PNP | 10-65 VDC | 250 | ≤200 | -25 to +70 | IP68 | PBT | PBT | GN | YE | A | 4 | A4 |
| **Bi50-Q80-ADZ30X2-B1131** 4200310 | | • | 50 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | B | 5 | A5 |
| **Bi50-Q80-ADZ30X2-B3131** 4200311 | | • | 50 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | C | 6 | A5 |
| **Ni75U-Q80-AN6X2-H1141** 1625856 | Uprox+ | | 75 | 3-wire DC NPN | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP68 | PBT | PBT | GN | YE | A | 1 | A4 |
| **Ni75U-Q80-AP6X2-H1141** 1625855 | Uprox+ | | 75 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP68 | PBT | PBT | GN | YE | A | 2 | A4 |
| **Ni75U-Q80-VP4X2-H1141** 1625857 | Uprox+, Comp. Outputs | | 75 | 4-wire DC PNP | 10-65 VDC | 250 | ≤200 | -25 to +70 | IP68 | PBT | PBT | GN | YE | A | 4 | A4 |



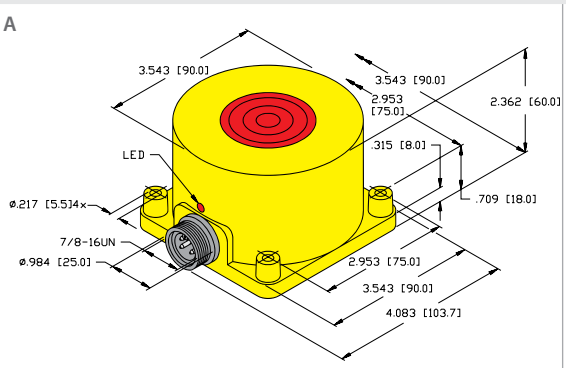
We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | K90 & K90SR

**Top Sensing with 4-Wire DC or AC/DC Outputs**

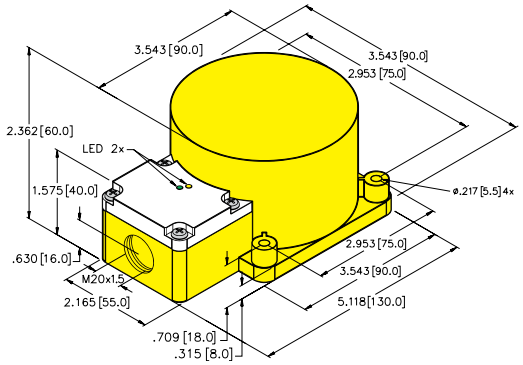
| Housing Style | Dimension Drawings |
|---|---|

A




K90 - Nonembeddable, Minifast Connector

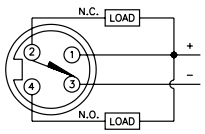
B




K90SR - Nonembeddable, Terminal Chamber

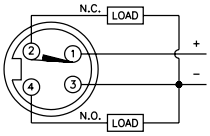
## Wiring Diagrams/Mating Cordsets

1



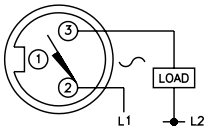

Mating Cordset: RK 40-*M

2



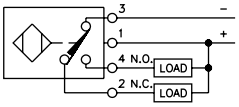

Mating Cordset: RK 40-*M

3

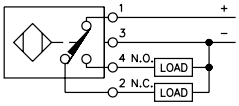



Mating Cordset: RK 30-*M

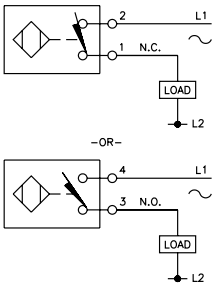
4




5




6




## A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current |
| | ≥170 mA on 150 mA Load Current |
| | ≥120 mA on 100 mA Load Current |
| Off-State (Leakage) Current: | ≤0.1 mA |
| No-Load Current: | ≤15 mA (Ferrite, Uprox, Rectangular) |
| | ≤20 mA (Uprox+, Uprox 3) |
| Time Delay Before Availability: | ≤8 ms |
| Power-On Effect: | Per IEC 947-5-2 |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Transient Protection: | Per EN 60947-5-2 |
| Temperature Drift: | ≤±10% |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

## A6 — 2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | K90 & K90SR

## Top Sensing with 4-Wire DC or AC/DC Outputs

| Part Number/ ID Number | Features | Embeddable | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Front Cap/Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni60-K90-VN4X-B2141** 15203 | Comp. Outputs | | 60 | 4-wire DC NPN | 10-65 VDC | 60 | ≤200 | -25 to +70 | IP67 | PUR | PUR | N/A | YE | A | 1 | A4 |
| **Ni60-K90-VP4X-B2141** 15103 | Comp. Outputs | | 60 | 4-wire DC PNP | 10-65 VDC | 60 | ≤200 | -25 to +70 | IP67 | PUR | PUR | N/A | YE | A | 2 | A4 |
| **Ni60-K90-AZ3X-B2131** 13542 | | | 60 | 2-wire AC | 20-250 VAC/10-300 VDC | 20 | ≤500 | -25 to +70 | IP67 | PBT | PBT | N/A | YE | A | 3 | A6 |
| **Ni60-K90SR-VN4X2** 15740 | Comp. Outputs | | 60 | 4-wire DC NPN | 10-65 VDC | 60 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | B | 4 | A4 |
| **Ni60-K90SR-VP4X2** 15640 | Comp. Outputs | | 60 | 4-wire DC PNP | 10-65 VDC | 250 | ≤200 | -30 to +85 | IP68 | PBT | PBT | GN | YE | B | 5 | A4 |
| **Ni60-K90SR-FZ3X2** 13429 | Prog. Outputs | | 60 | 2-wire AC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | B | 6 | A6 |
| **Ni100U-K90SR-VP4X2** 1625834 | Uprox+, Comp. Outputs | | 100 | 4-wire DC PNP | 10-65 VDC | 60 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | B | 5 | A4 |



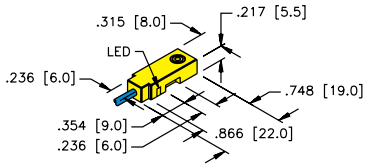
We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | Namur

**Intrinsically Safe**

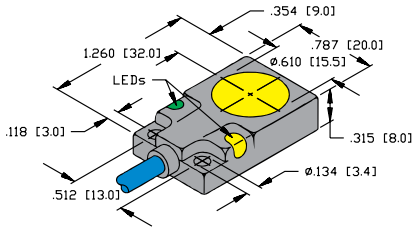
## Dimension Drawings

A



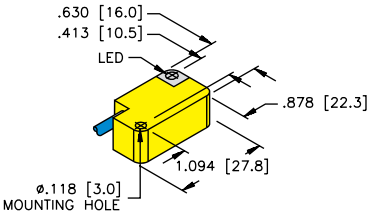

5.5 mm - Embeddable/Nonembeddable, Potted-In Cable

B



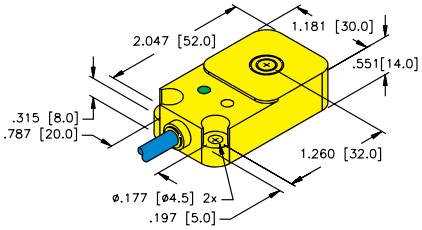

8.0 mm - Embeddable, Potted-In Cable

C



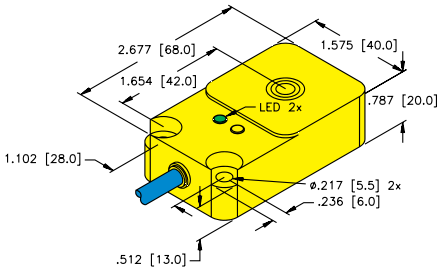

10 mm - Embeddable/Nonembeddable, Potted-In Cable

D



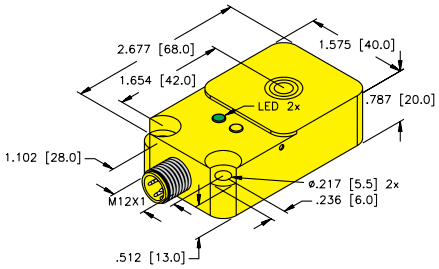

14 mm - Potted-In Cable

E




20 mm - Embeddable/Nonembeddable, Potted-In Cable

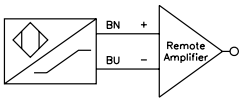
F



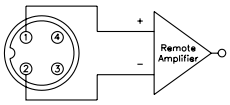

20 mm - Embeddable/Nonembeddable, Eurofast Connector

## Wiring Diagrams/Mating Cordsets

1




2




Mating Cordset: RK 4.21T-*

## A1 2-wire DC NAMUR - (Y0 and Y1)

| | |
|---|---|
| Differential Travel (Hysteresis): | 1-10% (5% typical) |
| Nominal Voltage: | 8.2 VDC (EN60947-5-6) |
| Load Resistance: | 1000 Ω |
| Non-activated Current Consumption: | ≥2.1 mA |
| Activated Current Consumption: | ≤1.2 mA |
| Recommended Switching Point for Remote Amplifier: | >1.2 to <2.1 mA, typ. 1.55 mA ON/1.75 mA OFF |
| Power-On Effect: | Realized in Amplifier |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Realized in Amplifier |
| Transient Protection: | Realized in Amplifier |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

**Amplifier Note:**
Inductive sensors with Namur outputs are typically used in hazardous locations and the approval agencies require the use of an amplifier to regulate the signals in the hazardous area. Due to the wide variety of approvals, output options, and amplifier designs, it is not possible to incorporate all of the choices in this catalog. For the most up to date information, please either search for these products under our interface technology product category (www.turck.us) or contact us by phone.

We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | Namur

**Intrinsically Safe** IS

| Part Number/ ID Number | Features | Embeddable | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Front Cap/Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi2-Q5.5K-Y1X** 4055300 | | • | 2 | 2-wire DC NAMUR | 8.2 VDC nominal | 2000 | Remote | -25 to +70 | IP67 | PP | PP | N/A | YE | 2M/TPU | A | 1 | A1 |
| **Bi5-Q08-Y1X** 4054000 | | • | 5 | 2-wire DC NAMUR | 8.2 VDC nominal | 1000 | Remote | -25 to +70 | IP67 | Zinc | PA 12 | N/A | YE | 2M/TPU | B | 1 | A1 |
| **Bi2-Q10S-Y1X** 4012130 | | • | 2 | 2-wire DC NAMUR | 8.2 VDC nominal | 1000 | Remote | -25 to +70 | IP67 | PP-GF20 | PP-GF20 | N/A | YE | 2M/PVC | C | 1 | A1 |
| **Bi10-Q14-Y1X** 1608730 | | • | 10 | 2-wire DC NAMUR | 8.2 VDC nominal | 1000 | Remote | -25 to +70 | IP67 | PBT | PBT | N/A | YE | 2M/TPU | D | 1 | A1 |
| **Bi15-Q20-Y1X** 1080020 | | • | 15 | 2-wire DC NAMUR | 8.2 VDC nominal | 1000 | Remote | -25 to +70 | IP67 | PBT | PBT | N/A | YE | 2M/TPU | E | 1 | A1 |
| **Bi15-Q20-Y1X-H1141** 1080025 | | • | 15 | 2-wire DC NAMUR | 8.2 VDC nominal | 1000 | Remote | -25 to +70 | IP67 | PBT | PBT | N/A | YE | - - | F | 2 | A1 |



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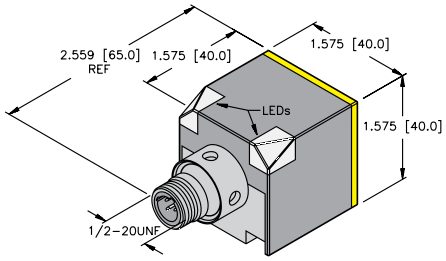
# Rectangular Inductive Sensors | Namur

**Intrinsically Safe**

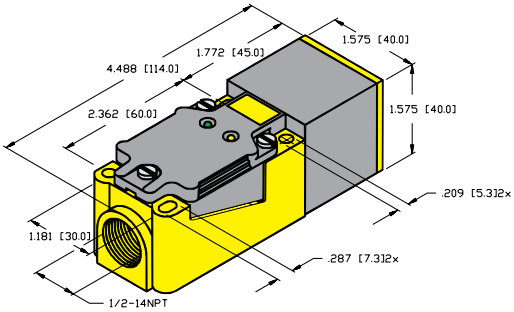
## Dimension Drawings

A



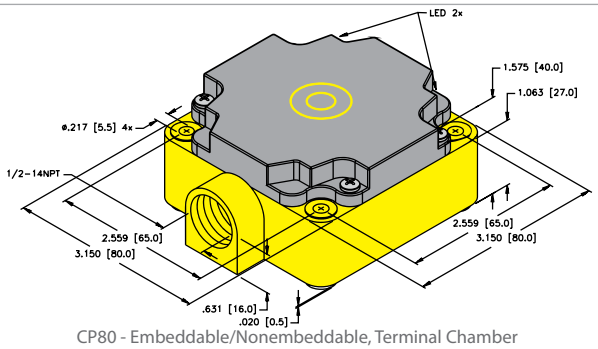

CK40 - Embeddable/Nonembeddable, Eurofast Connector

B



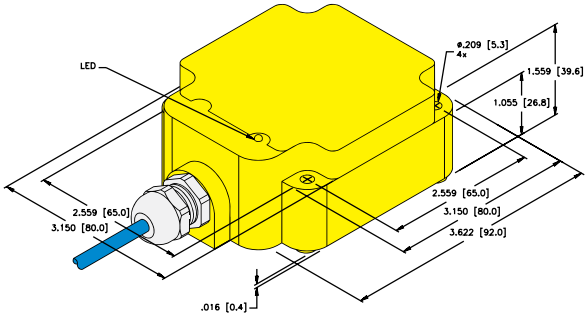

CP40 - Embeddable/Nonembeddable, Terminal Chamber

C



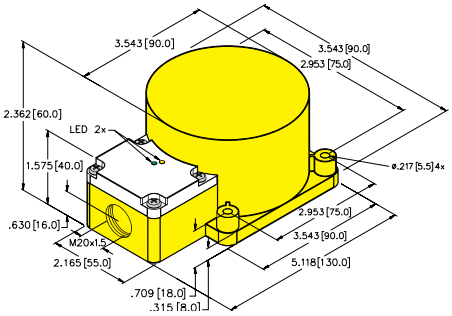

CP80 - Embeddable/Nonembeddable, Terminal Chamber

D




Q80 - Nonembeddable, Potted-In Cable

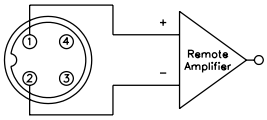
E




K90SR - Nonembeddable, Terminal Chamber

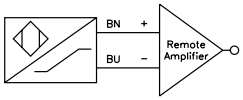
## Wiring Diagrams/Mating Cordsets

1

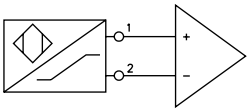



Mating Cordset: RK 4.21T-*

2




3




## A1 — 2-wire DC NAMUR - (Y0 and Y1)

| | |
|---|---|
| Differential Travel (Hysteresis): | 1-10% (5% typical) |
| Nominal Voltage: | 8.2 VDC (EN60947-5-6) |
| Load Resistance: | 1000 Ω |
| Non-activated current consumption: | ≥2.1 mA |
| Activated current consumption: | ≤1.2 mA |
| Recommended Switching Point for Remote Amplifier: | >1.2 to <2.1 mA, typ. 1.55 mA ON/1.75 mA OFF |
| Power-On Effect: | Realized in Amplifier |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Realized in Amplifier |
| Transient Protection: | Realized in Amplifier |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

**Amplifier Note:**
Inductive sensors with Namur outputs are typically used in hazardous locations and the approval agencies require the use of an amplifier to regulate the signals in the hazardous area. Due to the wide variety of approvals, output options, and amplifier designs, it is not possible to incorporate all of the choices in this catalog. For the most up to date information, please either search for these products under our interface technology product category (www.turck.us) or contact us by phone.

We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | Namur

**Intrinsically Safe** IS

| Part Number/ ID Number | Features | Embeddable | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Front Cap/Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi15-CK40-Y1X-H1141** 4065000 | | • | 15 | 2-wire DC NAMUR | 8.2 VDC nominal | 150 | Remote | -25 to +70 | IP67 | PBT | PBT | N/A | YE | - - | A | 1 | A1 |
| **Bi15-CP40-Y1X/S10** 10120 | | • | 15 | 2-wire DC NAMUR | 8.2 VDC nominal | 150 | Remote | -25 to +70 | IP67 | PBT | PBT | N/A | YE | - - | B | 3 | A1 |
| **Ni20-CP40-Y1X/S10** 10121 | | | 20 | 2-wire DC NAMUR | 8.2 VDC nominal | 150 | Remote | -25 to +70 | IP67 | PBT | PBT | N/A | YE | - - | B | 3 | A1 |
| **Ni35-CP40-Y1X/S100-S10** 1011126 | High Temp. 100 °C | | 35 | 2-wire DC NAMUR | 8.2 VDC nominal | 80 | Remote | -25 to +100 | IP67 | PBT | PBT | N/A | YE | - - | B | 3 | A1 |
| **Ni50-CP80-Y1/S10** 10401 | | | 50 | 2-wire DC NAMUR | 8.2 VDC nominal | 100 | Remote | -25 to +70 | IP67 | PBT | PBT | N/A | N/A | - - | C | 3 | A1 |
| **Ni60-Q80-Y1X** 1008700 | | | 60 | 2-wire DC NAMUR | 8.2 VDC nominal | 100 | Remote | -25 to +70 | IP67 | PBT | PBT | N/A | YE | 2M/ PVC | D | 2 | A1 |
| **Ni50-K90SR-Y1** 10074 | | | 50 | 2-wire DC NAMUR | 8.2 VDC nominal | 100 | Remote | -25 to +70 | IP67 | PBT | PBT | N/A | N/A | - - | E | 3 | A1 |



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Notes

Notes

# Inductive Barrel Sensor Selection Guide

| Embeddable/Nonembeddable Barrels | | | | | |
|---|---|---|---|---|---|
| | | | | | |
| **Housing** | 3 mm | 4 mm | 4 mm | 4 mm | 5 mm |
| **Sensing Range** | 1 mm | 1 mm | 1 mm | 1 mm | 1 mm |
| **Pages** | B9 | B9 | B9 | B11 | B11 |
| **Features** | | | | | |
| **2-wire** | | | | | |
| **3/4-wire** | • | • | • | • | • |
| **2-wire AC/DC** | | | | | |

| Embeddable/Nonembeddable Barrels | | | | |
|---|---|---|---|---|
| | | | | |
| **Housing** | 5 mm | 6.5 mm | 6.5 mm | 8 mm |
| **Sensing Range** | 1 mm | 1.5 - 6 mm | 1.5 - 6 mm | 1.5 - 2 mm |
| **Pages** | B11 | B13 - 16 | B13 - 16 | B17 |
| **Features** | | Uprox | Uprox | |
| **2-wire** | | | | |
| **3/4-wire** | • | • | • | • |
| **2-wire AC/DC** | | | | |

| Embeddable/Nonembeddable Barrels | | | | |
|---|---|---|---|---|
| | | | | |
| **Housing** | 8 mm | Side Sensing | Side Sensing | 8 mm |
| **Sensing Range** | 1.5 - 2 mm | 1 - 1.5 mm | 1.5 mm | 1.5 - 6 mm |
| **Pages** | B17 | B19 | B19 | B23 - 34 |
| **Features** | Uprox | | | Uprox |
| **2-wire** | | | | • |
| **3/4-wire** | • | • | • | • |
| **2-wire AC/DC** | | | | |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensor Selection Guide

| Embeddable/Nonembeddable Barrels | | | | |
|---|---|---|---|---|
| | | | | |
| **Housing** | 8 mm | 12 mm | 12 mm | 12 mm |
| **Sensing Range** | 1.5 - 6 mm | 2 - 10 mm | 2 - 8 mm | 2 - 10 mm |
| **Pages** | B35 - 42 | B43 - 64 | B59 | B65 - 72 |
| **Features** | | Uprox | Uprox | |
| **2-wire** | • | • | | • |
| **3/4-wire** | • | • | • | • |
| **2-wire AC/DC** | | • | | • |

| Embeddable/Nonembeddable Barrels | | | | | |
|---|---|---|---|---|---|
| | | | | | |
| **Housing** | 12 mm | 12 mm | 18 mm | 18 mm | |
| **Sensing Range** | 2 - 8 mm | 2 - 8 mm | 5 - 15 mm | 2 - 10 mm | |
| **Pages** | B73 | B75 | B77 - 104 | B95 | B103 |
| **Features** | Uprox | Uprox | Uprox | Uprox | |
| **2-wire** | | • | • | | |
| **3/4-wire** | • | • | • | • | |
| **2-wire AC/DC** | • | | • | | |

| Embeddable/Nonembeddable Barrels | | | | |
|---|---|---|---|---|
| | | | | |
| **Housing** | 18 mm | 18 mm | 18 mm | 18 mm |
| **Sensing Range** | 5 - 15 mm | 5 - 12 mm | 5 - 10 mm | 5 - 12 mm |
| **Pages** | B105 - 110 | B99 - 112 | B113 | B115 |
| **Features** | Uprox | Uprox | Uprox | Uprox |
| **2-wire** | • | • | | |
| **3/4-wire** | • | • | • | • |
| **2-wire AC/DC** | • | • | • | • |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensor Selection Guide

| Embeddable/Nonembeddable Barrels | | | | |
|---|---|---|---|---|
| | | | | |
| **Housing** | 30 mm | 30 mm | 30 mm | 30 mm |
| **Sensing Range** | 10 - 30 mm | 10 - 20 mm | 10 - 30 mm | 10 - 20 mm |
| **Pages** | B117 - 132 | B127 / B143 | B133 - 140 | B141 |
| **Features** | Uprox | Uprox | Uprox | Uprox |
| **2-wire** | • | • | • | • |
| **3/4-wire** | • | • | • | • |
| **2-wire AC/DC** | • | • | • | • |

| Embeddable/Nonembeddable Barrels | | | | |
|---|---|---|---|---|
| | | | | |
| **Housing** | 30 mm | 30 mm | 40 mm | 47 mm |
| **Sensing Range** | 10 - 20 mm | 10 - 20 mm | 30 mm | 20 - 25 mm |
| **Pages** | B145 | B145 | B147 | B147 |
| **Features** | Uprox | | | |
| **2-wire** | | | | |
| **3/4-wire** | • | • | • | • |
| **2-wire AC/DC** | • | • | • | • |

| Embeddable/Nonembeddable Barrels | | | | |
|---|---|---|---|---|
| | | | | IS |
| **Housing** | 47 mm | 40 mm | 47 mm | Variable |
| **Sensing Range** | 20 - 25 mm | 15 - 30 mm | 25 - 40 mm | 1 - 15 mm |
| **Pages** | B147 | B149 | B149 | B151 - 162 |
| **Features** | | | | |
| **2-wire** | | | | • |
| **3/4-wire** | • | • | • | |
| **2-wire AC/DC** | • | • | • | |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensor Part Number Key

| B | I | 10 | U | - | | G | T | 30 | | - | A | DZ | 30 | X2 | Wiring Option* | Special Option Code** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

**Mounting**
B = embeddable
N = nonembeddable

**Principle of Operation**
I = inductive

**Rated Operating Distance (mm)**

**Sensing Characteristics**
U = Uprox® sensor

**Housing Material Modifier**
E = stainless steel

**Housing Style**
**Barrel - Metal**
G = full threading, generally chrome plated brass
GS = threaded side sensor
H = smooth, chrome plated brass or stainless steel
HS = smooth side sensor
M = partial threading, chrome plated brass
**Barrel - Plastic**
K = smooth
P = full threading
S = partial threading
SK = side sensing/slot sensor, plastic housing

**Primary Barrel Modifier**
T = PTFE coated

**Housing Diameter or Height (mm)**

**Secondary Barrel Modifier**
CA = conduit adaptor
E = extended barrel length
EE = extra long barrel length
F = stainless steel face
FE = stainless steel face, extended barrel length
H = Stoneface®
K = short barrel length
M = medium barrel length
S = side sensing
SE = extended length
SK = right-angle terminal chamber
SR = straight terminal chamber
T = barb fitting at cable entry
TC = terminal chamber
WD = washdown IP68/IP69K

**Number of LEDs**
(blank) = no LEDs
X = 1 LED
X2 = 2 LEDs

**Voltage Range**
**AC/DC: (No SCP**)**
3 = 20-250 VAC, 10-300 VDC
14 = 20-132 VAC, 10-140 VDC
31 = 20-250 VAC, 10-300 VDC, plastic barrel
33 = 35-250 VAC, grounded metal barrel
**AC/DC: (Latched SCP)**
30 = 20-250 VAC, 10-300 VDC
32 = 20-250 VAC, 10-300 VDC
40 = 20-140 VAC/DC, high off-state current
**DC:**
4 = 10-65 VDC, polarity protected, pulsed SCP**
6 = 10-30 VDC, polarity protected, pulsed SCP
7 = 10-30 VDC, TTL compatible
8 = 20-30 VDC, polarity protected, pulsed SCP
41 = 10-55 VDC, polarity protected, pulsed SCP
44 = 10-55 VDC
45 = 8.4-64 Volts
**SCP = short-circuit and overload protection

**Output**
D = 2-wire DC (transistor output)
DZ = 2-wire AC/DC, (power MOSFET output)
G = 2-wire DC, low voltage drop
N = NPN transistor (current sinking)
P = PNP transistor (current sourcing)
Z = 2-wire AC or 2-wire AC/DC

**Output Function**
A = normally open (N.O.)
DA = dynamic output (ring sensor), normally open
F = connection programmable (N.O or N.C.)
R = normally closed (N.C.)
V = complementary outputs: one N.O., one N.C.
Y0 = NAMUR output, requires switching amplifier
Y1 = NAMUR output, requires switching amplifier, ATEX Approved

**NOTE:**
Part number keys are to assist in identification only.
Verify new part numbers with factory; some configurations are not possible.

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensor Part Number Key

## Wiring Options*

**A. Connectorized Sensor**

**Bi2-M12-AN6X - H1 1 4 1**

**Connector Family**

B1 = Minifast®, 7/8"-16UN, metal, male
B2 = Minifast®, 7/8"-16UN, plastic, male
B3 = Microfast®, 1/2"-20UNF, metal, male
H1 = Eurofast®, M12x1, metal or plastic, male
V1 = Picofast®, snap and M8x1, metal, male (Q08 snap only)
V2 = Picofast®, snap and M8x1, male (Q08 only)

**Connector/Sensor Transition**

1 = straight
3 = straight with adapter
4 = right-angle with adapter

**Factory Code**

**Example:**
0 = non-standard wiring
1 = standard wiring
3 = N.C. DC output on pin 4
4 = N.O. 2-wire DC output on pin 4

**Number of Pins**

**B. Potted Cable**

**Bi2-G12-AN6X 7M**

**Cable Length**

(blank) = 2 meter cable
7M = 7 meter cable
*M = custom cable lengths available

**C. Potted Cable with Molded Connector**

**Bi2-G12-Y0X - 0.2M - RS 4.21T**

**Cable Length**

**examples:**
0.2M = 0.2 meters (minimum)
2M = 2 meter cable
7M = 7 meter cable

**Standard Cordset Connector**

**AC:** RSM 30 = Minifast, 7/8"-16UN, metal, male, 3-conductor
SB 3T = Microfast, 1/2"-20UNF, metal , male, 30 conductor
**DC:** RS 4T = Eurofast, M12x1, metal or plastic, male, 3-conductor
RS 4.2T = Eurofast, M12x1, metal or plastic, male, 2-conductor
RS 4.21T = Eurofast, M12x1, metal or plastic, male, NAMUR, 2-conductor
RS 4.4T = Eurofast, M12x1, metal or plastic, male, 4-conductor
RSM 40 = Minifast, 7/8"-16UN, metal, male, 4-conductor
PSG 3 = Picofast, snap, plastic, male, 3-conductor
PSG 3M = Picofast, M8x1, male, 3-conductor

## Option Codes for Special or Custom-Built Sensors**

**Bi 2-S12-AN7X /S100 or Bi10-M30-AN6X-H1141 /F2**

**examples:**
/S34 = weld field immune
/S90 = TPU cable
/S97 = -40 °C (-40 °F) operating temperature
/S100 = +100 °C (+212 °F) operating temperature
/S1589 = barrel sensors with Weldguard® laminate
/S1610 = barrel sensors with tool steel sleeve and Weldguard® laminate

**example:**
/F2 = alternate oscillator frequency

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors

## Mounting

Turck inductive proximity sensors are manufactured with a shielded coil, designated by "Bi" in the part number, and a nonshielded coil, designated by "Ni" in the part number. Embeddable (shielded) units may be safely flush-mounted in metal. Nonembeddable (nonshielded) units require a metal free area around the sensing face. Because of possible interference of the electromagnetic fields generated by the oscillators, minimum spacing is required between adjacent or opposing sensors.

It is good engineering practice to mount sensors horizontally or with the sensing face looking down. Avoid sensors that look up wherever considered, especially if metal filings and chips are present.

## Maximum Locknut Torque Specifications

The locknut torque should be considered for all threaded sensors to prevent the housing from being over stressed. The values below pertain to the locknut provided with each sensor. Liquid thread sealants of an anaerobic base, such as Loctite, are recommended if strong vibrations are likely.

Caution: Sensor barrels are typically brass. Consider break torque when selecting grade of thread sealant.

| Barrel Size | Metal Barrel | Plastic Barrel |
|---|---|---|
| 5 mm | 5 Nm (3.7 ft-lb) | - - - - |
| 8 mm | 5 Nm (3.7 ft-lb) | - - - - |
| 8 mm (M08 Ferrite) | 7 Nm (5.2 ft-lb) | - - - - |
| 12 mm | 10 Nm (7.4 ft-lb) | 1 Nm (0.7 ft-lb) |
| 18 mm | 25 Nm (18 ft-lb) | 2 Nm (1.4 ft-lb) |
| 30 mm | 75 Nm (55 ft-lb) | 5 Nm (3.7 ft-lb) |
| 47 mm | 90 Nm (66 ft-lb) | - - - - |

## Drill Hole Sizes for Metric Threads

| Thread Size | Pitch | Thru Hole (mm) | Tap Hole Dia. (mm) | Thru Hole (in) | Tap Hole Dia. (in) |
|---|---|---|---|---|---|
| M5 x 0.5 | 0.5 | 5.0 | 4.5 | 13/64 | 5/32 |
| M8 x 1 | 1.0 | 8.0 | 7 | 21/64 | 1/4 |
| M12 x 1 | 1.0 | 12.0 | 11 | 31/64 | 13/32 |
| M18 x 1 | 1.0 | 18.0 | 17 | 23/32 | 41/64 |
| M30 x 1.5 | 1.5 | 30.0 | 28 | 1-3/16 | 1-5/64 |
| PG 9 | 1.41 | 15.2 | 14 | 5/8 | 1/2 |
| PG 13.5 | 1.41 | 20.4 | 19 | 13/16 | 23/32 |
| PG 36 | 1.59 | 47.0 | 45.5 | 1-7/8 | 1-47/64 |



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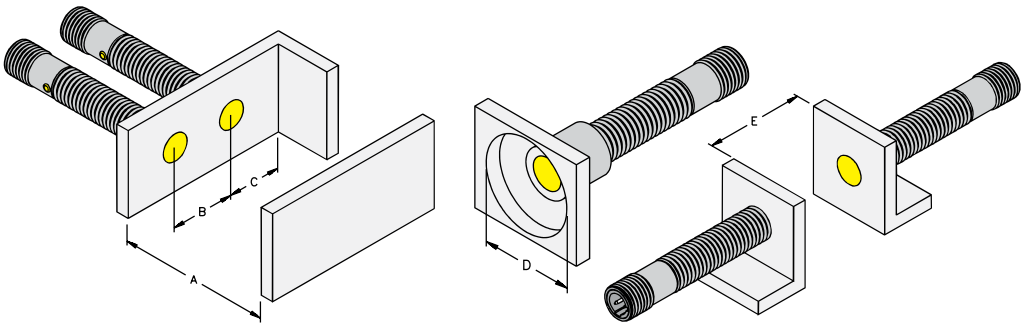
# Inductive Barrel Sensors

## Embeddable Mounting Considerations




### Flush Mountable

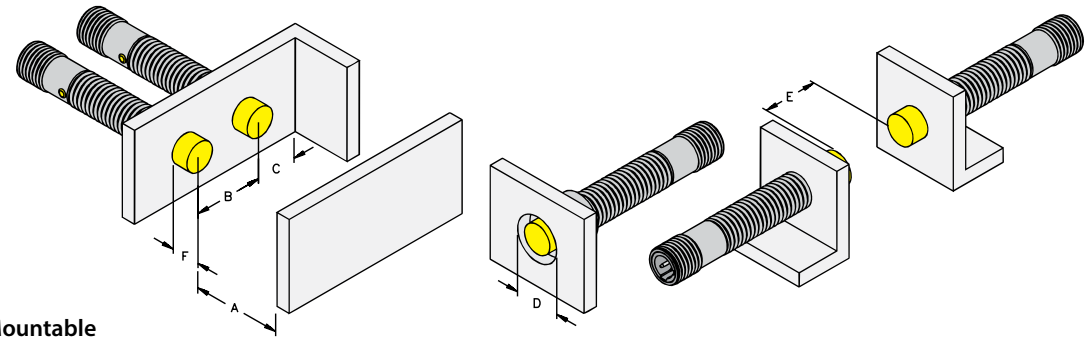
| Sensor Type | Barrel Diameter | A | B | C | D | E |
|---|---|---|---|---|---|---|
| Bi1 | 3.00 | 3.00 | 6.00 | 4.50 | 9.00 | 9.00 |
| Bi1U | 4.00 | 3.00 | 8.00 | 6.00 | 12.00 | 6.00 |
| Bi1 | 4.00 | 3.00 | 8.00 | 6.00 | 12.00 | 6.00 |
| Bi1 | 5.00 | 3.00 | 10.00 | 8.00 | 15.00 | 6.00 |
| Bi1U | 5.00 | 3.00 | 10.00 | 7.50 | 15.00 | 6.00 |
| Bi1.5U | 6.50 | 5.00 | 13.00 | 10.00 | 20.00 | 9.00 |
| Bi1.5 | 6.50 | 5.00 | 13.00 | 10.00 | 20.00 | 9.00 |
| Bi2 | 6.50 | 6.00 | 13.00 | 10.00 | 20.00 | 12.00 |
| Bi1.5U | 8.00 | 5.00 | 16.00 | 12.00 | 24.00 | 9.00 |
| Bi1.5 | 8.00 | 5.00 | 16.00 | 12.00 | 24.00 | 9.00 |
| Bi2 | 8.00 | 6.00 | 16.00 | 12.00 | 24.00 | 12.00 |
| Bi2U | 8.00 | 6.00 | 16.00 | 12.00 | 24.00 | 12.00 |
| Bi3U | 8.00 | 9.00 | 16.00 | 12.00 | 24.00 | 18.00 |
| Bi2 | 11.00 | 6.00 | 22.00 | 17.00 | 33.00 | 12.00 |
| Bi2 | 12.00 | 6.00 | 24.00 | 18.00 | 36.00 | 12.00 |
| Bi3U | 12.00 | 9.00 | 24.00 | 18.00 | 36.00 | 18.00 |
| Bi3 | 12.00 | 9.00 | 24.00 | 18.00 | 36.00 | 18.00 |
| Bi4 | 12.00 | 12.00 | 24.00 | 18.00 | 36.00 | 24.00 |
| Bi4U | 12.00 | 12.00 | 24.00 | 18.00 | 36.00 | 24.00 |
| Bi6U | 12.00 | 18.00 | 24.00 | 18.00 | 36.00 | 36.00 |
| Bi5U | 18.00 | 15.00 | 36.00 | 27.00 | 54.00 | 30.00 |
| Bi5 | 18.00 | 15.00 | 36.00 | 27.00 | 54.00 | 30.00 |
| Bi7 | 18.00 | 21.00 | 36.00 | 27.00 | 54.00 | 42.00 |
| Bi8U | 18.00 | 24.00 | 36.00 | 27.00 | 54.00 | 48.00 |
| Bi8 | 18.00 | 24.00 | 36.00 | 27.00 | 54.00 | 48.00 |
| Bi10U | 18.00 | 30.00 | 36.00 | 27.00 | 54.00 | 60.00 |
| Bi10U | 30.00 | 27.00 | 60.00 | 45.00 | 90.00 | 54.00 |
| Bi10 | 30.00 | 30.00 | 60.00 | 45.00 | 90.00 | 60.00 |
| Bi12 | 30.00 | 36.00 | 60.00 | 45.00 | 90.00 | 72.00 |
| Bi15 | 30.00 | 45.00 | 60.00 | 45.00 | 90.00 | 90.00 |
| Bi15U | 30.00 | 45.00 | 60.00 | 45.00 | 90.00 | 90.00 |
| Bi 20U | 30.00 | 60.00 | 60.00 | 45.00 | 90.00 | 120.00 |
| Bi 20 | 47.00 | 60.00 | 94.00 | 71.00 | 141.00 | 120.00 |
| Bi 25 | 47.00 | 75.00 | 94.00 | 71.00 | 141.00 | 150.00 |

Dimensions are in mm.

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors

## Nonembeddable Mounting Characteristics

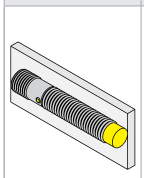
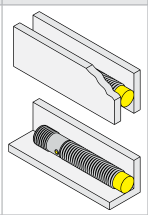
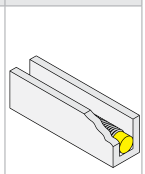



### Non-Flush Mountable

| Sensor Type | Barrel Diameter | A | B | C | D | E | F | 1 Side | 2 Side | 3 Side |
|---|---|---|---|---|---|---|---|---|---|---|
| Ni3 | 6.50 | 9.00 | 20.00 | 10.00 | 20.00 | 18.00 | 6.00 | | | |
| Ni3 | 8.00 | 9.00 | 24.00 | 12.00 | 24.00 | 18.00 | 6.00 | | | |
| Ni4U | 8.00 | 12.00 | 32.00 | 12.00 | 32.00 | 24.00 | 8.00 | | | |
| Ni4 | 8.00 | 12.00 | 24.00 | 12.00 | 24.00 | 24.00 | 8.00 | | | |
| Ni6U | 8.00 | 18.00 | 32.00 | 12.00 | 36.00 | 36.00 | 12.00 | | | |
| Ni5 | 11.00 | 15.00 | 33.00 | 17.00 | 33.00 | 30.00 | 10.00 | | | |
| Ni4 | 12.00 | 12.00 | 36.00 | 18.00 | 36.00 | 24.00 | 8.00 | | | |
| Ni5 | 12.00 | 15.00 | 36.00 | 18.00 | 36.00 | 30.00 | 10.00 | | | |
| Ni8U | 12.00 | 24.00 | 48.00 | 18.00 | 45.00 | 48.00 | 16.00 | Sr=6 mm* | | |
| Ni8 | 12.00 | 24.00 | 36.00 | 18.00 | 36.00 | 48.00 | 16.00 | | | |
| Ni10U | 12.00 | 30.00 | 48.00 | 18.00 | 36.00 | 60.00 | 20.00 | | | |
| Ni8 | 18.00 | 24.00 | 54.00 | 27.00 | 54.00 | 48.00 | 16.00 | | | |
| Ni10 | 18.00 | 30.00 | 54.00 | 27.00 | 54.00 | 60.00 | 20.00 | | | |
| Ni12U | 18.00 | 36.00 | 70.00 | 27.00 | 54.00 | 72.00 | 24.00 | | | |
| Ni14 | 18.00 | 42.00 | 54.00 | 27.00 | 54.00 | 84.00 | 20.00 | | | |
| Ni15U | 18.00 | 45.00 | 70.00 | 27.00 | 54.00 | 90.00 | 30.00 | | | |
| Ni10 | 20.00 | 30.00 | 60.00 | 30.00 | 60.00 | 60.00 | 20.00 | | | |
| Ni15 | 30.00 | 45.00 | 90.00 | 45.00 | 90.00 | 90.00 | 20.00 | | | |
| Ni20U | 30.00 | 60.00 | 90.00 | 45.00 | 90.00 | 120.00 | 40.00 | Sr=15 mm* | Sr=12 mm* | Sr=11 mm* |
| Ni20 | 30.00 | 60.00 | 90.00 | 45.00 | 90.00 | 120.00 | 20.00 | | | |
| Ni30U | 30.00 | 135.00 | 90.00 | 45.00 | 90.00 | 180.00 | 60.00 | | | |
| Ni20 | 40.00 | 60.00 | 120.00 | 60.00 | 120.00 | 120.00 | 40.00 | | | |
| Ni30 | 40.00 | 90.00 | 120.00 | 60.00 | 120.00 | 180.00 | 40.00 | | | |
| Ni25 | 47.00 | 75.00 | 141.00 | 71.00 | 141.00 | 150.00 | 40.00 | | | |
| Ni40 | 47.00 | 120.00 | 141.00 | 71.00 | 141.00 | 240.00 | 40.00 | | | |

Dimensions are in mm.

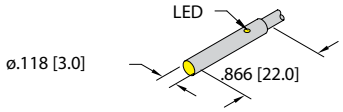
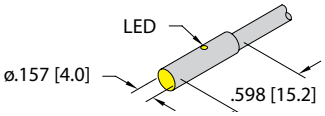
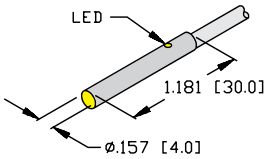
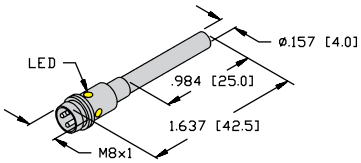
* The above Uprox Ni sensors with DC outputs and Stainless barrels can be flush mounted because the sensor automatically compensates for metal alongside its sensing face by decreasing the sensing range, preventing the output from locking on.

| 1 Side | 2 Side | 3 Side |
|---|---|---|
|  |  |  |

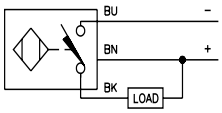
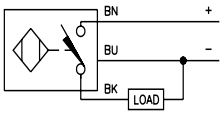
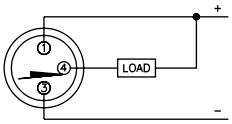
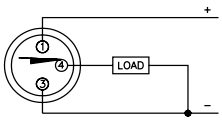
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 3 mm, 4 mm

**Embeddable Smooth Metal Barrels with DC Outputs**

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   3 mm - Embeddable, Miniature Smooth Barrel, Potted-In Cable | B   4 mm - Embeddable, Miniature Smooth Barrel, Potted-In Cable |
| C   4 mm - Embeddable, Miniature Smooth Barrel, Potted-In Cable | D   4 mm - Embeddable, Miniature Smooth, M8 Picofast Quick Disconnect | |

**Wiring Diagrams/Mating Cordsets**

| 1 | 2 | 3 | 4 |
|---|---|---|---|
|   |   |   Mating Cordset: PKG 3M-* |   Mating Cordset: PKG 3M-* |

**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 3 mm, 4 mm

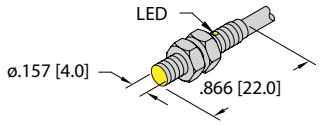
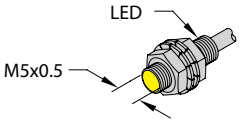
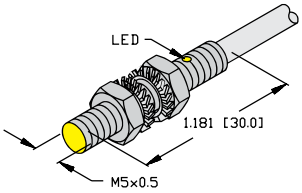
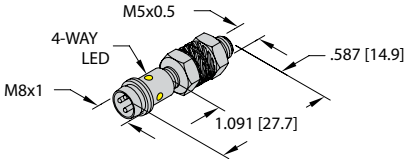
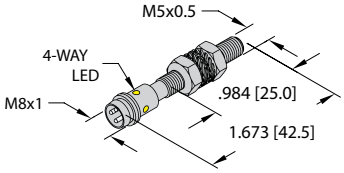
**Embeddable Smooth Metal Barrels with DC Outputs**

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi1U-EH04-AN6X** 4602114 | Uprox3 | 1 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | C | 1 | A4 |
| **Bi1U-EH04-AP6X** 4602112 | Uprox3 | 1 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | C | 2 | A4 |
| **Bi1-EH04-AN6X** 4609640 | | 1 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | C | 1 | A4 |
| **Bi1-EH04-AP6X** 4609540 | | 1 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | C | 2 | A4 |
| **Bi1-EH04K-AN6X** 4609768 | Short Barrel | 1 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | B | 1 | A4 |
| **Bi1-EH04K-AP6X** 4609767 | Short Barrel | 1 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | B | 2 | A4 |
| **Bi1-EH03-AN6X** 1619326 | | 1 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | A | 1 | A4 |
| **Bi1-EH03-AP6X** 1619325 | | 1 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | A | 2 | A4 |
| **Bi1U-EH04-AN6X-V1331** 4602115 | Uprox3 | 1 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | -- | D | 3 | A4 |
| **Bi1U-EH04-AP6X-V1331** 4602113 | Uprox3 | 1 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | -- | D | 4 | A4 |
| **Bi1-EH04-AN6X-V1331** 4608540 | | 1 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | -- | D | 3 | A4 |
| **Bi1-EH04-AP6X-V1331** 4608440 | | 1 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | -- | D | 4 | A4 |

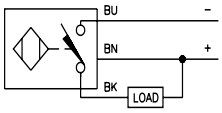
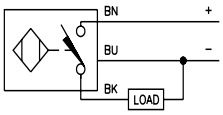
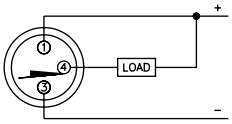
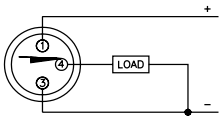
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 4 mm, 5 mm

**Embeddable Threaded Metal Barrels with DC Outputs**

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   4 mm - Embeddable, Miniature Threaded Barrel, Potted-In Cable | B   5 mm - Embeddable, Miniature Threaded Barrel, Potted-In Cable |
| C   5 mm - Embeddable, Miniature Threaded Barrel, Potted-In Cable | D   5 mm - Embeddable, Miniature Threaded, M8 Picofast Quick Disconnect | E   5 mm - Embeddable, Miniature Threaded, M8 Picofast Quick Disconnect |

**Wiring Diagrams/Mating Cordsets**

| 1 | 2 | 3 | 4 |
|---|---|---|---|
|   |   |   Mating Cordset: PKG 3M-* |   Mating Cordset: PKG 3M-* |

**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 4 mm, 5 mm

## Embeddable Threaded Metal Barrels with DC Outputs

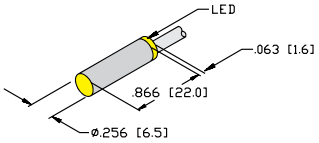
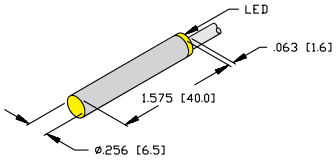
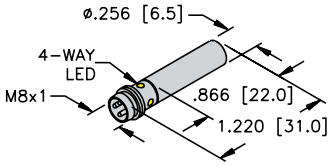
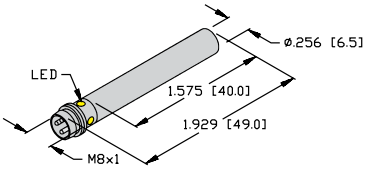
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi1U-EG05-AN6X** 4602118 | Uprox3 | 1 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | C | 1 | A4 |
| **Bi1U-EG05-AP6X** 4602116 | Uprox3 | 1 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | C | 2 | A4 |
| **Bi1-EG05-AN6X** 4609840 | | 1 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | C | 1 | A4 |
| **Bi1-EG05-AP6X** 4609740 | | 1 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | C | 2 | A4 |
| **Bi1-EG05K-AN6X** 4609764 | Short Barrel | 1 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | B | 1 | A4 |
| **Bi1-EG05K-AP6X** 4609765 | Short Barrel | 1 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | B | 2 | A4 |
| **Bi1-EG04-AN6X** 1619328 | | 1 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | A | 1 | A4 |
| **Bi1-EG04-AP6X** 1619327 | | 1 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | A | 2 | A4 |
| **Bi1U-EG05-AN6X-V1331** 4602119 | Uprox3 | 1 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | -- | E | 3 | A4 |
| **Bi1U-EG05-AP6X-V1331** 4602117 | Uprox3 | 1 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | -- | E | 4 | A4 |
| **Bi1-EG05-AN6X-V1331** 4608740 | | 1 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | -- | E | 3 | A4 |
| **Bi1-EG05-AP6X-V1331** 4608640 | | 1 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | -- | E | 4 | A4 |
| **Bi1-EG05K-AP6X-V1331** 4609766 | Short Barrel | 1 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | -- | D | 4 | A4 |



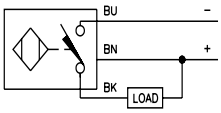
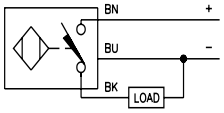
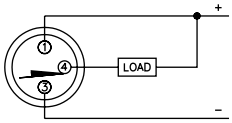
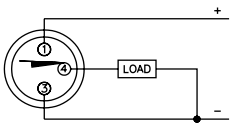
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 6.5 mm

## Embeddable Smooth Metal Barrels with DC Outputs

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   6.5 mm - Embeddable, Miniature Smooth Barrel, Potted-In Cable | B   6.5 mm - Embeddable, Miniature Smooth Barrel, Potted-In Cable |
| C   6.5 mm - Embeddable, Miniature Smooth, M8 Picofast Quick Disconnect | D   6.5 mm - Embeddable, Miniature Smooth, M8 Picofast Quick Disconnect | |

### Wiring Diagrams/Mating Cordsets

| 1 | 2 | 3 | 4 |
|---|---|---|---|
|   |   |   Mating Cordset: PKG 3M-* |   Mating Cordset: PKG 3M-* |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 6.5 mm

**Embeddable Smooth Metal Barrels with DC Outputs**

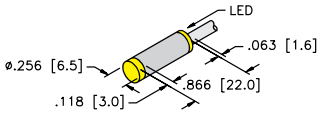
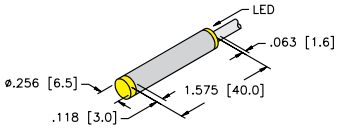
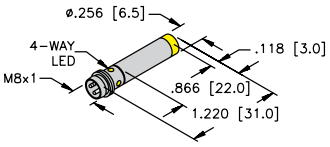
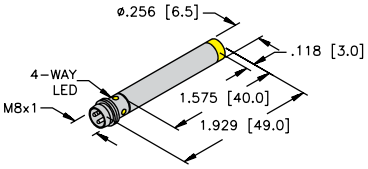
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi2U-EH6.5-AN6X** 4281170 | Uprox | 2 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤150 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | 2M/ TPU | B | 1 | A4 |
| **Bi2U-EH6.5-AP6X** 4281150 | Uprox | 2 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤150 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | 2M/ TPU | B | 2 | A4 |
| **Bi2-EH6.5-AN6X** 4612300 | | 2 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/ TPU | B | 1 | A4 |
| **Bi2-EH6.5-AP6X** 4612200 | | 2 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/ TPU | B | 2 | A4 |
| **Bi2-EH6.5K-AN6X** 4610100 | Short Barrel | 2 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/ TPU | A | 1 | A4 |
| **Bi2-EH6.5K-AP6X** 4610000 | Short Barrel | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/ TPU | A | 2 | A4 |
| **Bi1.5-EH6.5-AN6X** 4612100 | | 1.5 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/ TPU | B | 1 | A4 |
| **Bi1.5-EH6.5-AP6X** 4612000 | | 1.5 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/ TPU | B | 2 | A4 |
| **Bi1.5-EH6.5-AP6X/S100** 4612001 | High Temp. 100 °C | 1.5 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +100 | IP67 | SS | PA 12 | N/A | YE | 2M/ TPU | B | 2 | A4 |
| **Bi1.5-EH6.5K-AN6X** 4610640 | Short Barrel | 1.5 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/ TPU | A | 1 | A4 |
| **Bi1.5-EH6.5K-AP6X** 4610540 | Short Barrel | 1.5 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/ TPU | A | 2 | A4 |
| **Bi2U-EH6.5-AN6X-V1131** 4281180 | Uprox | 2 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤150 | -25 to +70 | IP68 | SS | PA 12 | N/A | YE | -- | D | 3 | A4 |
| **Bi2U-EH6.5-AP6X-V1131** 4281160 | Uprox | 2 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤150 | -25 to +70 | IP68 | SS | PA 12 | N/A | YE | -- | D | 4 | A4 |
| **Bi2-EH6.5-AN6X-V1131** 4612320 | | 2 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | -- | D | 3 | A4 |
| **Bi2-EH6.5-AP6X-V1131** 4612220 | | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | -- | D | 4 | A4 |
| **Bi2-EH6.5K-AN6X-V1131** 4610120 | Short Barrel | 2 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | -- | C | 3 | A4 |
| **Bi2-EH6.5K-AP6X-V1131** 4610020 | Short Barrel | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | -- | C | 4 | A4 |
| **Bi1.5-EH6.5-AN6X-V1131** 4612120 | | 1.5 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | -- | D | 3 | A4 |
| **Bi1.5-EH6.5-AP6X-V1131** 4612020 | | 1.5 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | -- | D | 4 | A4 |
| **Bi1.5-EH6.5K-AN6X-V1131** 4610840 | Short Barrel | 1.5 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | -- | C | 3 | A4 |
| **Bi1.5-EH6.5K-AP6X-V1131** 4610740 | Short Barrel | 1.5 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | -- | C | 4 | A4 |



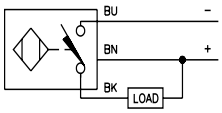
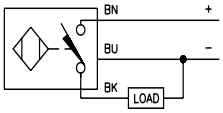
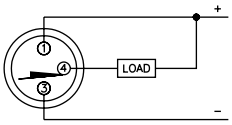
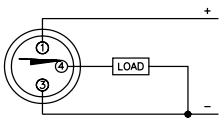
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 6.5 mm

## Nonembeddable Smooth Metal Barrels with DC Outputs

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   6.5 mm - Nonembeddable, Miniature Smooth Barrel, Potted-In Cable | B   6.5 mm - Nonembeddable, Miniature Smooth Barrel, Potted-In Cable |
| C   6.5 mm - Nonembeddable, Miniature Smooth, M8 Picofast Quick Disconnect | D   6.5 mm - Nonembeddable, Miniature Smooth, M8 Picofast Quick Disconnect | |

### Wiring Diagrams/Mating Cordsets

| 1 | 2 | 3 | 4 |
|---|---|---|---|
|   |   |   Mating Cordset: PKG 3M-* |   Mating Cordset: PKG 3M-* |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 6.5 mm

**Nonembeddable Smooth Metal Barrels with DC Outputs**

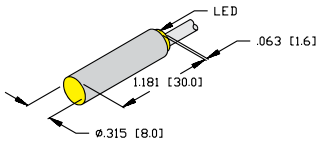
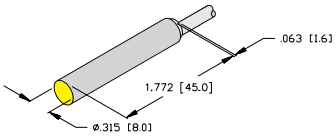
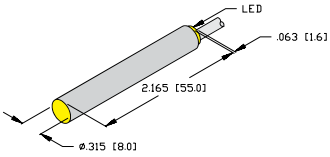
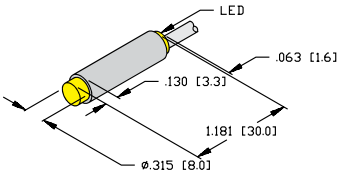
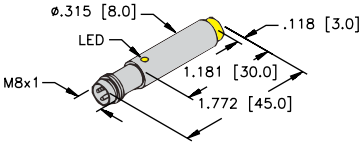
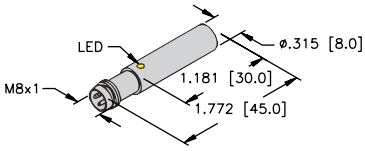
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni4U-EH6.5-AP6X** 4600680 | Uprox | 4 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | 2M/TPU | B | 2 | A4 |
| **Ni3-EH6.5-AN6X** 4612500 | | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | B | 1 | A4 |
| **Ni3-EH6.5-AP6X** 4612400 | | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | B | 2 | A4 |
| **Ni3-EH6.5K-AN6X** 4610300 | Short Barrel | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | A | 1 | A4 |
| **Ni3-EH6.5K-AP6X** 4610200 | Short Barrel | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | A | 2 | A4 |
| **Ni6U-EH6.5-AP6X-V1131** 4631510 | Uprox+ | 6 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤150 | 0 to +70 | IP68 | SS | PA 12 | N/A | YE | -- | D | 4 | A4 |
| **Ni4U-EH6.5-AN6X-V1131** 4600683 | Uprox | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤150 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | -- | D | 3 | A4 |
| **Ni4U-EH6.5-AP6X-V1131** 4600681 | Uprox | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤150 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | -- | D | 4 | A4 |
| **Ni3-EH6.5-AN6X-V1131** 4612520 | | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | -- | D | 3 | A4 |
| **Ni3-EH6.5-AP6X-V1131** 4612420 | | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | -- | D | 4 | A4 |
| **Ni3-EH6.5K-AN6X-V1131** 4610320 | Short Barrel | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | -- | C | 3 | A4 |
| **Ni3-EH6.5K-AP6X-V1131** 4610220 | Short Barrel | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | -- | C | 4 | A4 |



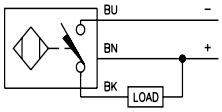
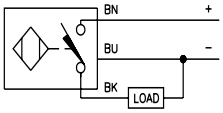
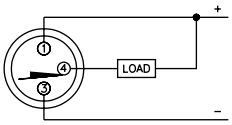
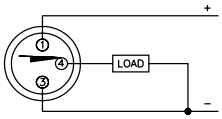
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 8 mm

**Embeddable and Nonembeddable Smooth Metal Barrels with DC Outputs**

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   8 mm - Embeddable, Miniature Smooth Barrel, Potted-In Cable | B   8 mm - Embeddable, Miniature Smooth Barrel, Potted-In Cable |
| C   8 mm - Embeddable, Miniature Smooth Barrel, Potted-In Cable | D   8 mm - Nonembeddable, Miniature Smooth Barrel, Potted-In Cable | E   8 mm - Nonembeddable, Miniature Smooth, M8 Picofast Quick Disconnect |
| F   8 mm - Embeddable, Miniature Smooth, M8 Picofast Quick Disconnect | | |

**Wiring Diagrams/Mating Cordsets**

| 1 | 2 | 3 | 4 |
|---|---|---|---|
|   |   |   Mating Cordset: PKG 3M-* |   Mating Cordset: PKG 3M-* |

**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 8 mm

**Embeddable and Nonembeddable Smooth Metal Barrels with DC Outputs**

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi1.5-H08K-AN6X** 1604341 | Short Barrel | 1.5 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | A | 1 | A4 |
| **Bi1.5-H08K-AP6X** 1604331 | Short Barrel | 1.5 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | A | 2 | A4 |
| **Bi1.5-H08M-AP6X** 1604301 | | 1.5 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | B | 2 | A4 |
| **Bi1.5-H08-AN6X** 16143 | | 1.5 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | C | 1 | A4 |
| **Bi1.5-H08-AP6X** 16043 | | 1.5 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | C | 2 | A4 |
| **Ni2-H08K-AN6X** 16147 | Short Barrel | 2 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | D | 1 | A4 |
| **Ni2-H08K-AP6X** 16047 | Short Barrel | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | D | 2 | A4 |
| **Bi1.5-H08K-AN6X-V1131** 1604340 | Short Barrel | 1.5 | 3-wire DC NPN | 10-30 VDC | 5000 | ≤150 | -25 to +70 | IP67 | SS | PBT | N/A | YE | -- | F | 3 | A4 |
| **Bi1.5-H08K-AP6X-V1131** 1604330 | Short Barrel | 1.5 | 3-wire DC PNP | 10-30 VDC | 5000 | ≤150 | -25 to +70 | IP67 | SS | PBT | N/A | YE | -- | F | 4 | A4 |
| **Ni2-H08K-AN6X-V1131** 16148 | Short Barrel | 2 | 3-wire DC NPN | 10-30 VDC | 5000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | -- | E | 3 | A4 |
| **Ni2-H08K-AP6X-V1131** 16048 | Short Barrel | 2 | 3-wire DC PNP | 10-30 VDC | 5000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | -- | E | 4 | A4 |



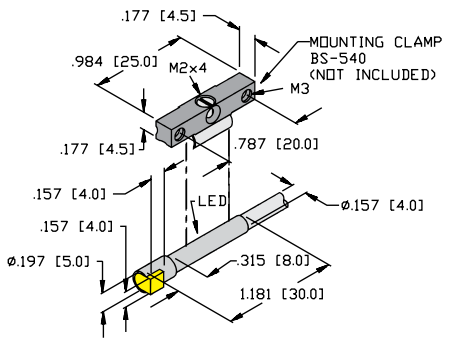
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 5 mm, 8 mm

**Embeddable Side Sensing Metal Barrels with Cable and DC Outputs**

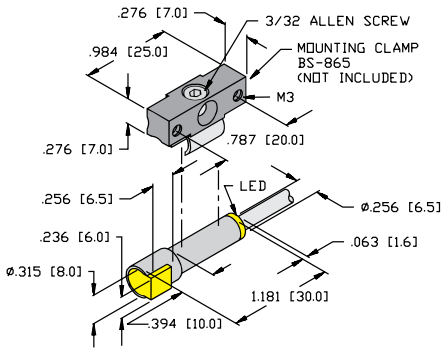
| Housing Style | Dimension Drawings |
|---|---|

A



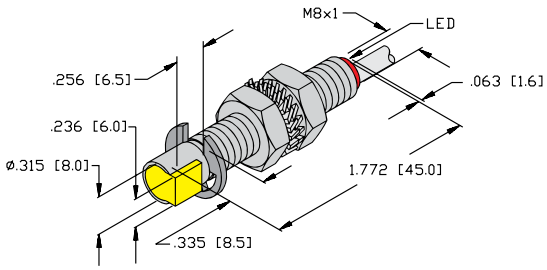

5 mm - Embeddable, Side Sensing, Miniature Smooth Barrel, Potted-In Cable

B




8 mm - Embeddable, Side Sensing, Miniature Smooth Barrel, Potted-In Cable

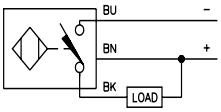
C



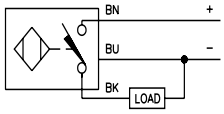

8 mm - Embeddable, Miniature Threaded Barrel, Side Sensing, Potted-In Cable

**Wiring Diagrams/Mating Cordsets**

1




2




**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 5 mm, 8 mm

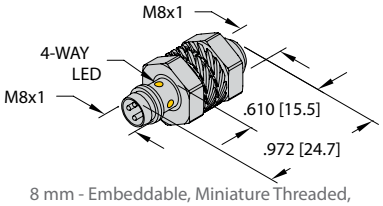
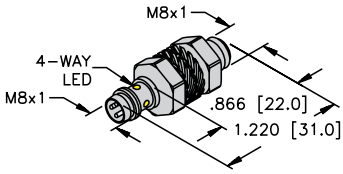
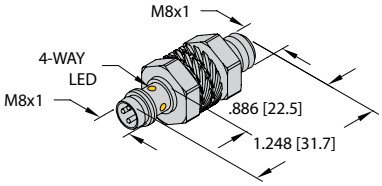
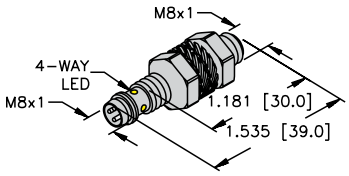
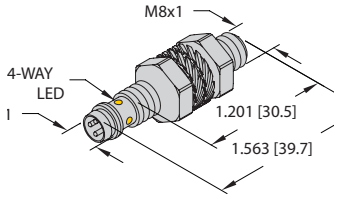
**Embeddable Side Sensing Metal Barrels with Cable and DC Outputs**

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi1.5-HS865-AN6X** 4604301 | Side Sensing | 1.5 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | B | 1 | A4 |
| **Bi1.5-HS865-AP6X** 4604201 | Side Sensing | 1.5 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | B | 2 | A4 |
| **Bi1.5-GS880-AN6X** 4604501 | Side Sensing | 1.5 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | C | 1 | A4 |
| **Bi1.5-GS880-AP6X** 4604401 | Side Sensing | 1.5 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | C | 2 | A4 |
| **Bi1-HS540-AN6X** 4604101 | Side Sensing | 1 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | A | 1 | A4 |
| **Bi1-HS540-AP6X** 4604001 | Side Sensing | 1 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | A | 2 | A4 |

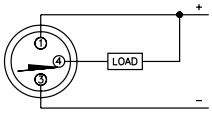
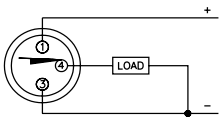
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 8 mm

**Embeddable Threaded Metal Barrels with Connector and DC Outputs**

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   8 mm - Embeddable, Miniature Threaded, M8 Picofast Quick Disconnect | B   8 mm - Embeddable, Miniature Threaded, M8 Picofast Quick Disconnect |
| C   8 mm - Embeddable, Miniature Threaded, M8 Picofast Quick Disconnect | D   8 mm - Embeddable, Miniature Threaded, M8 Picofast Quick Disconnect | E   8 mm - Embeddable, Miniature Threaded, M8 Picofast Quick Disconnect |

**Wiring Diagrams/Mating Cordsets**

| 1 | 2 |
|---|---|
|   Mating Cordset: PKG 3M-* |   Mating Cordset: PKG 3M-* |

**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 8 mm

## Embeddable Threaded Metal Barrels with Connector and DC Outputs

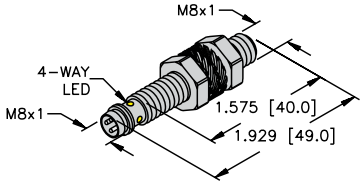
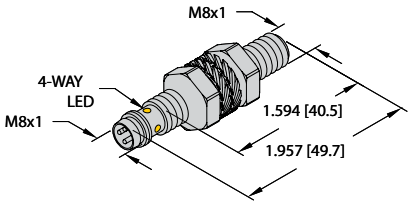
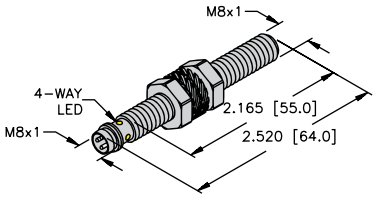
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi3U-EM08-AN6X-V1131** 4602423 | Uprox3 | 3 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤150 | 0 to +60 | IP68 | SS | PA 12 | N/A | YE | D | 1 | A4 |
| **Bi3U-EMT08-AN6X-V1131** 4602157 | Uprox3, PTFE | 3 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤150 | 0 to +60 | IP68 | SS | TC | N/A | YE | D | 1 | A4 |
| **Bi3U-EM08-AP6X-V1131** 4602413 | Uprox3 | 3 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤150 | 0 to +60 | IP68 | SS | PA 12 | N/A | YE | D | 2 | A4 |
| **Bi3U-EMT08-AP6X-V1131** 4602156 | Uprox3, PTFE | 3 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤150 | 0 to +60 | IP68 | SS | TC | N/A | YE | D | 2 | A4 |
| **Bi3-M08-AN6X-V1131** 4602914 | | 3 | 3-wire DC NPN | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | E | 1 | A4 |
| **Bi3-M08-AP6X-V1131** 4602911 | | 3 | 3-wire DC PNP | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | E | 2 | A4 |
| **Bi3-M08KK-AN6X-V1131** 4602942 | Short Barrel | 3 | 3-wire DC NPN | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | A | 1 | A4 |
| **Bi3-M08KK-AP6X-V1131** 4602939 | Short Barrel | 3 | 3-wire DC PNP | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | A | 2 | A4 |
| **Bi2-EG08K-AN6X-V1131** 4669550 | | 2 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | D | 1 | A4 |
| **Bi2-EG08K-AP6X-V1131** 4669450 | | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | D | 2 | A4 |
| **Bi2-G08K-AP6X-V1131** 4672803 | | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PBT | N/A | YE | D | 2 | A4 |
| **Bi2-M08K-AN6X-V1131** 4602965 | | 2 | 3-wire DC NPN | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | C | 1 | A4 |
| **Bi2-M08K-AP6X-V1131** 4602968 | | 2 | 3-wire DC PNP | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | C | 2 | A4 |
| **Bi1.5-EG08K-AN6X-V1131** 4672540 | | 1.5 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | B | 1 | A4 |
| **Bi1.5-EG08K-AP6X-V1131** 4672440 | | 1.5 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | B | 2 | A4 |

**Note:** Reference sensor data sheet for considerations if mounting a BI3-M08 sensor flush in steel.

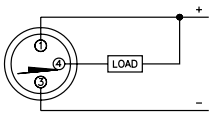
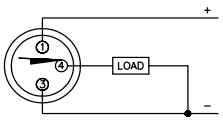
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 8 mm

**Embeddable Threaded Metal Barrels with Connector and DC Outputs**

| Housing Style | Dimension Drawings |
|---|---|
| | A   8 mm - Embeddable, Miniature Threaded, M8 Picofast Quick Disconnect |
| B   8 mm - Embeddable, Miniature Threaded, M8 Picofast Quick Disconnect | C   8 mm - Embeddable, Miniature Threaded, M8 Picofast Quick Disconnect |

**Wiring Diagrams/Mating Cordsets**

| | |
|---|---|
| 1   Mating Cordset: PKG 3M-* | 2   Mating Cordset: PKG 3M-*; PKG 3M-*/S1587 |

**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 8 mm

**Embeddable Threaded Metal Barrels with Connector and DC Outputs**

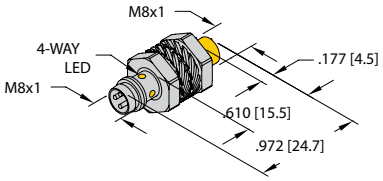
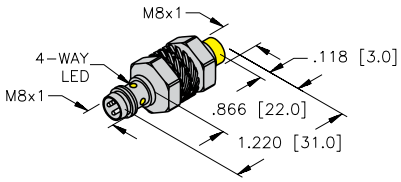
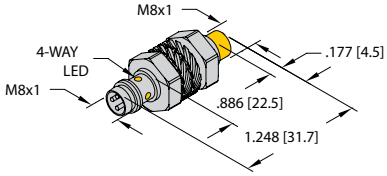
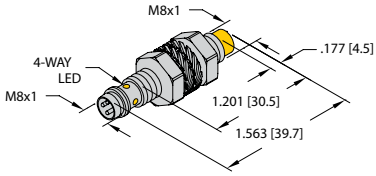
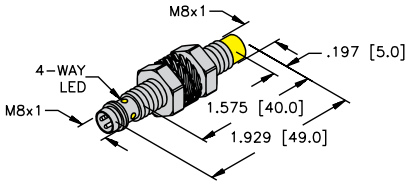
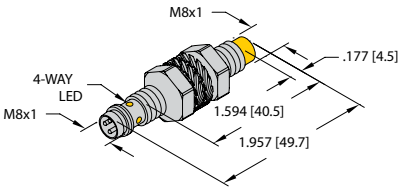
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi2U-EG08-AN6X-V1131** 4602036 | Uprox | 2 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤150 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | C | 1 | A4 |
| **Bi2U-EG08-AP6X-V1131** 4602033 | Uprox | 2 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤150 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | C | 2 | A4 |
| **Bi2-EG08-AN6X-V1131** 4602150 | | 2 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | C | 1 | A4 |
| **Bi2-EG08-AP6X-V1131** 4602050 | | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | C | 2 | A4 |
| **Bi2-EG08-AP6X-V1131/S1589** 46020501 | Weldguard | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | WG | N/A | YE | C | 2 | A4 |
| **Bi2-EGT08-AP6X-V1131/S100** 4602263 | PTFE, High Temp. 100 °C | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +100 | IP67 | SS | TC | N/A | YE | C | 2 | A4 |
| **Bi2-EGT08-AP6X-V1131/S100/S1589** 4602072 | PTFE, High Temp. 100 °C, Weldguard | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +100 | IP67 | SS | WG | N/A | YE | C | 2 | A4 |
| **Bi2-G08-AP6X-V1131** 4602002 | | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | C | 2 | A4 |
| **Bi2-M08E-AN6X-V1131** 4602953 | | 2 | 3-wire DC NPN | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | B | 1 | A4 |
| **Bi2-M08E-AP6X-V1131** 4602956 | | 2 | 3-wire DC PNP | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | B | 2 | A4 |
| **Bi1.5U-EG08-AN6X-V1131** 4600530 | Uprox | 1.5 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤150 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | A | 1 | A4 |
| **Bi1.5U-EG08-AP6X-V1131** 4600520 | Uprox | 1.5 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤150 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | A | 2 | A4 |
| **Bi1.5-EG08-AN6X-V1131** 4602350 | | 1.5 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 1 | A4 |
| **Bi1.5-EG08-AP6X-V1131** 4602220 | | 1.5 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 2 | A4 |



We reserve the right to make technical alterations without prior notice.

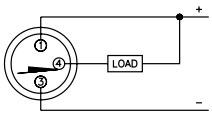
# Inductive Barrel Sensors | 8 mm

## Nonembeddable Threaded Metal Barrels with Connector and DC Outputs

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   8 mm - Nonembeddable, Miniature Threaded, M8 Picofast Quick Disconnect | B   8 mm - Nonembeddable, Miniature Threaded, M8 Picofast Quick Disconnect |
| C   8 mm - Nonembeddable, Miniature Threaded, M8 Picofast Quick Disconnect | D   8 mm - Nonembeddable, Miniature Threaded, M8 Picofast Quick Disconnect | E   8 mm - Nonembeddable, Miniature Threaded, M8 Picofast Quick Disconnect |
| F   8 mm - Nonembeddable, Miniature Threaded, M8 Picofast Quick Disconnect | | |

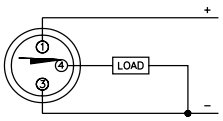
### Wiring Diagrams/Mating Cordsets

1




Mating Cordset: PKG 3M-*

2




Mating Cordset: PKG 3M-*

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 8 mm

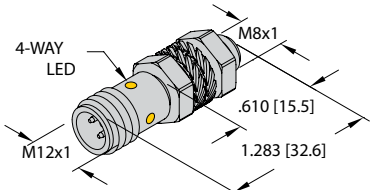
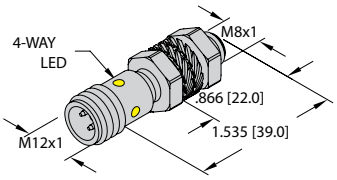
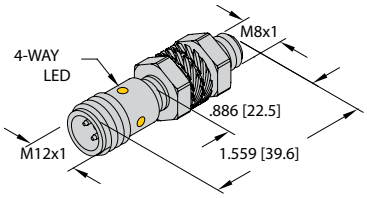
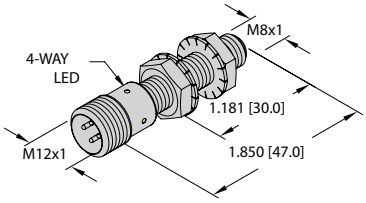
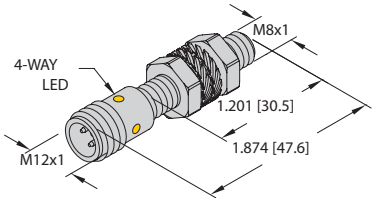
## Nonembeddable Threaded Metal Barrels with Connector and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni6U-EG08-AN6X-V1131** 4635804 | Uprox+ | 6 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤150 | 0 to +70 | IP68 | SS | LCP | N/A | YE | E | 1 | A4 |
| **Ni6U-EG08-AP6X-V1131** 4635801 | Uprox+ | 6 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤150 | 0 to +70 | IP68 | SS | LCP | N/A | YE | E | 2 | A4 |
| **Ni5-M08-AN6X-V1131** 4602924 | | 5 | 3-wire DC NPN | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CBP | PP-GF20 | N/A | YE | D | 1 | A4 |
| **Ni5-M08-AP6X-V1131** 4602921 | | 5 | 3-wire DC PNP | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CBP | PP-GF20 | N/A | YE | D | 2 | A4 |
| **Ni5-M08KK-AN6X-V1131** 4602949 | Short Barrel | 5 | 3-wire DC NPN | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CBP | PP-GF20 | N/A | YE | A | 1 | A4 |
| **Ni5-M08KK-AP6X-V1131** 4602946 | Short Barrel | 5 | 3-wire DC PNP | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CBP | PP-GF20 | N/A | YE | A | 2 | A4 |
| **Ni4U-EG08-AN6X-V1131** 4600630 | Uprox | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤150 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | E | 1 | A4 |
| **Ni4U-EG08-AP6X-V1131** 4600620 | Uprox | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤150 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | E | 2 | A4 |
| **Ni3-M08E-AN6X-V1131** 4602833 | | 3 | 3-wire DC NPN | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CBP | PP-GF20 | N/A | YE | F | 1 | A4 |
| **Ni3-M08E-AP6X-V1131** 4602836 | | 3 | 3-wire DC PNP | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CBP | PP-GF20 | N/A | YE | F | 2 | A4 |
| **Ni3-M08K-AN6X-V1131** 4602849 | | 3 | 3-wire DC NPN | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CBP | PP-GF20 | N/A | YE | C | 1 | A4 |
| **Ni3-M08K-AP6X-V1131** 4602853 | | 3 | 3-wire DC PNP | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CBP | PP-GF20 | N/A | YE | C | 2 | A4 |
| **Ni3-EG08-AN6X-V1131** 4602850 | | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | E | 1 | A4 |
| **Ni3-EG08-AP6X-V1131** 4602750 | | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | E | 2 | A4 |
| **Ni3-EG08K-AN6X-V1131** 4669750 | | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | B | 1 | A4 |
| **Ni3-EG08K-AP6X-V1131** 4669650 | | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | B | 2 | A4 |

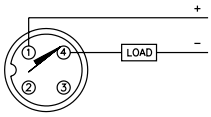
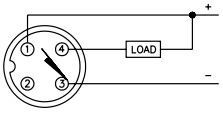
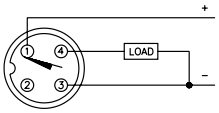
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 8 mm

## Embeddable Threaded Metal Barrels with Connector and DC Outputs

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   8 mm - Embeddable, Miniature Threaded, M12 Eurofast Quick Disconnect | B   8 mm - Embeddable, Miniature Threaded, M12 Eurofast Quick Disconnect |
| C   8 mm - Embeddable, Miniature Threaded, M12 Eurofast Quick Disconnect | D   8 mm - Embeddable, Miniature Threaded, M12 Eurofast Quick Disconnect | E   8 mm - Embeddable, Miniature Threaded, M12 Eurofast Quick Disconnect |

**Wiring Diagrams/Mating Cordsets**

| 1 | 2 | 3 |
|---|---|---|
|   |   |   |
| Mating Cordset: RK 4.23T-* | Mating Cordset: RK 4T-* | Mating Cordset: RK 4T-*; RK 4T-*/S1587 |

**A2 — 2-wire DC - (AD, RD, AG)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

**A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 8 mm

## Embeddable Threaded Metal Barrels with Connector and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi3U-EM08-AN6X-H1341** 4602422 | Uprox3 | 3 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤150 | 0 to +60 | IP68 | SS | PA 12 | N/A | YE | D | 2 | A4 |
| **Bi3U-EMT08-AN6X-H1341** 4602158 | Uprox3, PTFE | 3 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤150 | 0 to +60 | IP68 | SS | TC | N/A | YE | D | 2 | A4 |
| **Bi3U-EM08-AP6X-H1341** 4602412 | Uprox3 | 3 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤150 | 0 to +60 | IP68 | SS | PA 12 | N/A | YE | D | 3 | A4 |
| **Bi3U-EMT08-AP6X-H1341** 4602156 | Uprox3, PTFE | 3 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤150 | 0 to +60 | IP68 | SS | TC | N/A | YE | D | 3 | A4 |
| **Bi3-M08-AN6X-H1341** 4602915 | | 3 | 3-wire DC NPN | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | E | 2 | A4 |
| **Bi3-M08-AP6X-H1341** 4602912 | | 3 | 3-wire DC PNP | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | E | 3 | A4 |
| **Bi3-M08KK-AN6X-H1341** 4602943 | Short Barrel | 3 | 3-wire DC NPN | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | A | 2 | A4 |
| **Bi3-M08KK-AP6X-H1341** 4602940 | Short Barrel | 3 | 3-wire DC PNP | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | A | 3 | A4 |
| **Bi2-EG08K-AG41X-H1341** 4562011 | | 2 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | B | 1 | A2 |
| **Bi2-EG08K-AG41X-H1341/S1589** 4562090 | Weldguard | 2 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | SS | WG | N/A | YE | B | 1 | A2 |
| **Bi2-EGT08K-AG41X-H1341/S1589** 4602599 | PTFE, Short barrel, Weldguard | 2 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | SS | WG | N/A | YE | B | 1 | A2 |
| **Bi2-EG08K-AN6X-H1341** 4669560 | | 2 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | B | 2 | A4 |
| **Bi2-EG08K-AP6X-H1341** 4669460 | | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | B | 3 | A4 |
| **Bi2-EG08K-AP6X-H1341/S1589** 4669486 | Weldguard | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | WG | N/A | YE | B | 3 | A4 |
| **Bi2-M08K-AN6X-H1341** 4602964 | | 2 | 3-wire DC NPN | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | C | 2 | A4 |
| **Bi2-M08K-AP6X-H1341** 4602967 | | 2 | 3-wire DC PNP | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | C | 3 | A4 |
| **Bi1.5-EG08K-AN6X-H1341** 4669150 | | 1.5 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | B | 2 | A4 |
| **Bi1.5-EG08K-AP6X-H1341** 4669050 | | 1.5 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | B | 3 | A4 |

**Note:** Reference sensor data sheet for considerations if mounting a BI3-M08 sensor flush in steel.

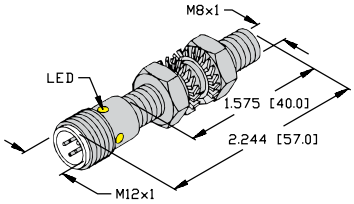
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 8 mm

## Embeddable Threaded Metal Barrels with Connector and DC Outputs

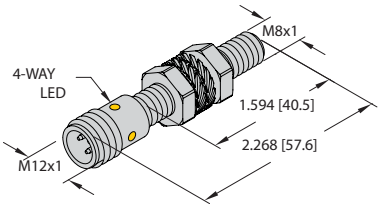
| Housing Style | Dimension Drawings |
|---|---|

A



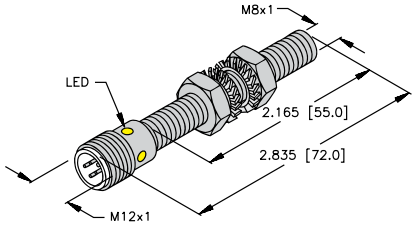

8 mm - Embeddable, Miniature Threaded, M12 Eurofast Quick Disconnect

B




8 mm - Embeddable, Miniature Threaded, M12 Eurofast Quick Disconnect

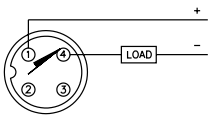
C




8 mm - Embeddable, Miniature Threaded, M12 Eurofast Quick Disconnect

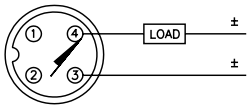
### Wiring Diagrams/Mating Cordsets

1



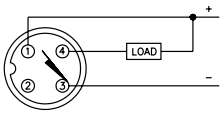

Mating Cordset: RK 4.23T-*

2



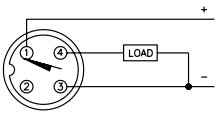

Mating Cordset: RK 4.23T-*

3




Mating Cordset: RK 4T-*; RK 4T-*/S1587

4




Mating Cordset: RK 4T-*; RK 4T-*/S1587

### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

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# Inductive Barrel Sensors | 8 mm

## Embeddable Threaded Metal Barrels with Connector and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi2U-EG08-AN6X-H1341** 4602037 | Uprox | 2 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤150 | -35 to +85 | IP68 | SS | PA 12 | N/A | YE | A | 3 | A4 |
| **Bi2U-EG08-AP6X-H1341** 4602034 | Uprox | 2 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤150 | -35 to +85 | IP68 | SS | PA 12 | N/A | YE | A | 4 | A4 |
| **Bi2-EG08-AG41X-H1341** 4562001 | | 2 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 1 | A2 |
| **Bi2-EG08-AG41X-H1341/S1589** 4562095 | Weldguard | 2 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | SS | WG | N/A | YE | A | 1 | A2 |
| **Bi2-EG08-AN6X-H1341** 4602160 | | 2 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 3 | A4 |
| **Bi2-EG08-AN6X-H1341/S1589** 4602182 | Weldguard | 2 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | WG | N/A | YE | A | 3 | A4 |
| **Bi2-EG08-AP6X-H1341** 4602060 | | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 4 | A4 |
| **Bi2-EG08-AP6X-H1341/S1589** 4602086 | Weldguard | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | WG | N/A | YE | A | 4 | A4 |
| **Bi2-EGT08-AP6X-H1341/S100** 4602257 | PTFE, High Temp. 100 °C | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +100 | IP67 | TC | TC | N/A | YE | A | 4 | A4 |
| **Bi2-EG08-VN6X-H1341** 4602521 | Comp. Outputs | 2 | 4-wire DC NPN | 10-30 VDC | 3000 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 5 | A4 |
| **Bi2-EG08-VP6X-H1341** S4602522 | Comp. Outputs | 2 | 4-wire DC PNP | 10-30 VDC | 3000 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 6 | A4 |
| **Bi2-G08-AN6X-H1341** 46026 | | 2 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | C | 3 | A4 |
| **Bi2-G08-AP6X-H1341** 46025 | | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | C | 4 | A4 |
| **Bi2-M08E-AN6X-H1341** 4602952 | | 2 | 3-wire DC NPN | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CBP | PP-GF20 | N/A | YE | B | 3 | A4 |
| **Bi2-M08E-AP6X-H1341** 4602955 | | 2 | 3-wire DC PNP | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CBP | PP-GF20 | N/A | YE | B | 4 | A4 |
| **Bi1.5U-EG08-AN6X-H1341** 4600550 | Uprox | 1.5 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤150 | -30 to +85 | IP67 | SS | PA 12 | N/A | YE | A | 3 | A4 |
| **Bi1.5U-EG08-AP6X-H1341** 4600540 | Uprox | 1.5 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤150 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | A | 4 | A4 |
| **Bi1.5U-EG08-AP6X-H1341/S1589** 46005401 | Uprox, Weldguard | 1.5 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤150 | -30 to +85 | IP67 | SS | WG | N/A | YE | A | 4 | A4 |
| **Bi1.5U-EGT08-AP6X-H1341** 4600555 | Uprox, PTFE | 1.5 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤150 | -30 to +85 | IP67 | TC | TC | N/A | YE | A | 4 | A4 |
| **Bi1.5-EG08-AD6X-H1341** 4600203 | | 1.5 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 2 | A2 |
| **Bi1.5-EG08-AN6X-H1341** 4602360 | | 1.5 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 3 | A4 |
| **Bi1.5-EG08-AP6X-H1341** 4602260 | | 1.5 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 4 | A4 |
| **Bi1.5-G08-AN6X-H1341** 4603700 | | 1.5 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | C | 3 | A4 |
| **Bi1.5-G08-AN7X-H1341** 4701126 | TTL Compatible | 1.5 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | C | 3 | A4 |
| **Bi1.5-G08-AP6X-H1341** 4603600 | | 1.5 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | C | 4 | A4 |



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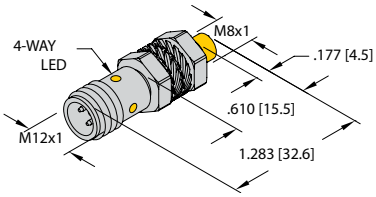
# Inductive Barrel Sensors | 8 mm

## Nonembeddable Threaded Metal Barrels with Connector and DC Outputs

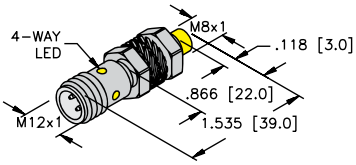
| Housing Style | Dimension Drawings |
|---|---|

A



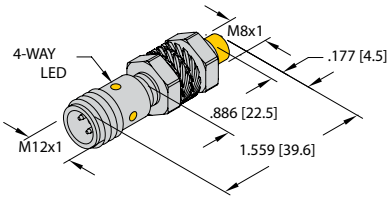

8 mm - Nonembeddable, Miniature Threaded, M12 Eurofast Quick Disconnect

B



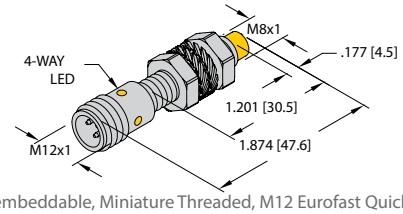

8 mm - Nonembeddable, Miniature Threaded, M12 Eurofast Quick Disconnect

C




8 mm - Nonembeddable, Miniature Threaded, M12 Eurofast Quick Disconnect

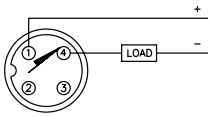
D




8 mm - Nonembeddable, Miniature Threaded, M12 Eurofast Quick Disconnect

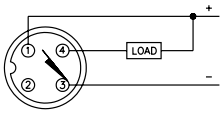
### Wiring Diagrams/Mating Cordsets

1



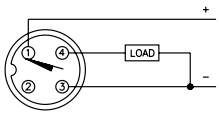

Mating Cordset: RK 4.23T-*

2




Mating Cordset: RK 4T-*

3




Mating Cordset: RK 4T-*

### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

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# Inductive Barrel Sensors | 8 mm

## Nonembeddable Threaded Metal Barrels with Connector and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni5-M08-AN6X-H1341** 4602925 | | 5 | 3-wire DC NPN | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | D | 2 | A4 |
| **Ni5-M08-AP6X-H1341** 4602922 | | 5 | 3-wire DC PNP | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | D | 3 | A4 |
| **Ni5-M08KK-AN6X-H1341** 4602950 | Short Barrel | 5 | 3-wire DC NPN | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | A | 2 | A4 |
| **Ni5-M08KK-AP6X-H1341** 4602947 | Short Barrel | 5 | 3-wire DC PNP | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | A | 3 | A4 |
| **Ni4-EG08K-AG41X-H1341** 4561011 | | 4 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | B | 1 | A2 |
| **Ni4-EG08K-AG41X-H1341/S1589** 4561090 | Weldguard | 4 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | SS | WG | N/A | YE | B | 1 | A2 |
| **Ni3-EG08K-AN6X-H1341** 4669760 | | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | B | 2 | A4 |
| **Ni3-EG08K-AP6X-H1341** 4669660 | | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | B | 3 | A4 |
| **Ni3-M08K-AN6X-H1341** 4602848 | | 3 | 3-wire DC NPN | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | C | 2 | A4 |
| **Ni3-M08K-AP6X-H1341** 4602852 | | 3 | 3-wire DC PNP | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | C | 3 | A4 |



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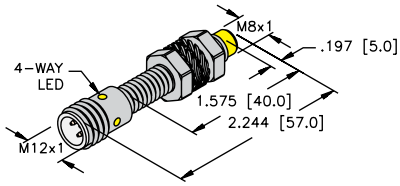
# Inductive Barrel Sensors | 8 mm

## Nonembeddable Threaded Metal Barrels with Connector and DC Outputs

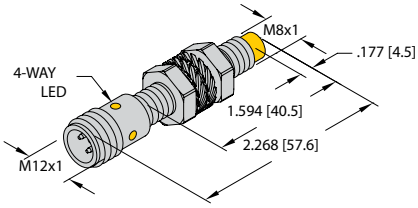
| Housing Style | Dimension Drawings |
|---|---|

A



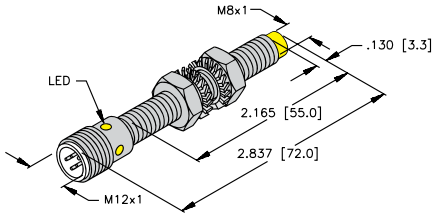

8 mm - Nonembeddable, Miniature Threaded, M12 Eurofast Quick Disconnect

B




8 mm - Nonembeddable, Miniature Threaded, M12 Eurofast Quick Disconnect

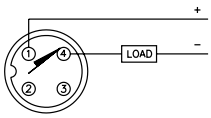
C




8 mm - Nonembeddable, Miniature Threaded, M12 Eurofast Quick Disconnect

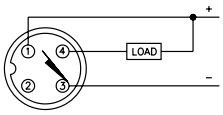
### Wiring Diagrams/Mating Cordsets

1



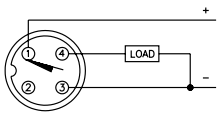

Mating Cordset: RK 4.23T-*; RK 4.23T-*/S1587

2




Mating Cordset: RK 4T-*;

3




Mating Cordset: RK 4T-*; RK 4T-*/S1587

### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 8 mm

## Nonembeddable Threaded Metal Barrels with Connector and DC Outputs

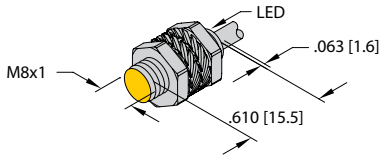
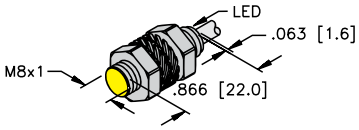
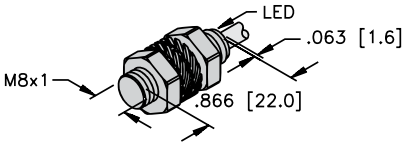
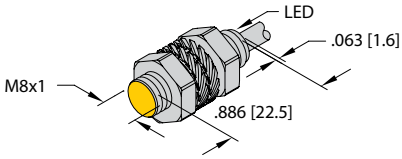
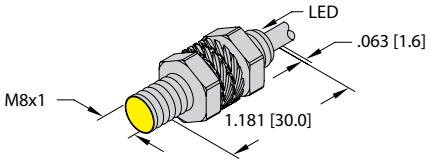
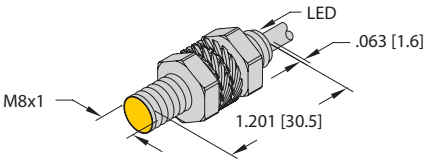
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni6U-EG08-AN6X-H1341** 4635805 | Uprox+ | 6 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤150 | 0 to +70 | IP68 | SS | LCP | N/A | YE | A | 2 | A4 |
| **Ni6U-EG08-AP6X-H1341** 4635802 | Uprox+ | 6 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤150 | 0 to +70 | IP68 | SS | LCP | N/A | YE | A | 3 | A4 |
| **Ni4U-EG08-AN6X-H1341** 4600650 | Uprox | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤150 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | A | 2 | A4 |
| **Ni4U-EG08-AP6X-H1341** 4600640 | Uprox | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤150 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | A | 3 | A4 |
| **Ni4U-EG08-AP6X-H1341/S1589** 4600641 | Uprox, Weldguard | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤150 | -30 to +85 | IP67 | SS | WG | N/A | YE | A | 3 | A4 |
| **Ni4-EG08-AG41X-H1341** 4561001 | | 4 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 1 | A2 |
| **Ni4-EG08-AG41X-H1341/S1589** 4561091 | Weldguard | 4 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | SS | WG | N/A | YE | A | 1 | A2 |
| **Ni3-EG08-AN6X-H1341** 4602860 | | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 2 | A4 |
| **Ni3-EG08-AN7X-H1341** 4669761 | TTL Compatible | 3 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 2 | A4 |
| **Ni3-EG08-AP6X-H1341** 4602760 | | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 3 | A4 |
| **Ni3-EG08-AP6X-H1341/S1589** 4602799 | Weldguard | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | WG | N/A | YE | A | 3 | A4 |
| **Ni3-M08E-AN6X-H1341** 4602832 | | 3 | 3-wire DC NPN | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | B | 2 | A4 |
| **Ni3-M08E-AP6X-H1341** 4602835 | | 3 | 3-wire DC PNP | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | B | 3 | A4 |
| **Ni3-G08-AN6X-H1341** 4602704 | | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | C | 2 | A4 |
| **Ni3-G08-AP6X-H1341** 4602705 | | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | C | 3 | A4 |
| **Ni2-G08-AN6X-H1341** 46033 | | 2 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | C | 2 | A4 |
| **Ni2-G08-AP6X-H1341** 46032 | | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | C | 3 | A4 |



We reserve the right to make technical alterations without prior notice.

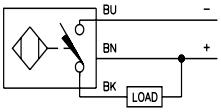
# Inductive Barrel Sensors | 8 mm

**Embeddable Threaded Metal Barrels with Cable and DC Outputs**

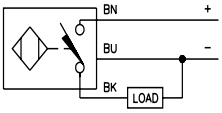
| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   8 mm - Embeddable, Miniature Threaded Barrel, Potted-In Cable | B   8 mm - Embeddable, Miniature Threaded Barrel, Potted-In Cable |
| C   8 mm - Embeddable, Miniature Threaded Barrel, Potted-In Cable, PTFE Coated | D   8 mm - Embeddable, Miniature Threaded Barrel, Potted-In Cable | E   8 mm - Embeddable, Miniature Threaded Barrel, Potted-In Cable |
| F   8 mm - Embeddable, Miniature Threaded Barrel, Potted-In Cable | | |

**Wiring Diagrams/Mating Cordsets**

1




2




**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 8 mm

## Embeddable Threaded Metal Barrels with Cable and DC Outputs

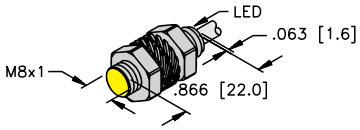
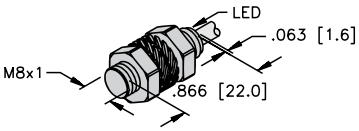
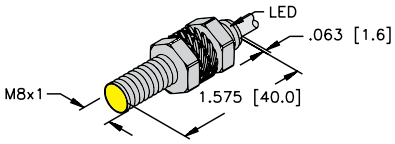
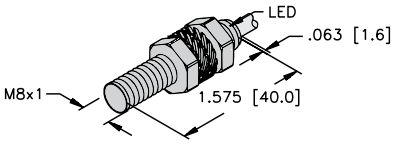
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi3U-EM08-AN6X** 4602421 | Uprox3 | 3 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤150 | 0 to +60 | IP68 | SS | PA 12 | N/A | YE | 2M/TPU | E | 1 | A4 |
| **Bi3U-EM08-AP6X** 4602411 | Uprox3 | 3 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤150 | 0 to +60 | IP68 | SS | PA 12 | N/A | YE | 2M/TPU | E | 2 | A4 |
| **Bi3-M08-AN6X** 4602913 | | 3 | 3-wire DC NPN | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CBP | PP-GF20 | N/A | YE | 2M/TPU | F | 1 | A4 |
| **Bi3-M08-AP6X** 4602910 | | 3 | 3-wire DC PNP | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CBP | PP-GF20 | N/A | YE | 2M/TPU | F | 2 | A4 |
| **Bi3-M08KK-AN6X** 4602941 | Short Barrel | 3 | 3-wire DC NPN | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CBP | PP-GF20 | N/A | YE | 2M/TPU | A | 1 | A4 |
| **Bi3-M08KK-AP6X** 4602938 | Short Barrel | 3 | 3-wire DC PNP | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CBP | PP-GF20 | N/A | YE | 2M/TPU | A | 2 | A4 |
| **Bi2-EG08K-AN6X** 4669500 | | 2 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | B | 1 | A4 |
| **Bi2-EG08K-AN6X/S1589** 4669587 | Weldguard | 2 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | WG | N/A | YE | 2M/TPU | B | 1 | A4 |
| **Bi2-EG08K-AP6X** 4669400 | | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | B | 2 | A4 |
| **Bi2-EG08K-AP6X/S97** 4669413 | Low Temp. -40 °C | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -40 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | B | 2 | A4 |
| **Bi2-EGT08K-AP6X** 4602541 | PTFE | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | TC | TC | N/A | YE | 2M/TPU | C | 2 | A4 |
| **Bi2-EGT08K-AP6X/S100** 4602544 | PTFE, High Temp. 100 °C | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +100 | IP67 | TC | TC | N/A | YE | 2M/TPU | C | 2 | A4 |
| **Bi2-EGT08K-AP6X/S1589** 46025413 | PTFE, Weldguard | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | TC | WG | N/A | YE | 2M/TPU | C | 2 | A4 |
| **Bi2-M08K-AN6X** 4602963 | | 2 | 3-wire DC NPN | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CBP | PP-GF20 | N/A | YE | 2M/TPU | D | 1 | A4 |
| **Bi2-M08K-AP6X** 4602966 | | 2 | 3-wire DC PNP | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CBP | PP-GF20 | N/A | YE | 2M/TPU | D | 2 | A4 |
| **Bi1.5-EG08K-AN6X** 4669140 | | 1.5 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | B | 1 | A4 |
| **Bi1.5-EG08K-AP6X** 4669040 | | 1.5 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | B | 2 | A4 |
| **Bi1.5-EG08K-AP6/S100** 4669016 | High Temp. 100 °C | 1.5 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +100 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | B | 2 | A4 |

**Note:** Reference sensor data sheet for considerations if mounting a BI3-M08 sensor flush in steel.

We reserve the right to make technical alterations without prior notice.

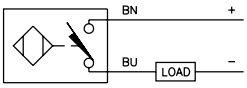
# Inductive Barrel Sensors | 8 mm

## Embeddable Threaded Metal Barrels with Cable and 2-Wire Outputs

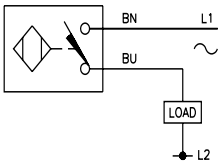
| Housing Style | Dimension Drawings | |
|---|---|---|
| | A<br>  <br><br>8 mm - Embeddable, Miniature Threaded Barrel, Potted-In Cable | B<br>  <br><br>8 mm - Embeddable, Miniature Threaded Barrel, Potted-In Cable, PTFE Coated |
| C<br>  <br><br>8 mm - Embeddable, Miniature Threaded Barrel, Potted-In Cable | D<br>  <br><br>8 mm - Embeddable, Miniature Threaded Barrel, Potted-In Cable, PTFE Coated | |

### Wiring Diagrams/Mating Cordsets

1




2




### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A6 — 2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Inrush Current: | ≤8 A (≤10 ms max. 5 Hz) |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Power-On Effect: | Per IEC 947-5-2 |
| | AC: ≤100 mA; DC: ≤100 mA | Transient Protection: | Per EN 60947-5-2 |
| Off-State (Leakage) Current: | ≤1.7 mA | Shock: | 30 g, 11 ms |
| Minimum Load Current: | ≥3.0 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 8 mm

## Embeddable Threaded Metal Barrels with Cable and 2-Wire Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi2-EG08-AG41X** 4562000 | | 2 | 2-wire DC | 10-55 VDC | 1000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | C | 1 | A2 |
| **Bi2-EG08-AG41X/S1589** 4562088 | Weldguard | 2 | 2-wire DC | 10-55 VDC | 1000 | ≤100 | -25 to +70 | IP67 | SS | WG | N/A | YE | 2M/TPU | C | 1 | A2 |
| **Bi2-EG08-AZ14X** 4100001 | | 2 | 2-wire AC/DC | 20-132 VAC/10-140 VDC | 20 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | C | 2 | A6 |
| **Bi2-EGT08-AG41X** 4602540 | PTFE | 2 | 2-wire DC | 10-55 VDC | 1000 | ≤100 | -25 to +70 | IP67 | TC | PA 12 | N/A | YE | 2M/TPU | D | 1 | A2 |
| **Bi2-EGT08-AG41X/S1589** 46020003 | PTFE, Weldguard | 2 | 2-wire DC | 10-55 VDC | 1000 | ≤100 | -25 to +70 | IP67 | TC | WG | N/A | YE | 2M/TPU | D | 1 | A2 |
| **Bi2-EG08K-AG41X** 4562010 | | 2 | 2-wire DC | 10-55 VDC | 1000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | A | 1 | A2 |
| **Bi2-EG08K-AG41X/S1589** 4562091 | Weldguard | 2 | 2-wire DC | 10-55 VDC | 1000 | ≤100 | -25 to +70 | IP67 | SS | WG | N/A | YE | 2M/TPU | A | 1 | A2 |
| **Bi2-EGT08K-AG41X** 4602545 | PTFE | 2 | 2-wire DC | 10-55 VDC | 1000 | ≤100 | -25 to +70 | IP67 | TC | PA 12 | N/A | YE | 2M/TPU | B | 1 | A2 |



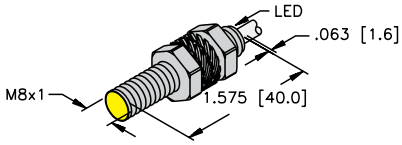
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 8 mm

## Embeddable Threaded Metal Barrels with Cable and DC Outputs

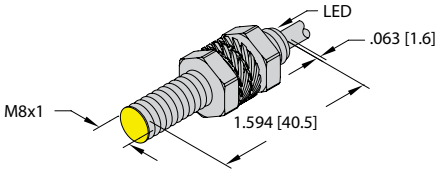
| Housing Style | Dimension Drawings |
|---|---|

A



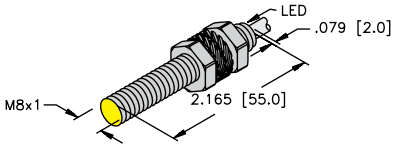

8 mm - Embeddable, Miniature Threaded Barrel, Potted-In Cable

B




8 mm - Embeddable, Miniature Threaded Barrel, Potted-In Cable

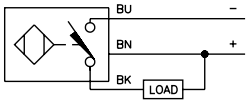
C



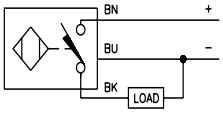

8 mm - Embeddable, Miniature Threaded Barrel, Potted-In Cable

### Wiring Diagrams/Mating Cordsets

1




2

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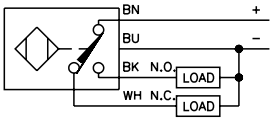



### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current |
| | ≥170 mA on 150 mA Load Current |
| | ≥120 mA on 100 mA Load Current |
| Off-State (Leakage) Current: | ≤0.1 mA |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) |
| | ≤20 mA (Uprox+, Uprox3) |
| Time Delay Before Availability: | ≤8 ms |
| Power-On Effect: | Per IEC 947-5-2 |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Transient Protection: | Per EN 60947-5-2 |
| Temperature Drift: | ≤±10% |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 8 mm

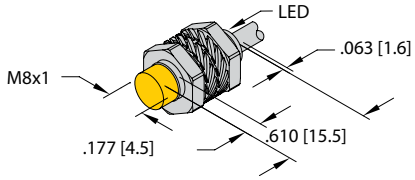
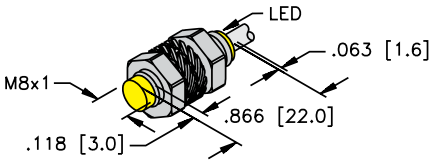
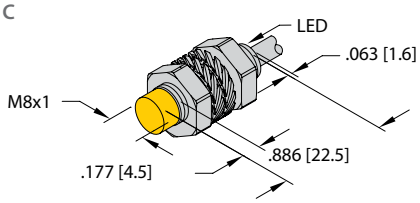
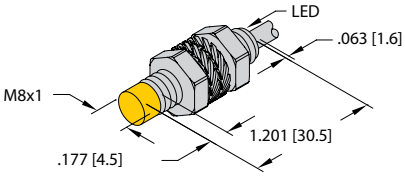
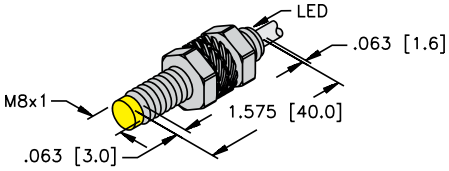
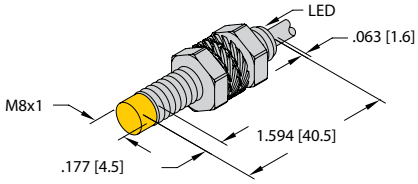
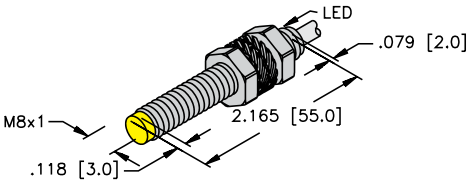
## Embeddable Threaded Metal Barrels with Cable and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi2U-EG08-AN6X** 4602035 | Uprox | 2 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤150 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | 2M/TPU | A | 1 | A4 |
| **Bi2U-EG08-AP6X** 4602032 | Uprox | 2 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤150 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | 2M/TPU | A | 2 | A4 |
| **Bi2-EG08-AN6X** 4602140 | Extended Range | 2 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | A | 1 | A4 |
| **Bi2-EG08-AP6X** 4602040 | Extended Range | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | A | 2 | A4 |
| **Bi2-EG08-AP6X/S100** 4602047 | High Temp. 100 °C | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +100 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | A | 2 | A4 |
| **Bi2-EG08-AP6X/S1589** 4602085 | Weldguard | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | WG | N/A | YE | 2M/TPU | A | 2 | A4 |
| **Bi2-EG08-VP6X** 1604610 | Comp. Outputs | 2 | 4-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | A | 3 | A4 |
| **Bi2-G08-AN6X** 46021 | Extended Range | 2 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | C | 1 | A4 |
| **Bi2-G08-AP6X** 46020 | Extended Range | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | C | 2 | A4 |
| **Bi2-M08E-AN6X** 4602951 | | 2 | 3-wire DC NPN | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CBP | PP-GF20 | N/A | YE | 2M/TPU | B | 1 | A4 |
| **Bi2-M08E-AP6X** 4602954 | | 2 | 3-wire DC PNP | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CBP | PP-GF20 | N/A | YE | 2M/TPU | B | 2 | A4 |
| **Bi1.5U-EG08-AN6X** 4600510 | Uprox | 1.5 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤150 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | 2M/TPU | A | 1 | A4 |
| **Bi1.5U-EG08-AP6X** 4600500 | Uprox | 1.5 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤150 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | 2M/TPU | A | 2 | A4 |
| **Bi1.5-EG08-AN6X** 4602340 | | 1.5 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | A | 1 | A4 |
| **Bi1.5-EG08-AN7X** 1766110 | TTL Compatible | 1.5 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | A | 1 | A4 |
| **Bi1.5-EG08-AP6X** 4602240 | | 1.5 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | A | 2 | A4 |
| **Bi1.5-G08-AN6X** 46023 | | 1.5 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | C | 1 | A4 |
| **Bi1.5-G08-AP6X** 46022 | | 1.5 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | C | 2 | A4 |

We reserve the right to make technical alterations without prior notice.

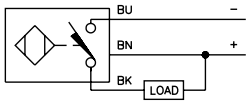
# Inductive Barrel Sensors | 8 mm

## Nonembeddable Threaded Metal Barrels with Cable and DC Outputs

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   8 mm - Nonembeddable, Miniature Threaded Barrel, Potted-In Cable | B   8 mm - Nonembeddable, Miniature Threaded Barrel, Potted-In Cable |
| C   8 mm - Nonembeddable, Miniature Threaded Barrel, Potted-In Cable | D   8 mm - Nonembeddable, Miniature Threaded Barrel, Potted-In Cable | E   8 mm - Nonembeddable, Miniature Threaded Barrel, Potted-In Cable |
| F   8 mm - Nonembeddable, Miniature Threaded Barrel, Potted-In Cable | G   8 mm - Nonembeddable, Miniature Threaded Barrel, Potted-In Cable | |

### Wiring Diagrams/Mating Cordsets

1

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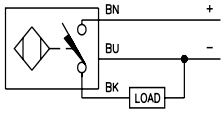



### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current |
| | ≥170 mA on 150 mA Load Current |
| | ≥120 mA on 100 mA Load Current |
| Off-State (Leakage) Current: | ≤0.1 mA |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) |
| | ≤20 mA (Uprox+, Uprox3) |
| Time Delay Before Availability: | ≤8 ms |
| Power-On Effect: | Per IEC 947-5-2 |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Transient Protection: | Per EN 60947-5-2 |
| Temperature Drift: | ≤±10% |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 8 mm

## Nonembeddable Threaded Metal Barrels with Cable and DC Outputs

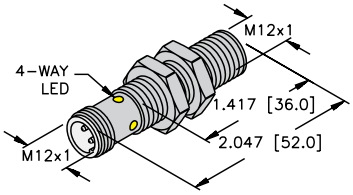
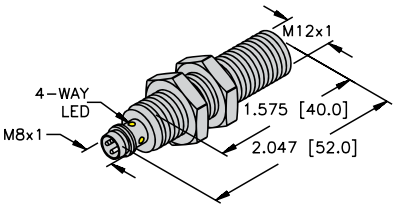
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni6U-EG08-AN6X** 4635803 | Uprox+ | 6 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤150 | 0 to +70 | IP68 | SS | LCP | N/A | YE | 2M/TPU | E | 1 | A4 |
| **Ni6U-EG08-AP6X** 4635800 | Uprox+ | 6 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤150 | 0 to +70 | IP68 | SS | LCP | N/A | YE | 2M/TPU | E | 2 | A4 |
| **Ni5-M08-AN6X** 4602923 | | 5 | 3-wire DC NPN | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | 2M/TPU | D | 1 | A4 |
| **Ni5-M08-AP6X** 4602920 | | 5 | 3-wire DC PNP | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | 2M/TPU | D | 2 | A4 |
| **Ni5-M08KK-AN6X** 4602948 | Short Barrel | 5 | 3-wire DC NPN | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | 2M/TPU | A | 1 | A4 |
| **Ni5-M08KK-AP6X** 4602944 | Short Barrel | 5 | 3-wire DC PNP | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | 2M/TPU | A | 2 | A4 |
| **Ni4U-EG08-AN6X** 4600610 | Uprox | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤150 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | 2M/TPU | E | 1 | A4 |
| **Ni4U-EG08-AP6X** 4600600 | Uprox | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤150 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | 2M/TPU | E | 2 | A4 |
| **Ni3-EG08-AN6X** 4602840 | | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | E | 1 | A4 |
| **Ni3-EG08-AN6X/S1589** 4602888 | Weldguard | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | WG | N/A | YE | 2M/TPU | E | 1 | A4 |
| **Ni3-EG08-AN7X** 4669759 | TTL Compatible | 3 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | E | 1 | A4 |
| **Ni3-EG08-AP6X** 4602740 | | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | E | 2 | A4 |
| **Ni3-EG08-AP6X/S1589** 4602789 | Weldguard | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | WG | N/A | YE | 2M/TPU | E | 2 | A4 |
| **Ni3-EG08K-AN6X** 4669700 | | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | B | 1 | A4 |
| **Ni3-EG08K-AP6X** 4669600 | | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | B | 2 | A4 |
| **Ni3-G08-AN6X** 46028 | | 3 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | G | 1 | A4 |
| **Ni3-G08-AP6X** 46027 | | 3 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | G | 2 | A4 |
| **Ni3-M08E-AN6X** 4602831 | | 3 | 3-wire DC NPN | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | 2M/TPU | F | 1 | A4 |
| **Ni3-M08E-AP6X** 4602834 | | 3 | 3-wire DC PNP | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | 2M/TPU | F | 2 | A4 |
| **Ni3-M08K-AN6X** 4602847 | | 3 | 3-wire DC NPN | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | 2M/TPU | C | 1 | A4 |
| **Ni3-M08K-AP6X** 4602851 | | 3 | 3-wire DC PNP | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | 2M/TPU | C | 2 | A4 |
| **Ni2-G08-AN6X** 4601300 | | 2 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | G | 1 | A4 |
| **Ni2-G08-AP6X** 46012 | | 2 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | G | 2 | A4 |



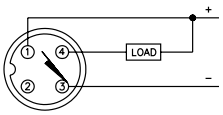
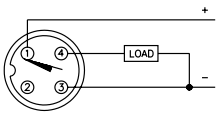
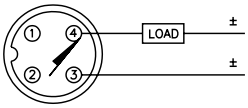
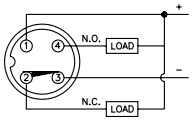
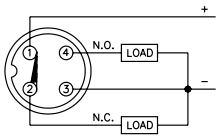
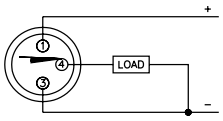
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

## Embeddable Threaded Metal Barrels with Connector and DC Outputs

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   12 mm - Embeddable, M12 Eurofast Connection | B   12 mm - Embeddable, M8 Picofast Connection |

**Wiring Diagrams/Mating Cordsets**

| | | |
|---|---|---|
| 1   Mating Cordset: RK 4T-*; RKV 4T-* | 2   Mating Cordset: RK 4T-*; RKV 4T-* | 3   Mating Cordset: RK 4.2T-* |
| 4   Mating Cordset: RK 4.4T-* | 5   Mating Cordset: RK 4.4T-*; RKV 4.4T-* | 6   Mating Cordset: PKG 3M-* |

**A2 — 2-wire DC - (AD, RD, AG)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

**A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

## Embeddable Threaded Metal Barrels with Connector and DC Outputs

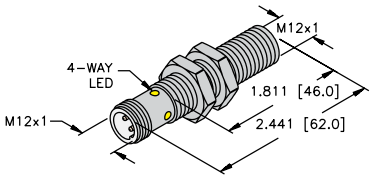
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi6U-M12-AN6X-H1141** 1644808 | Uprox3 | 6 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP68 | CPB | LCP | N/A | YE | A | 1 | A4 |
| **Bi6U-M12-AP6X-H1141** 1644810 | Uprox3 | 6 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP68 | CPB | LCP | N/A | YE | A | 2 | A4 |
| **Bi6U-M12-VP6X-H1141** 1644805 | Uprox3, Comp. Outputs | 6 | 4-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP68 | CPB | LCP | N/A | YE | A | 5 | A4 |
| **Bi4U-EM12-AN6X-H1141** 1634827 | Uprox+ | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | SS | LCP | N/A | YE | A | 1 | A4 |
| **Bi4U-M12-AN6X-H1141** 1634824 | Uprox+ | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | A | 1 | A4 |
| **Bi4U-EM12-AP6X-H1141** 1634807 | Uprox+ | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | SS | LCP | N/A | YE | A | 2 | A4 |
| **Bi4U-M12-AP6X-H1141** 1634804 | Uprox+ | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | A | 2 | A4 |
| **Bi4U-M12-AP6X-V1131** 1634780 | Uprox+ | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | B | 6 | A4 |
| **Bi4-M12-AN6X-H1141** 4607100 | Extended Range | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A4 |
| **Bi4-M12-AP6X-H1141** 46070 | Extended Range | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 2 | A4 |
| **Bi4-M12-VN6X-H1141** 1643200 | Ext. Range, Comp. Outputs | 4 | 4-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 4 | A4 |
| **Bi4-M12-VP6X-H1141** 1633200 | Ext. Range, Comp. Outputs | 4 | 4-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 5 | A4 |
| **Bi4-EM12-VP6X-H1141** 1633201 | Ext. Range, Comp. Outputs | 4 | 4-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 5 | A4 |
| **Bi3U-EM12-AN6X-H1141** 1634350 | Uprox | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | A | 1 | A4 |
| **Bi3U-M12-AN6X-H1141** 1634150 | Uprox | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A4 |
| **Bi3U-EM12-AP6X-H1141** 1634340 | Uprox | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | A | 2 | A4 |
| **Bi3U-M12-AP6X-H1141** 1634140 | Uprox | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP67 | CPB | PA 12 | N/A | YE | A | 2 | A4 |
| **Bi3-M12-AD4X-H1141** 4405041 | | 3 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 3 | A2 |
| **Bi2-M12-AD4X-H1141** 44065 | | 2 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 3 | A2 |
| **Bi2-EM12-AN6X-H1141** 4606601 | | 2 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 1 | A4 |
| **Bi2-M12-AN6X-H1141** 46066 | | 2 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A4 |
| **Bi2-EM12-AP6X-H1141** 4606501 | | 2 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 2 | A4 |
| **Bi2-M12-AP6X-H1141** 46065 | | 2 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 2 | A4 |
| **Bi2-M12-VN6X-H1141** 16430 | Comp. Outputs | 2 | 4-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 4 | A4 |
| **Bi2-M12-VP6X-H1141** 16330 | Comp. Outputs | 2 | 4-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 5 | A4 |



We reserve the right to make technical alterations without prior notice.

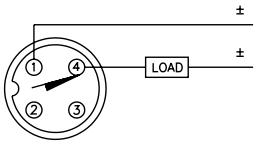
# Inductive Barrel Sensors | 12 mm

## Embeddable Threaded Metal Barrels with Connector and DC Outputs

| Housing Style | Dimension Drawings |
|---|---|
| | A   12 mm - Embeddable, M12 Eurofast Connection, Extended Barrel Length |

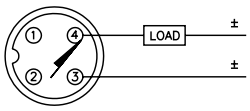
### Wiring Diagrams/Mating Cordsets

1



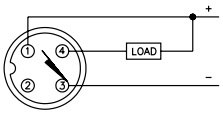

Mating Cordset: RK 4.23T-*

2



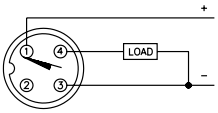

Mating Cordset: RK 4.2T-*

3



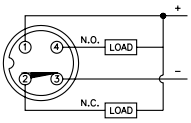

Mating Cordset: RK 4T-*; RKC 4T-*/S1587

4



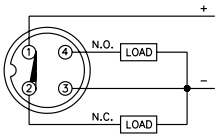

Mating Cordset: RK 4T-*; RKC 4T-*/S1587

5




Mating Cordset: RK 4.4T-*

6




Mating Cordset: RK 4.4T-*

### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

## Embeddable Threaded Metal Barrels with Connector and DC Outputs

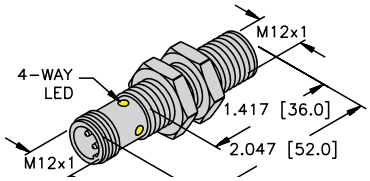
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi4-M12E-AN6X-H1141** 4607193 | Extended Range | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 3 | A4 |
| **Bi4-EM12E-AN6X-H1141/S1589** 4607185 | Ext. Range, Weldguard | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | SS | WG | N/A | YE | A | 3 | A4 |
| **Bi4-M12E-AP6X-H1141** 4608030 | Extended Range | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 4 | A4 |
| **Bi4-EM12E-AP6X-H1141/S1589** 4607184 | Ext. Range, Weldguard | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | SS | WG | N/A | YE | A | 4 | A4 |
| **Bi4-M12E-VN6X-H1141** 1643201 | Extended Range | 4 | 4-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 5 | A4 |
| **Bi4-M12E-VP6X-H1141** 4608092 | Extended Range | 4 | 4-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 6 | A4 |
| **Bi3U-EM12E-AN6X-H1141** 1634351 | Uprox | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | A | 3 | A4 |
| **Bi3U-EM12HE-AN6X2-H1141** 1634311 | Uprox, Stoneface | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP68 | SS | PA 12 | GN | YE | A | 3 | A4 |
| **Bi3U-EM12E-AN6X2-H1141/S1589** 1634397 | Uprox, Weldguard | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP68 | SS | WG | GN | YE | A | 3 | A4 |
| **Bi3U-M12E-AP6X-H1141** 1634148 | Uprox | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP67 | CPB | PA 12 | N/A | YE | A | 4 | A4 |
| **Bi3U-EM12HE-AP6X2-H1141** 1634310 | Uprox, Stoneface | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP68 | SS | SF | GN | YE | A | 4 | A4 |
| **Bi3U-EM12E-AP6X2-H1141/S1589** 1634398 | Uprox, Weldguard | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP68 | SS | WG | GN | YE | A | 4 | A4 |
| **Bi3U-M12E-AN6X-H1141** 1634151 | Uprox | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP67 | CPB | PA 12 | N/A | YE | A | 3 | A4 |
| **Bi3U-EM12E-AP6X-H1141** 1634343 | Uprox | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | A | 4 | A4 |
| **Bi3U-M12E-VN4X-H1141** 1580354 | Uprox | 3 | 4-wire DC NPN | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP67 | CPB | PA 12 | N/A | YE | A | 5 | A4 |
| **Bi3U-M12E-VP4X-H1141** 1580252 | Uprox | 3 | 4-wire DC PNP | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP67 | CPB | PA 12 | N/A | YE | A | 6 | A4 |
| **Bi3-M12E-AD4X-H1141** 4405080 | | 3 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 2 | A2 |
| **Bi2U-M12E-AD4X-H1144** 4405060 | Uprox | 2 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | A | 1 | A2 |
| **Bi2-M12E-AN6X-H1141** 4606602 | | 2 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 3 | A4 |



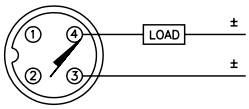
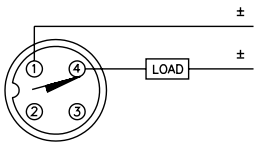
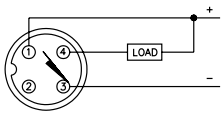
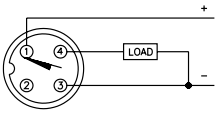
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

**Embeddable Threaded PTFE Coated Metal Barrels with Connector and DC Outputs**

| Housing Style | Dimension Drawings |
|---|---|
| | A   12 mm - Embeddable, M12 Eurofast Connection, PTFE Coated Sensors |

**Wiring Diagrams s/Mating Cordset**

| | |
|---|---|
| 1   Mating Cordset: RK 4.2T-* | 2   Mating Cordset: RK 4.23T-* |
| 3   Mating Cordset: RK 4T-*; RKC 4T-*/S1587 | 4   Mating Cordset: RK 4T-*; RKC 4T-*/S1587 |

**A2 — 2-wire DC - (AD, RD, AG)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

**A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

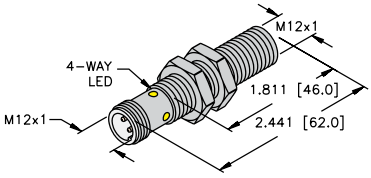
## Embeddable Threaded PTFE Coated Metal Barrels with Connector and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi6U-MT12-AN6X-H1141** 1644858 | Uprox3, PTFE | 6 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP68 | TC | TC | N/A | YE | A | 3 | A4 |
| **Bi6U-MT12-AP6X-H1141** 1644831 | Uprox3, PTFE | 6 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP68 | TC | TC | N/A | YE | A | 4 | A4 |
| **Bi6U-MT12-AP6X2-H1141** 1644904 | Uprox3, PTFE | 6 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP68 | TC | TC | GN | YE | A | 4 | A4 |
| **Bi4U-MT12-AN6X-H1141** 1634829 | Uprox+, PTFE | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | TC | TC | N/A | YE | A | 3 | A4 |
| **Bi4U-MT12-AN6X-H1141/S1589** 16348290 | Uprox+, PTFE, Weldguard | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | TC | WG | N/A | YE | A | 3 | A4 |
| **Bi4U-MT12-AP6X-H1141** 1634809 | Uprox+, PTFE | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | TC | TC | N/A | YE | A | 4 | A4 |
| **Bi4-MT12H-AN6X-H1141** 4607194 | Ext. Range, PTFE, Stoneface | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | TC | SF | N/A | YE | A | 3 | A4 |
| **Bi4-MT12-AN6X-H1141/S1589** 4607188 | Ext. Range, PTFE, Weldguard | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | TC | WG | N/A | YE | A | 3 | A4 |
| **Bi4-MT12H-AP6X-H1141** 4607093 | Ext. Range, PTFE, Stoneface | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | TC | SF | N/A | YE | A | 4 | A4 |
| **Bi4-MT12-AP6X-H1141/S1589** 4607099 | Ext. Range, PTFE, Weldguard | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | TC | WG | N/A | YE | A | 4 | A4 |
| **Bi3U-MT12-AN6X-H1141** 1634250 | Uprox, PTFE | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP67 | TC | TC | N/A | YE | A | 3 | A4 |
| **Bi3U-MT12-AP6X-H1141** 1634240 | Uprox, PTFE | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP67 | TC | TC | N/A | YE | A | 4 | A4 |
| **Bi3U-MT12-AP6X2-H1141** 1634245 | Uprox, PTFE | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP67 | TC | TC | GN | YE | A | 4 | A4 |
| **Bi3U-MT12H-AP6X-H1141** 1634212 | Uprox, PTFE, Stoneface | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP67 | TC | TC | N/A | YE | A | 4 | A4 |
| **Bi3U-MT12-AP6X2-H1141/S1589** 1634293 | Uprox, PTFE, Weldguard | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP67 | TC | WG | GN | YE | A | 4 | A4 |
| **Bi3-MT12-AD4X-H1141/S1589** 4405082 | PTFE, Weldguard | 3 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | TC | WG | N/A | YE | A | 1 | A2 |
| **Bi3-MT12-AD4X-H1144/S1589** 4405084 | PTFE, Weldguard | 3 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | TC | WG | N/A | YE | A | 2 | A2 |

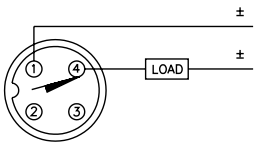
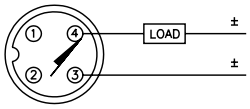
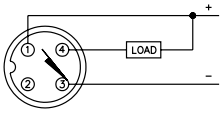
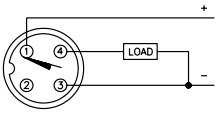
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

## Embeddable Threaded PTFE Coated Metal Barrels with Connector and DC Outputs

| Housing Style | Dimension Drawings |
|---|---|
| | A   12 mm - Embeddable, M12 Eurofast Connection, Extended Barrel Length, PTFE Coated Sensors |

### Wiring Diagrams/Mating Cordset

| | |
|---|---|
| 1   Mating Cordset: RK 4.23T-* | 2   Mating Cordset: RK 4.2T-* |
| 3   Mating Cordset: RK 4T-*; RKC 4T-*/S1587 | 4   Mating Cordset: RK 4T-*; RKC 4T-*/S1587 |

### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

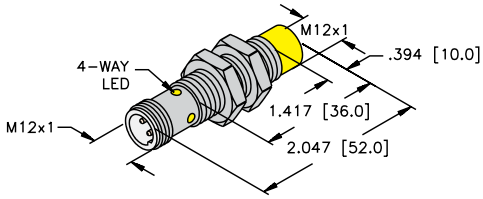
## Embeddable Threaded PTFE Coated Metal Barrels with Connector and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi4U-MT12E-AP6X2-H1141** 1644742 | Uprox+ | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | TC | TC | GN | YE | A | 4 | A4 |
| **Bi4U-MT12E-AP6X2-H1141/S1589** 1644797 | Uprox+, PTFE, Weldguard | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | TC | WG | N/A | YE | A | 4 | A4 |
| **Bi4-MT12E-AP6X-H1141** 46080932 | Ext. Range, PTFE | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | TC | TC | N/A | YE | A | 4 | A4 |
| **Bi4-MT12HE-AN6X-H1141** 4607197 | Ext. Range, PTFE | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | TC | TC | N/A | YE | A | 3 | A4 |
| **Bi4-MT12HE-AP6X-H1141** 4608093 | Ext. Range, Stoneface | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | TC | TC | N/A | YE | A | 4 | A4 |
| **Bi4-MT12E-AN6X-H1141/S1589** 4607187 | Ext. Range, Weldguard | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | TC | WG | N/A | YE | A | 3 | A4 |
| **Bi4-MT12E-AP6X-H1141/S1589** 4608094 | Ext. Range, Weldguard | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | TC | WG | N/A | YE | A | 4 | A4 |
| **Bi3U-MT12HE-AN6X2-H1141** 1634230 | Uprox, PTFE, Stoneface | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP67 | TC | TC | GN | YE | A | 3 | A4 |
| **Bi3U-MT12E-AN6X2-H1141/S1589** 1634290 | Uprox, Weldguard | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP67 | TC | WG | GN | YE | A | 3 | A4 |
| **Bi3U-MT12HE-AP6X2-H1141** 1634220 | Uprox, PTFE, Stoneface | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP67 | TC | TC | GN | YE | A | 4 | A4 |
| **Bi3U-MT12E-AP6X2-H1141/S1589** 1634291 | Uprox, Weldguard | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP67 | TC | WG | GN | YE | A | 4 | A4 |
| **Bi3-MT12E-AD4X-H1141** 44050882 | PTFE | 3 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | TC | TC | N/A | YE | A | 2 | A2 |
| **Bi3-MT12HE-AD4X-H1141** 4405088 | Stoneface | 3 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | TC | TC | N/A | YE | A | 2 | A2 |
| **Bi3-MT12E-AD4X-H1141/S1589** 4405086 | PTFE, Weldguard | 3 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | TC | WG | N/A | YE | A | 2 | A2 |
| **Bi3-MT12E-AD4X-H1144/S1589** 4405087 | PTFE, Weldguard | 3 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | TC | WG | N/A | YE | A | 2 | A2 |
| **Bi2U-MT12E-AD4X-H1144** 4405061 | Uprox+, PTFE | 2 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -30 to +85 | IP68 | TC | TC | N/A | YE | A | 1 | A2 |

We reserve the right to make technical alterations without prior notice.

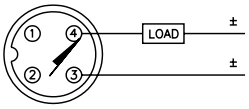
# Inductive Barrel Sensors | 12 mm

## Nonembeddable Threaded Metal Barrels with Connector and DC Outputs

| Housing Style | Dimension Drawings |
|---|---|
| | A   12 mm - Nonembeddable, M12 Eurofast Connection |

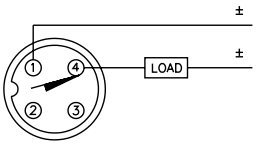
### Wiring Diagrams/Mating Cordsets

1



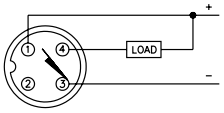

Mating Cordset: RK 4.2T-*

2



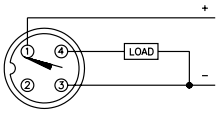

Mating Cordset: RK 4.23T-*

3



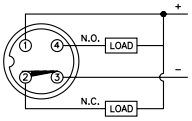

Mating Cordset: RK 4T-*; RKV 4T-*

4



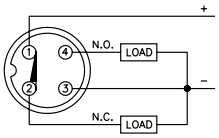

Mating Cordset: RK 4T-*; RKV 4T-*

5




Mating Cordset: RK 4.4T-*

6




Mating Cordset: RK 4.4T-*RKV 4.4T-*

### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

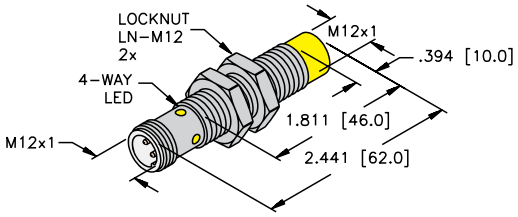
## Nonembeddable Threaded Metal Barrels with Connector and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni10U-M12-AN6X-H1141** 1634826 | Uprox+ | 10 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | A | 3 | A4 |
| **Ni10U-M12-AP6X-H1141** 1634806 | Uprox+ | 10 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | A | 4 | A4 |
| **Ni10U-EM12-AN6X-H1141** 1634828 | Uprox+ | 10 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | SS | LCP | N/A | YE | A | 3 | A4 |
| **Ni10U-EM12-AP6X-H1141** 1634808 | Uprox+ | 10 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | SS | LCP | N/A | YE | A | 4 | A4 |
| **Ni8U-M12-AN6X-H1141** 1644150 | Uprox | 8 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP67 | CPB | LCP | N/A | YE | A | 3 | A4 |
| **Ni8U-M12-AN6X2-H1141** 1644155 | Uprox | 8 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP67 | CPB | LCP | GN | YE | A | 3 | A4 |
| **Ni8U-M12-AP6X-H1141** 1644140 | Uprox | 8 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP67 | CPB | LCP | N/A | YE | A | 4 | A4 |
| **Ni8U-M12-AP6X2-H1141** 1644145 | Uprox | 8 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP67 | CPB | LCP | GN | YE | A | 4 | A4 |
| **Ni8U-EM12-AN6X-H1141** 1644350 | Uprox | 8 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | SS | LCP | N/A | YE | A | 3 | A4 |
| **Ni8U-EM12-AP6X-H1141** 1644340 | Uprox | 8 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | SS | PBT | N/A | YE | A | 4 | A4 |
| **Ni8-M12-AD4X-H1141** 4411241 | Extended Range | 8 | 2-wire DC | 10-65 VDC | 2000 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A2 |
| **Ni8-M12-AD4X-H1144** 4411289 | Extended Range | 8 | 2-wire DC | 10-65 VDC | 2000 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 2 | A2 |
| **Ni8-M12-AN6X-H1141** 4611315 | Extended Range | 8 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 3 | A4 |
| **Ni8-M12-AP6X-H1141** 4611310 | Extended Range | 8 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 4 | A4 |
| **Ni8-M12-VN6X-H1141** 4611323 | Ext. Range, Comp. Outputs | 8 | 4-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 5 | A4 |
| **Ni8-M12-VP6X-H1141** 4611324 | Ext. Range, Comp. Outputs | 8 | 4-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 6 | A4 |
| **Ni5-M12-AN6X-H1141** 4671390 | | 5 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 3 | A4 |
| **Ni5-M12-AP6X-H1141** 4653400 | | 5 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 4 | A4 |
| **Ni4-M12-AD4X-H1141** 44067 | | 4 | 2-wire DC | 10-65 VDC | 2000 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A2 |
| **Ni4-M12-AN6X-H1141** 46068 | | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 3 | A4 |
| **Ni4-M12-AP6X-H1141** 46067 | | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 4 | A4 |
| **Ni4-EM12-AN7X-H1141** 4606893 | TTL Compatible | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 3 | A4 |
| **Ni4-M12-VN6X-H1141** 16431 | Comp. Outputs | 4 | 4-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 5 | A4 |
| **Ni4-M12-VP6X-H1141** 16331 | Comp. Outputs | 4 | 4-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 6 | A4 |
| **Ni4-EM12-VP6X-H1141** 1633101 | Comp. Outputs | 4 | 4-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 6 | A4 |

We reserve the right to make technical alterations without prior notice.

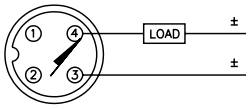
# Inductive Barrel Sensors | 12 mm

## Nonembeddable Threaded Metal Barrels with Connector and DC Outputs

| Housing Style | Dimension Drawings |
|---|---|
| | A   12 mm - Nonembeddable, Extended Barrel Length, M12 Eurofast Connection |

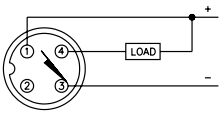
### Wiring Diagrams/Mating Cordsets

1



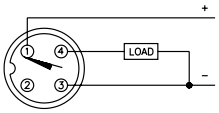

Mating Cordset: RK 4.23T-*

2



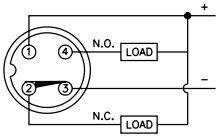

Mating Cordset: RK 4T-*; RKC 4T-*/S1587

3



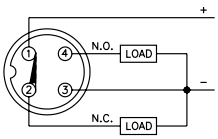

Mating Cordset: RK 4T-*; RKC 4T-*/S1587

4




Mating Cordset: RK 4.4T-*

5




Mating Cordset: RK 4.4T-*; RKV 4.4T-*

### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

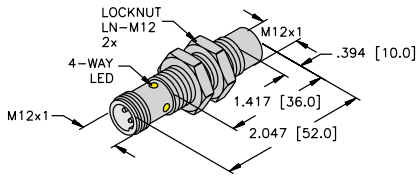
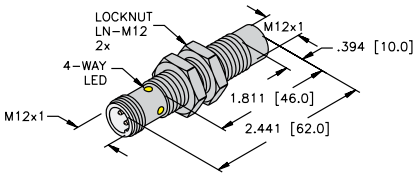
## Nonembeddable Threaded Metal Barrels with Connector and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni8U-M12E-AN6X-H1141** 1644151 | Uprox | 8 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | A | 2 | A4 |
| **Ni8U-EM12E-AN6X2-H1141** 1644315 | Uprox | 8 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | SS | PA 12 | GN | YE | A | 2 | A4 |
| **Ni8U-EM12E-AN6X2-H1141/S1589** 1644391 | Uprox, Weldguard | 8 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | WG | WG | GN | YE | A | 2 | A4 |
| **Ni8U-M12E-AP6X-H1141** 1644144 | Uprox | 8 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP67 | CPB | PA 12 | N/A | YE | A | 3 | A4 |
| **Ni8U-EM12E-AP6X-H1141** 1644342 | Uprox | 8 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | SS | PBT | N/A | YE | A | 3 | A4 |
| **Ni8U-EM12E-AP6X2-H1141** 1644314 | Uprox | 8 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | SS | PBT | GN | YE | A | 3 | A4 |
| **Ni8U-EM12E-AP6X2-H1141/S1589** 1644392 | Uprox, Weldguard | 8 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | WG | WG | GN | YE | A | 3 | A4 |
| **Ni8U-M12E-VN4X-H1141** 1580552 | Uprox, Comp. Outputs | 8 | 4-wire DC NPN | 10-65 VDC | 2000 | ≤200 | -30 to +85 | IP67 | SS | PA 12 | N/A | YE | A | 4 | A4 |
| **Ni8U-M12E-VP4X-H1141** 1580454 | Uprox | 8 | 4-wire DC PNP | 10-65 VDC | 2000 | ≤200 | -30 to +85 | IP67 | SS | PA 12 | N/A | YE | A | 5 | A4 |
| **Ni8U-EM12E-VP4X-H1141** 1580463 | Uprox | 8 | 4-wire DC PNP | 10-65 VDC | 2000 | ≤200 | -30 to +85 | IP67 | SS | PA 12 | N/A | YE | A | 5 | A4 |
| **Ni8-M12E-AN6X-H1141** 4611325 | Extended Range | 8 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 2 | A4 |
| **Ni8-EM12E-AN6X-H1141/S1589** 4611395 | Ext. Range, Weldguard | 8 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | WG | WG | N/A | YE | A | 2 | A4 |
| **Ni8-M12E-AP6X-H1141** 46113981 | Extended Range | 8 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 3 | A4 |
| **Ni8-EM12E-AP6X-H1141/S1589** 4611396 | Weldguard | 8 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | WG | WG | N/A | YE | A | 3 | A4 |
| **Ni8-M12E-VP6X-H1141** 4611389 | Ext. Range, Comp. Outputs | 8 | 4-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 5 | A4 |
| **Ni4-M12E-AD4X-H1144** 4406792 | | 4 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A2 |
| **Ni4-EM12E-VP6X-H1141** 1633191 | Comp. Outputs | 4 | 4-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 5 | A4 |

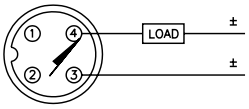
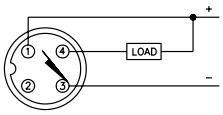
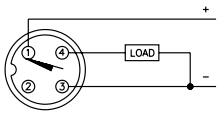
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

## Nonembeddable Threaded PTFE Coated Metal Barrels with Connector and DC Outputs

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   12 mm - Nonembeddable, M12 Eurofast Connection, PTFE Coated | B   12 mm - Nonembeddable, Extended Barrel Length, M12 Eurofast Connection, PTFE Coated |

### Wiring Diagrams/Mating Cordsets

| 1 | 2 | 3 |
|---|---|---|
|   |   |   |
| Mating Cordset: RKC 4.2T-* | Mating Cordset: RK 4T-*; RKC 4T-*/S1587 | Mating Cordset: RK 4T-*; RKC 4T-*/S1587 |

### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

## Nonembeddable Threaded PTFE Coated Metal Barrels with Connector and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni10U-MT12-AN6X-H1141** 1634830 | Uprox+, PTFE | 10 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | TC | LCP | N/A | YE | A | 2 | A4 |
| **Ni10U-MT12-AP6X-H1141** 1634810 | Uprox+, PTFE | 10 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | TC | LCP | N/A | YE | A | 3 | A4 |
| **Ni10U-MT12-AP6X-H1141/S1589** 16348101 | Uprox+, PTFE, Weldguard | 10 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | TC | WG | N/A | YE | A | 3 | A4 |
| **Ni10U-MT12E-AP6X2-H1141** 1634844 | Uprox+, PTFE | 10 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | TC | LCP | GN | YE | B | 3 | A4 |
| **Ni10U-MT12E-AP6X2-H1141/S1589** 1634994 | Uprox+, PTFE, Weldguard | 10 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | TC | WG | N/A | YE | B | 3 | A4 |
| **Ni8U-MT12-AP6X-H1141** 1644240 | Uprox, PTFE | 8 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP67 | TC | TC | N/A | YE | A | 3 | A4 |
| **Ni8U-MT12-AP6X2-H1141** 1644245 | Uprox, PTFE | 8 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP67 | TC | TC | GN | YE | A | 3 | A4 |
| **Ni8U-MT12-AP6X2-H1141/S1589** 1644292 | Uprox, PTFE, Weldguard | 8 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP67 | TC | WG | GN | YE | A | 3 | A4 |
| **Ni8U-MT12E-AN6X2-H1141** 1644248 | Uprox | 8 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP67 | TC | TC | N/A | YE | B | 2 | A4 |
| **Ni8U-MT12E-AP6X2-H1141** 1644247 | Uprox | 8 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP67 | TC | TC | N/A | YE | B | 3 | A4 |
| **Ni8-MT12-AD4X-H1141/S1589** 4411291 | PTFE, Weldguard | 8 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | TC | WG | N/A | YE | A | 1 | A2 |
| **Ni8-MT12E-AN6X-H1141/S1589** 4611397 | Ext. Range, Weldguard | 8 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | WG | WG | N/A | YE | B | 2 | A4 |
| **Ni8-MT12E-AP6X-H1141/S1589** 4611398 | Ext. Range, Weldguard | 8 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | WG | WG | N/A | YE | B | 3 | A4 |



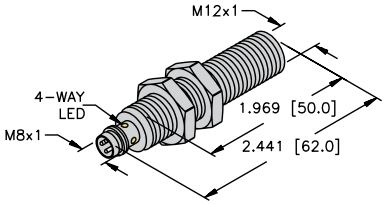
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

## Fully Threaded Metal Barrels with Connector and DC Outputs

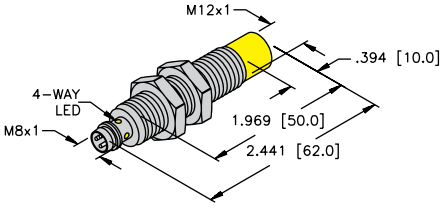
| Housing Style | Dimension Drawings |
|---|---|

A



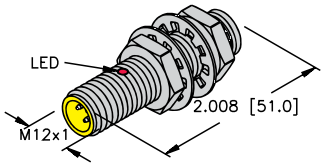

12 mm - Embeddable, M8 Picofast Connection

B



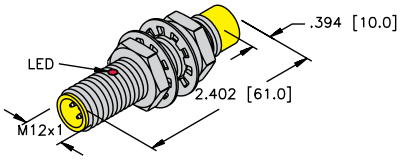

12 mm - Embeddable, M8 Picofast Connection

C




12 mm - Embeddable, M12 Eurofast Connection

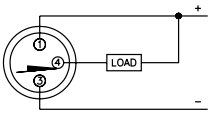
D




12 mm - Nonembeddable, M12 Eurofast Connection

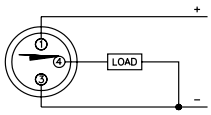
### Wiring Diagrams/Mating Cordsets

1



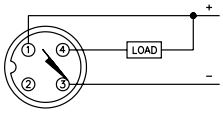

Mating Cordset: PKG 3M-*

2



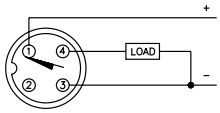

Mating Cordset: PKG 3M-*

3




Mating Cordset: RK 4T-*

4




Mating Cordset: RK 4T-*; RKV 4T-*

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

**Fully Threaded Metal Barrels with Connector and DC Outputs**

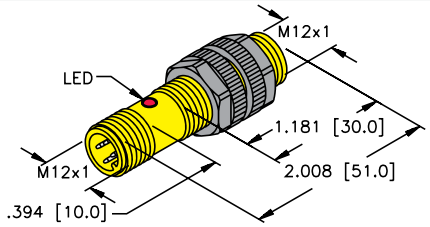
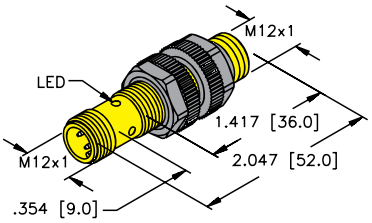
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi4-G12-AN6X-V1131** 1690707 | Extended Range | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A4 |
| **Bi4-G12-AP6X-V1131** 1690703 | Extended Range | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 2 | A4 |
| **Bi4-EG12-AP6X-H1141** 4607091 | Extended Range | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | RD | C | 4 | A4 |
| **Bi2-G12-AN6X-V1131** 4635583 | | 2 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A4 |
| **Bi2-G12-AN6X-H1141** 4606693 | | 2 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | C | 3 | A4 |
| **Bi2-G12-AP6X-H1141** 4606595 | | 2 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | C | 4 | A4 |
| **Bi2-G12-AP6X-V1131** 4606597 | | 2 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | B | 2 | A4 |
| **Ni8-G12-AN6X-H1141** 4611383 | Extended Range | 8 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | D | 3 | A4 |
| **Ni5-G12-AN6X-V1131** 4635721 | | 5 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | B | 1 | A4 |
| **Ni5-G12-AN6X-H1141** 4635793 | | 5 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | D | 3 | A4 |
| **Ni5-G12-AN7X-H1141** 1714593 | TTL Compatible | 5 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | D | 3 | A4 |
| **Ni5-G12-AP6X-V1131** 4635690 | | 5 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | B | 2 | A4 |
| **Ni5-G12-AP6X-H1141** 4635692 | | 5 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | D | 4 | A4 |



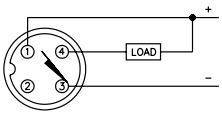
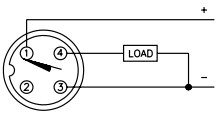
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

## Threaded Plastic Barrels with Connector and DC Outputs

| Housing Style | Dimension Drawings |
|---|---|
| | A   12 mm - Embeddable/Nonembeddable, Plastic, M12 Eurofast Connection |
| B   12 mm - Embeddable/Nonembeddable, Plastic, M12 Eurofast Connection | |

### Wiring Diagrams/Mating Cordsets

| 1 | 2 |
|---|---|
|   Mating Cordset: RKK 4T-* |   Mating Cordset: RKK 4T-* |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

## Threaded Plastic Barrels with Connector and DC Outputs

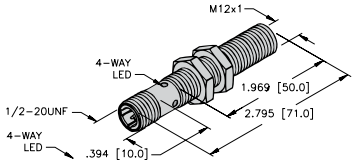
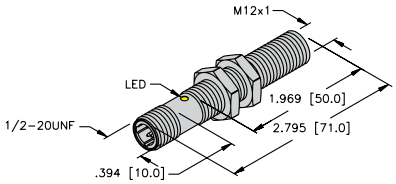
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi3U-S12-AN6X-H1141** 1634620 | Uprox | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP68 | PBT | PBT | N/A | YE | B | 1 | A4 |
| **Bi3U-S12-AP6X-H1141** 16346 | Uprox | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP68 | PBT | PBT | N/A | YE | B | 2 | A4 |
| **Bi2-S12-AN6X-H1141** 46521 | | 2 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | RD | A | 1 | A4 |
| **Bi2-S12-AP6X-H1141** 46520 | | 2 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | RD | A | 2 | A4 |
| **Ni8U-S12-AN6X-H1141** 1644620 | Uprox | 8 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | PBT | PBT | N/A | YE | B | 1 | A4 |
| **Ni8U-S12-AP6X-H1141** 1644600 | Uprox | 8 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | PBT | PBT | N/A | YE | B | 2 | A4 |
| **Ni4-S12-AN6X-H1141** 46523 | | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | RD | A | 1 | A4 |
| **Ni4-S12-AP6X-H1141** 46522 | | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | RD | A | 2 | A4 |



We reserve the right to make technical alterations without prior notice.

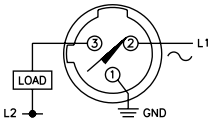
# Inductive Barrel Sensors | 12 mm

## Embeddable Threaded Metal Barrels with Connector and AC/DC Outputs

| Housing Style | Dimension Drawings |
|---|---|
| | A   12 mm - Embeddable, 1/2" Microfast Connection |
| B   12 mm - Embeddable, 1/2" Microfast Connection, PTFE Coated | |

### Wiring Diagrams/Mating Cordsets

1




Mating Cordset: KB 3T-*

### A5 — 2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA<br>AC: ≥120 mA; DC: ≥120 mA |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA<br>AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA (AC)<br>≤1.5 mA (DC) |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤3 A (≤20 ms, max 5 Hz) |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

### A6 — 2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA<br>AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤8 A (≤10ms max. 5 Hz)<br>≤1 A (≤10 ms max. 5 Hz) 12 mm<br>≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

## Embeddable Threaded Metal Barrels with Connector and AC/DC Outputs

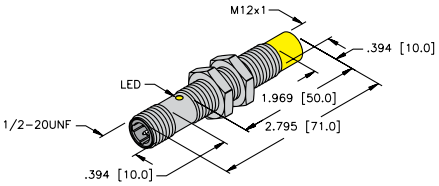
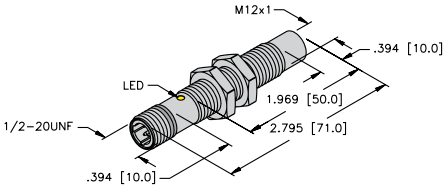
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi4-G12-ADZ32X-B3131** 4205031 | Extended Range | 4 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A5 |
| **Bi4-GT12H-ADZ32X-B3131** 4205097 | Stoneface | 4 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | TC | TC | N/A | YE | B | 1 | A5 |
| **Bi4-GT12-ADZ32X-B3131/S1589** 4205087 | PTFE, Weldguard | 4 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | TC | WG | N/A | YE | B | 1 | A5 |
| **Bi2U-G12-ADZ32X-B3131** 4281005 | Uprox | 2 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 10 | ≤100 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | A | 1 | A5 |
| **Bi2U-GT12-ADZ32X-B3131** 4281015 | Uprox | 2 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 10 | ≤100 | -30 to +85 | IP67 | TC | TC | N/A | YE | B | 1 | A5 |
| **Bi2-G12-AZ33X-B3131** 1304032 | | 2 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A6 |
| **Bi2-G12-ADZ32X-B3131** 4205001 | | 2 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A5 |
| **Bi2-GT12H-ADZ32X-B3131/S34** 4205093 | PTFE, WFI, Stoneface | 2 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | TC | TC | N/A | YE | B | 1 | A5 |
| **Bi2-GT12-ADZ32X-B3131/S34** 4205005 | PTFE, WFI | 2 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | TC | TC | N/A | YE | B | 1 | A5 |
| **Bi2-GT12-AZ33X-B3131/S34** 1304082 | PTFE, WFI | 2 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | TC | TC | N/A | YE | B | 1 | A6 |



We reserve the right to make technical alterations without prior notice.

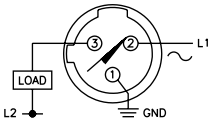
# Inductive Barrel Sensors | 12 mm

## Nonembeddable Threaded Metal Barrels with Connector and AC/DC Outputs

| Housing Style | Dimension Drawings |
|---|---|
| | A   12 mm - Nonembeddable, 1/2" Microfast Connection |
| B   12 mm - Nonembeddable, 1/2" Microfast Connection, PTFE Coated | |

### Wiring Diagrams/Mating Cordsets

1




Mating Cordset: KB 3T-*

### A5 — 2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA |
| | AC: ≥120 mA; DC: ≥120 mA |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA (AC) |
| | ≤1.5 mA (DC) |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤3 A (≤20 ms, max 5 Hz) |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

### A6 — 2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

## Nonembeddable Threaded Metal Barrels with Connector and AC/DC Outputs

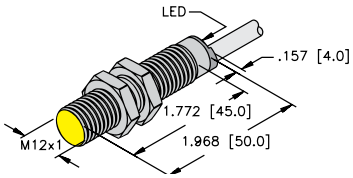
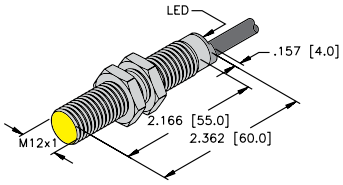
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni8U-G12-ADZ32X-B3131** 4281105 | Uprox | 8 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 10 | ≤100 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | A | 1 | A5 |
| **Ni8U-GT12-ADZ32X-B3131** 4281115 | Uprox | 8 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 10 | ≤100 | -30 to +85 | IP67 | TC | PA 12 | N/A | YE | B | 1 | A5 |
| **Ni4-G12-ADZ32X-B3131** 4205201 | | 4 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A5 |
| **Ni4-G12-AZ33X-B3131** 1304232 | | 4 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A6 |
| **Ni4-GT12-ADZ32X-B3131/S34** 4205205 | PTFE, WFI | 4 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | TC | PA 12 | N/A | YE | B | 1 | A5 |
| **Ni4-GT12-AZ33X-B3131/S34** 1304292 | PTFE, WFI | 4 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | TC | PA 12 | N/A | YE | B | 1 | A6 |
| **Ni4-GT12-ADZ32X-B3131/S34/S1589** 4205293 | PTFE, Weldguard | 4 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | TC | WG | N/A | YE | B | 1 | A5 |



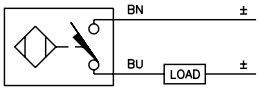
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

**Embeddable Threaded Metal Barrels with Cable and DC Outputs**

| Housing Style | Dimension Drawings |
|---|---|
| | A   12 mm - Embeddable, Potted-in Cable |
| B   12 mm - Embeddable, Extended Length Barrel, Potted-in Cable | |

**Wiring Diagrams/Mating Cordsets**

1
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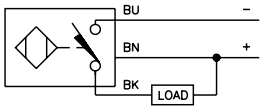


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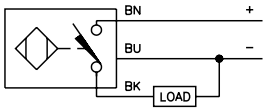


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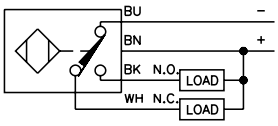


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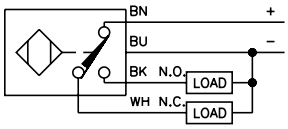



**A2 — 2-wire DC - (AD, RD, AG)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

**A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

## Embeddable Threaded Metal Barrels with Cable and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi6U-M12-AN6X** 1644806 | Uprox3 | 6 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP68 | CPB | LCP | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Bi6U-M12-AP6X** 1644801 | Uprox3 | 6 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP68 | CPB | LCP | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Bi6U-M12-VP6X** 1644803 | Uprox3, Comp. Outputs | 6 | 4-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP68 | CPB | LCP | N/A | YE | 2M/PVC | A | 5 | A4 |
| **Bi4U-M12-AN6X** 1634823 | Uprox+ | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Bi4U-M12-AP6X** 1634803 | Uprox+ | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Bi4-M12-AN6X** 4607130 | Extended Range | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Bi4-M12-AP6X** 4607006 | Extended Range | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Bi4-M12-VN6X** 1643300 | Ext. Range, Comp. Outputs | 4 | 4-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 4 | A4 |
| **Bi4-M12-VP6X** 1633300 | Ext. Range, Comp. Outputs | 4 | 4-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 5 | A4 |
| **Bi4-M12E-VN6X** 1643290 | Ext. Range, Comp. Outputs | 4 | 4-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | B | 4 | A4 |
| **Bi4-M12E-VP6X** 1633391 | Ext. Range, Comp. Outputs | 4 | 4-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | B | 5 | A4 |
| **Bi3U-M12-AN6X** 1634120 | Uprox | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Bi3U-M12-AP6X** 1634100 | Uprox | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Bi3U-M12E-AP6X** 1634108 | Uprox | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | 2M/PVC | B | 3 | A4 |
| **Bi3U-EM12-AN6X** 1634320 | Uprox | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP68 | SS | PBT | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Bi3U-EM12-AP6X** 1634300 | Uprox | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP68 | SS | PBT | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Bi3-M12-AD4X** 4405035 | Extended Range | 3 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 1 | A2 |
| **Bi2U-M12E-AD4X** 4405062 | Uprox | 2 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | 2M/PVC | B | 1 | A2 |
| **Bi2-M12-AD4X** 44050 | | 2 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 1 | A2 |
| **Bi2-M12-AP6X** 46050 | | 2 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Bi2-M12-VN6X** 16402 | Comp. Outputs | 2 | 4-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 4 | A4 |
| **Bi2-M12-VP6X** 16302 | Comp. Outputs | 2 | 4-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 5 | A4 |

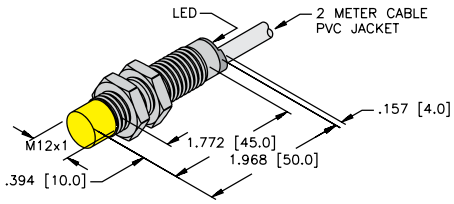
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

## Nonembeddable Threaded Metal Barrels with Cable and DC Outputs

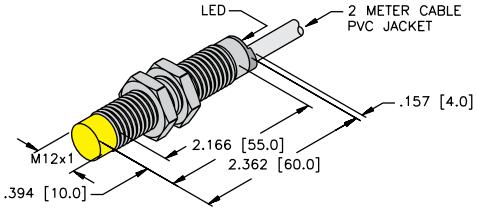
| Housing Style | Dimension Drawings |
|---|---|

A




12 mm - Nonembeddable, Potted-in Cable

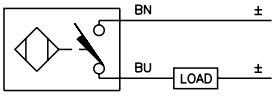
B




12 mm - Nonembeddable, Potted-In Cable, Extended Barrel Length

### Wiring Diagrams/Mating Cordsets

1

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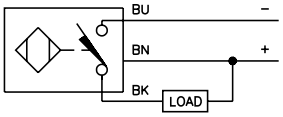


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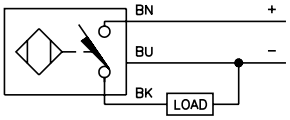


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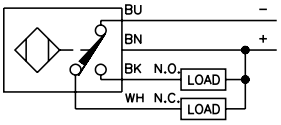


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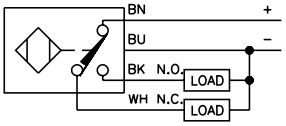



### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

## Nonembeddable Threaded Metal Barrels with Cable and DC Outputs

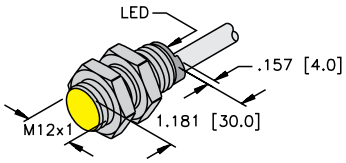
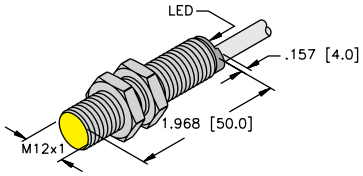
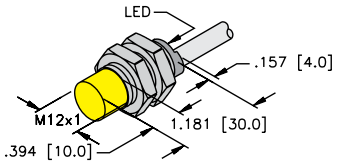
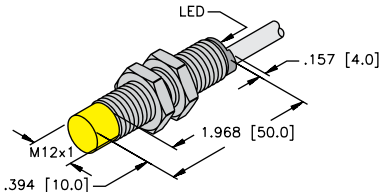
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni10U-M12-AN6X** 1634825 | Uprox | 10 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Ni10U-M12-AP6X** 1634805 | Uprox | 10 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Ni8U-M12-AN6X** 1644120 | Uprox | 8 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP67 | CPB | LCP | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Ni8U-M12-AP6X** 1644100 | Uprox | 8 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP67 | CPB | LCP | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Ni8U-M12E-AP6X** 1644102 | Uprox | 8 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP67 | CPB | LCP | N/A | YE | 2M/PVC | B | 3 | A4 |
| **Ni8U-EM12-AP6X** 1644300 | Uprox | 8 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | SS | LCP | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Ni8-M12-AD4X** 4411235 | Extended Range | 8 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 1 | A2 |
| **Ni8-M12-AN6X** 4611318 | Extended Range | 8 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Ni8-M12E-AN6X** 4611326 | | 8 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | B | 2 | A4 |
| **Ni8-M12-AP6X** 4611319 | Extended Range | 8 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Ni8-M12-VN6X** 4611321 | Ext. Range, Comp. Outputs | 8 | 4-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 4 | A4 |
| **Ni8-M12-VP6X** 4611322 | Ext. Range, Comp. Outputs | 8 | 4-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 5 | A4 |
| **Ni4-M12-AD4X** 44052 | | 4 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 1 | A2 |
| **Ni4-M12E-AD4X** 4405298 | | 4 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | B | 1 | A2 |
| **Ni4-M12-AP6X** 46052 | | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 3 | A4 |



We reserve the right to make technical alterations without prior notice.

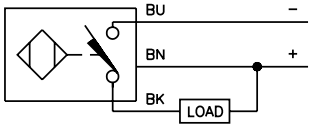
# Inductive Barrel Sensors | 12 mm

**Fully Threaded Metal Barrels with Cable and DC Outputs**

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   12 mm - Embeddable, Potted-In Cable | B   12 mm - Embeddable, Potted-In Cable |
| C   12 mm - Nonembeddable, Potted-In Cable | D   12 mm - Nonembeddable, Potted-In Cable | |

**Wiring Diagrams/Mating Cordsets**

1

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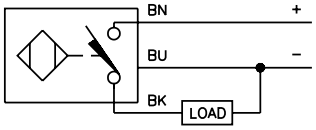


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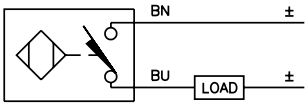



**A2 — 2-wire DC - (AD, RD, AG)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

**A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

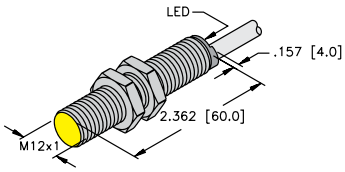
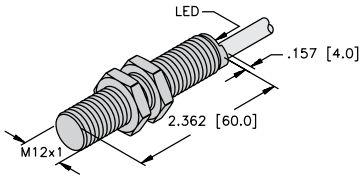
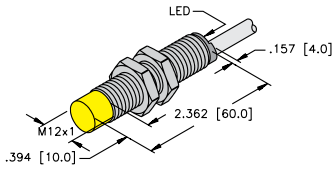
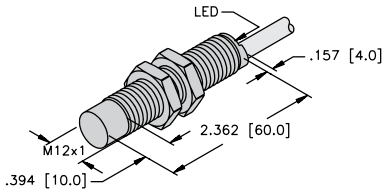
**Fully Threaded Metal Barrels with Cable and DC Outputs**

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi4-G12-AN6X** 1690706 | Extended Range | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | B | 1 | A4 |
| **Bi4-G12K-AN6X** 4670251 | Ext. Range, Short Barrel | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 1 | A4 |
| **Bi4-G12K-AP6X** 4670250 | Ext. Range, Short Barrel | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Bi2-G12-AN6X** 4635500 | | 2 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | B | 1 | A4 |
| **Bi2-G12-AN7X** 4730500 | TTL Compatible | 2 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤150 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | B | 1 | A4 |
| **Bi2-EG12-AP6X** 4605001 | | 2 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/PVC | B | 2 | A4 |
| **Bi2-G12-AP6X** 4635400 | | 2 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | B | 2 | A4 |
| **Bi2-G12K-AN6X** 46712 | Short Barrel | 2 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 1 | A4 |
| **Bi2-G12K-AP6X** 46702 | Short Barrel | 2 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Ni8-G12-AN6X** 4611327 | Extended Range | 8 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | D | 1 | A4 |
| **Ni8-G12K-AD4X** 4411230 | Short Barrel | 8 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | C | 3 | A2 |
| **Ni5-G12K-AN6X** 46713 | Short Barrel | 5 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | C | 2 | A4 |
| **Ni5-G12K-AP6X** 46703 | Short Barrel | 5 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | C | 2 | A4 |
| **Ni5-G12-AN6X** 4635700 | | 5 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | D | 1 | A4 |
| **Ni5-G12-AN7X** 1714500 | TTL Compatible | 5 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤150 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | D | 1 | A4 |
| **Ni5-G12-AP6X** 46356 | | 5 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | D | 2 | A4 |

We reserve the right to make technical alterations without prior notice.

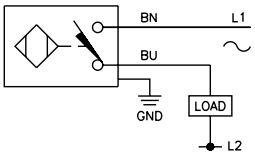
# Inductive Barrel Sensors | 12 mm

## Fully Threaded Metal Barrels with Cable and AC/DC Outputs

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   12 mm - Embeddable, Potted-In Cable | B   12 mm - Embeddable, Potted-In Cable, PTFE Coated |
| C   12 mm - Nonembeddable, Potted-In Cable | D   12 mm - Nonembeddable, Potted-In Cable, PTFE Coated | |

### Wiring Diagrams/Mating Cordsets

1




### A5 — 2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Minimum Load Current: | ≥3.0 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Inrush Current: | ≤3 A (≤20 ms, max 5 Hz) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | Power-On Effect: | Per IEC 947-5-2 |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA | Transient Protection: | Per EN 60947-5-2 |
| | AC: ≥120 mA; DC: ≥120 mA | Shock: | 30 g, 11 ms |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | AC: ≤100 mA; DC: ≤100 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Off-State (Leakage) Current: | ≤1.7 mA (AC) | | |
| | ≤1.5 mA (DC) | | |

### A6 — 2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Power-On Effect: | Per IEC 947-5-2 |
| | AC: ≤100 mA; DC: ≤100 mA | Transient Protection: | Per EN 60947-5-2 |
| Off-State (Leakage) Current: | ≤1.7 mA | Shock: | 30 g, 11 ms |
| Minimum Load Current: | ≥3.0 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

## Fully Threaded Metal Barrels with Cable and AC/DC Outputs

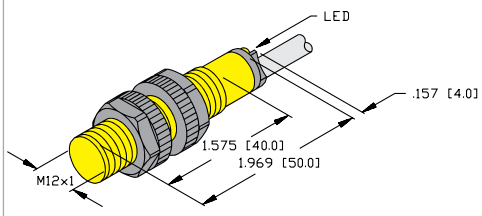
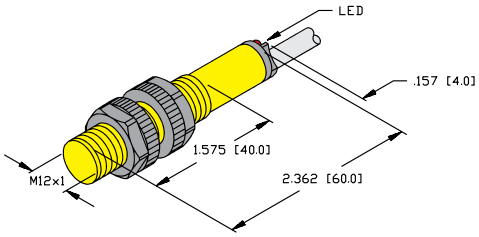
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi4-G12-ADZ32X** 4205030 | Extended Range | 4 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 1 | A5 |
| **Bi2-G12-ADZ32X** 4205000 | | 2 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 1 | A5 |
| **Bi2-G12-AZ33X** 1304002 | | 2 | 2-wire AC/DC | 35-250 VAC | 20 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 1 | A6 |
| **Bi2-GT12-ADZ32X/S34** 4205210 | PTFE, WFI | 2 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | TC | TC | N/A | YE | 2M/PVC | B | 1 | A5 |
| **Bi2-GT12-AZ33X/S34** 1304052 | PTFE, WFI | 2 | 2-wire AC/DC | 35-250 VAC | 20 | ≤200 | -25 to +70 | IP67 | TC | TC | N/A | YE | 2M/PVC | B | 1 | A6 |
| **Ni8-G12-ADZ32X** 4205400 | Extended Range | 8 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | C | 1 | A5 |
| **Ni4-G12-AZ33X** 1304202 | | 4 | 2-wire AC/DC | 35-250 VAC | 20 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | C | 1 | A6 |
| **Ni4-G12-ADZ32X** 4205200 | | 4 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | C | 1 | A5 |
| **Ni4-GT12-ADZ32X/S34** 4205210 | PTFE, WFI | 4 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | TC | TC | N/A | YE | 2M/PVC | D | 1 | A5 |
| **Ni4-GT12-AZ33X/S34** 1304294 | PTFE, WFI | 4 | 2-wire AC/DC | 35-250 VAC | 20 | ≤100 | -25 to +70 | IP67 | TC | TC | N/A | YE | 2M/PVC | D | 1 | A6 |



We reserve the right to make technical alterations without prior notice.

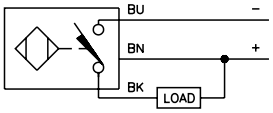
# Inductive Barrel Sensors | 12 mm

## Threaded Plastic Barrels with Cable and AC/DC Outputs

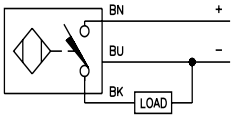
| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   12 mm - Embeddable/Nonembeddable, Plastic, Potted-In Cable | B   12 mm - Embeddable/Nonembeddable, Plastic, Potted-In Cable |

**Wiring Diagrams/Mating Cordsets**

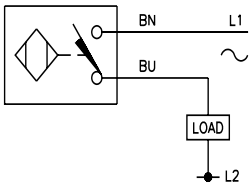
1




2




3




**A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

**A6 — 2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)**

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Power-On Effect: | Per IEC 947-5-2 |
| | AC: ≤100 mA; DC: ≤100 mA | Transient Protection: | Per EN 60947-5-2 |
| Off-State (Leakage) Current: | ≤1.7 mA | Shock: | 30 g, 11 ms |
| Minimum Load Current: | ≥3.0 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

## Threaded Plastic Barrels with Cable and AC/DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi3U-S12-AN6X** 1634520 | Uprox | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP68 | PBT | PBT | N/A | YE | 2M/PVC | A | 1 | A4 |
| **Bi3U-S12-AP6X** 1634500 | Uprox | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP68 | PBT | PBT | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Bi2-S12-AN6X** 46531 | | 2 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | 2M/PVC | B | 1 | A4 |
| **Bi2-S12-AN7X** 1713800 | TTL Compatible | 2 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | 2M/PVC | B | 1 | A4 |
| **Bi2-S12-AP6X** 46530 | | 2 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | 2M/PVC | B | 2 | A4 |
| **Bi2-S12-AP7X/S100** 17555 | TTL Compatible, High Temp. 100 °C | 2 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +100 | IP67 | PA 12 | PA 12 | N/A | YE | 2M/PVC | B | 2 | A4 |
| **Bi2-S12-AZ31X** 13020 | | 2 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | RD | 2M/PVC | B | 3 | A6 |
| **Bi2-S12-AZ31X/S100** 1302001 | High Temp. 100 °C | 2 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +100 | IP67 | PA 12 | PA 12 | N/A | RD | 2M/PVC | B | 3 | A6 |
| **Ni8U-S12-AN6X** 1644520 | Uprox | 8 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | PBT | PBT | N/A | YE | 2M/PVC | A | 1 | A4 |
| **Ni8U-S12-AP6X** 1644500 | Uprox | 8 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | PBT | PBT | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Ni4-S12-AN6X** 46533 | | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | 2M/PVC | B | 1 | A4 |
| **Ni4-S12-AN7X** 1713900 | TTL Compatible | 4 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | 2M/PVC | B | 1 | A4 |
| **Ni4-S12-AP6X** 46532 | | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | 2M/PVC | B | 2 | A4 |
| **Ni4-S12-AZ31X** 13022 | | 4 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | RD | 2M/PVC | B | 3 | A6 |
| **Ni4-S12-AZ31X/S100** 1302201 | High Temp. 100 °C | 4 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +100 | IP67 | PA 12 | PA 12 | N/A | RD | 2M/PVC | B | 3 | A6 |

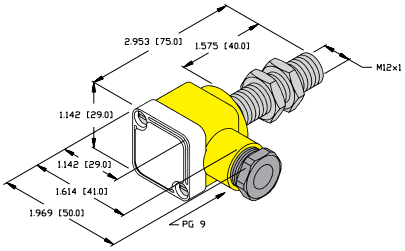
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

## Threaded Barrels with Terminal Chamber and DC Outputs

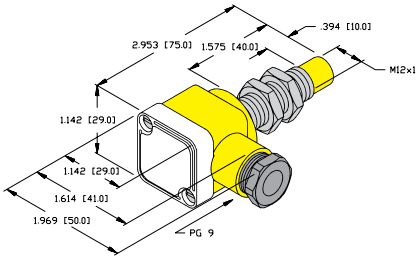
| Housing Style | Dimension Drawings |
|---|---|

A



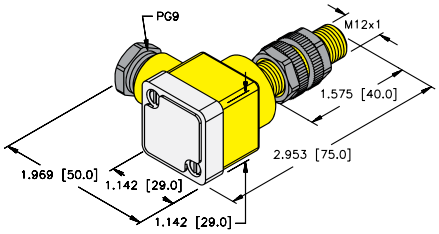

12 mm - Embeddable, Terminal Chamber

B




12 mm - Nonembeddable, Terminal Chamber

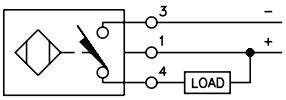
C



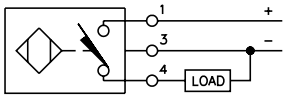

12 mm - Embeddable/Nonembeddable, Plastic, Terminal Chamber

### Wiring Diagrams/Mating Cordsets

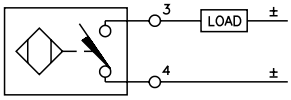
1




2




3




### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

## Threaded Barrels with Terminal Chamber and DC Outputs

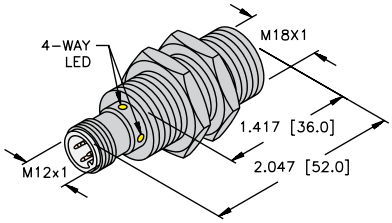
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi3U-EG12SK-AP6X** 1634400 | Uprox | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP68 | SS | PBT | N/A | YE | A | 2 | A4 |
| **Bi3U-P12SK-AP6X** 1634700 | Uprox | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP68 | PA 12 | PA 12 | N/A | YE | C | 2 | A4 |
| **Bi2-G12SK-AN6X2** 4636500 | | 2 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | GN | YE | A | 1 | A4 |
| **Bi2-G12SK-AP6X2** 4636400 | | 2 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | GN | YE | A | 2 | A4 |
| **Bi2-P12SK-AD4X** 4453050 | | 2 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | C | 3 | A2 |
| **Bi2-P12SK-AN6X2** 4654000 | | 2 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | GN | YE | C | 1 | A4 |
| **Bi2-P12SK-AP6X2** 4653900 | | 2 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | GN | YE | C | 2 | A4 |
| **Ni8U-EG12SK-AP6X** 1644400 | Uprox | 8 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | SS | PBT | N/A | YE | B | 2 | A4 |
| **Ni5-G12SK-AP6X2** 46366 | | 5 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | GN | YE | B | 2 | A4 |
| **Ni5-P12SK-AP6X2** 4654100 | | 5 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | GN | YE | C | 2 | A4 |



We reserve the right to make technical alterations without prior notice.

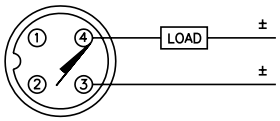
# Inductive Barrel Sensors | 18 mm

## Embeddable Threaded Metal Barrels with Connector and DC Outputs

| Housing Style | Dimension Drawings |
|---|---|
| | A   18 mm - Embeddable M12 Eurofast Connection |

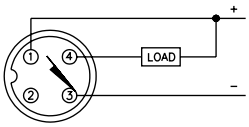
### Wiring Diagrams/Mating Cordsets

1



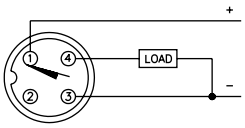

Mating Cordset: RK 4.2T-*

2



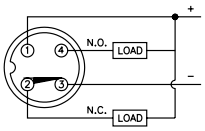

Mating Cordset: RK 4T-*; RKV 4T-*

3



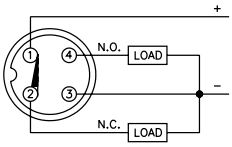

Mating Cordset: RK 4T-*; RKV 4T-*

4




Mating Cordset: RK 4.4T-*; RKV 4.4T-*

5




Mating Cordset: RK 4.4T-*

### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

## Embeddable Threaded Metal Barrels with Connector and DC Outputs

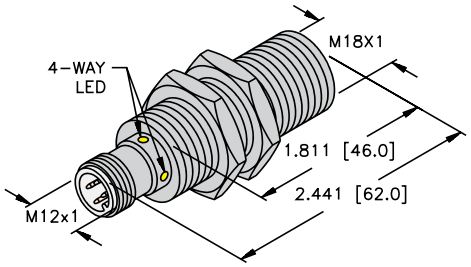
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi10U-M18-AN6X-H1141** 1644847 | Uprox3 | 10 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -25 to +70 | IP68 | CPB | LCP | N/A | YE | A | 2 | A4 |
| **Bi10U-M18-AP6X-H1141** 1644830 | Uprox3 | 10 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -25 to +70 | IP68 | CPB | LCP | N/A | YE | A | 3 | A4 |
| **Bi10U-M18-VP6X-H1141** 1644844 | Uprox3, Comp. Outputs | 10 | 4-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -25 to +70 | IP68 | CPB | LCP | N/A | YE | A | 5 | A4 |
| **Bi8U-M18-AN6X-H1141** 1644737 | Uprox+ | 8 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | A | 2 | A4 |
| **Bi8U-EM18-AN6X-H1141** 1644738 | Uprox+ | 8 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | SS | LCP | N/A | YE | A | 2 | A4 |
| **Bi8U-M18-AP6X-H1141** 1644731 | Uprox+ | 8 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | A | 3 | A4 |
| **Bi8U-EM18-AP6X-H1141** 1644734 | Uprox+ | 8 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | SS | LCP | N/A | YE | A | 3 | A4 |
| **Bi8-M18-AN6X-H1141** 4615100 | Extended Range | 8 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 2 | A4 |
| **Bi8-M18-AP6X-H1141** 46150 | Extended Range | 8 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 3 | A4 |
| **Bi8-EM18H-AP6X-H1141** 4615094 | Ext. Range, Stoneface | 8 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | SS | SF | N/A | YE | A | 3 | A4 |
| **Bi8-EM18-AP6X-H1141/S1589** 4615099 | Weldguard | 8 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | SS | WG | N/A | YE | A | 3 | A4 |
| **Bi8-M18-VN4X-H1141** 4590702 | Ext. Range, Comp. Outputs | 8 | 4-wire DC NPN | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 4 | A4 |
| **Bi8-M18-VP4X-H1141** 4590701 | Ext. Range, Comp. Outputs | 8 | 4-wire DC PNP | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 5 | A4 |
| **Bi7-M18-AD4X-H1141** 4414541 | Extended Range | 7 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A2 |
| **Bi5U-M18-AN6X-H1141** 1635150 | Uprox | 5 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | A | 2 | A4 |
| **Bi5U-EM18-AN6X-H1141** 1635350 | Uprox | 5 | 3-wire DC NPN | 10-30 VDC | 2500 | ≤200 | -30 to +85 | IP68 | SS | PBT | N/A | YE | A | 2 | A4 |
| **Bi5U-M18-AP6X-H1141** 1635140 | Uprox | 5 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | A | 3 | A4 |
| **Bi5U-EM18-AP6X-H1141** 1635340 | Uprox | 5 | 3-wire DC PNP | 10-30 VDC | 2500 | ≤200 | -30 to +85 | IP68 | SS | PBT | N/A | YE | A | 3 | A4 |
| **Bi5-M18-AD4X-H1141** 44145 | | 5 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A2 |
| **Bi5-M18-AN6X-H1141** 46146 | | 5 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 2 | A4 |
| **Bi5-M18-AP6X-H1141** 46145 | | 5 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 3 | A4 |
| **Bi5-EM18-AP6X-H1141** 4614501 | | 5 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 3 | A4 |
| **Bi5-M18-VN4X-H1141** 15718 | Comp. Outputs | 5 | 4-wire DC NPN | 10-65 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 4 | A4 |
| **Bi5-EM18-VN4X-H1141** 4614699 | Comp. Outputs | 5 | 4-wire DC NPN | 10-65 VDC | 1000 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 4 | A4 |
| **Bi5-M18-VP4X-H1141** 15618 | Comp. Outputs | 5 | 4-wire DC PNP | 10-65 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 5 | A4 |



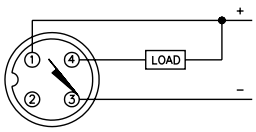
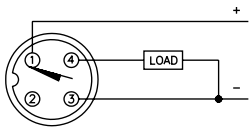
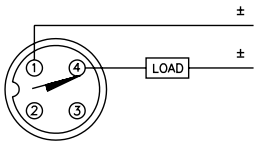
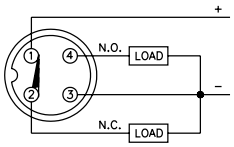
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

**Embeddable Threaded Metal Barrels with Connector and DC Outputs**

| Housing Style | Dimension Drawings |
|---|---|
| | A   18 mm - Embeddable, M12 Eurofast Connection |

**Wiring Diagrams/Mating Cordsets**

| 1 | 2 | 3 | 4 |
|---|---|---|---|
|   |   |   |   |
| Mating Cordset: RK 4T-*; RKC 4T-*/S1587 | Mating Cordset: RK 4T-*; RKC 4T-*/S1587 | Mating Cordset: RK 4.23T-* | Mating Cordset: RK 4.4T-* |

**A2 — 2-wire DC - (AD, RD, AG)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

**A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

## Embeddable Threaded Metal Barrels with Connector and DC Outputs

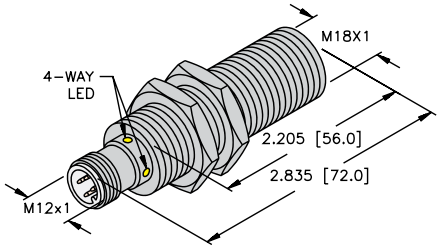
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi8U-EM18M-AP6X2-H1141/S1589** 1644771 | Uprox+, Weldguard | 8 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | SS | WG | GN | YE | A | 2 | A4 |
| **Bi8U-M18M-VP44X-H1141** 1634877 | Uprox+, Comp. Outputs | 8 | 4-wire DC PNP | 10-55 VDC | 1500 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | A | 4 | A4 |
| **Bi8-M18M-AP6X-H1141** 4615083 | Extended Range | 8 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +75 | IP67 | CPB | PBT | N/A | YE | A | 2 | A4 |
| **Bi5U-M18M-AD4X-H1144** 4405066 | Uprox+ | 5 | 2-wire DC | 10-65 VDC | 10 | ≤100 | -30 to +85 | IP68 | TC | LCP | N/A | YE | A | 3 | A2 |
| **Bi5U-M18-AN6X-H1141/S395** 1635154 | Uprox | 5 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A4 |
| **Bi5U-M18-AP6X-H1141/S395** 1635141 | Uprox | 5 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | A | 2 | A4 |
| **Bi5U-EM18-AP6X-H1141/S395** 1635342 | Uprox | 5 | 3-wire DC PNP | 10-30 VDC | 2500 | ≤200 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | A | 2 | A4 |
| **Bi5U-EM18H-AN6X2-H1141/S395** 1635146 | Uprox, Stoneface | 5 | 3-wire DC NPN | 10-30 VDC | 2500 | ≤200 | -30 to +85 | IP68 | SS | SF | GN | YE | A | 1 | A4 |
| **Bi5U-EM18H-AN6X2-H1141/S395/S1589** 1635196 | Uprox, Weldguard | 5 | 3-wire DC NPN | 10-30 VDC | 2500 | ≤200 | -30 to +85 | IP68 | SS | WG | GN | YE | A | 1 | A4 |
| **Bi5U-EM18H-AP6X2-H1141/S395** 1635158 | Uprox, Stoneface | 5 | 3-wire DC PNP | 10-30 VDC | 2500 | ≤200 | -30 to +85 | IP68 | SS | SF | GN | YE | A | 2 | A4 |
| **Bi5U-EM18-AP6X2-H1141/S395/S1589** 1635197 | Uprox, Weldguard | 5 | 3-wire DC PNP | 10-30 VDC | 2500 | ≤200 | -30 to +85 | IP68 | SS | WG | GN | YE | A | 2 | A4 |
| **Bi5U-EM18M-AP6X2-H1141** 1635349 | Uprox | 5 | 3-wire DC PNP | 10-30 VDC | 2500 | ≤200 | -30 to +85 | IP68 | SS | PBT | GN | YE | A | 2 | A4 |



We reserve the right to make technical alterations without prior notice.

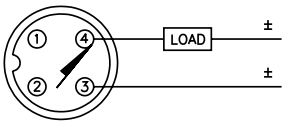
# Inductive Barrel Sensors | 18 mm

## Embeddable Threaded Metal Barrels with Connector and DC Outputs

| Housing Style | Dimension Drawings |
|---|---|
| | A   18 mm - Embeddable, Ext. Barrel Length, M12 Eurofast Connection |

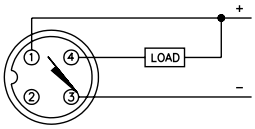
### Wiring Diagrams/Mating Cordsets

1



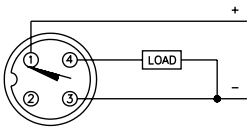

Mating Cordset: RK 4.2T-*

2




Mating Cordset: RK 4T-*; RKC 4T-*/S1587

3




Mating Cordset: RK 4T-*; RKV 4T-*; RKC 4T-*/S1587

### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

## Embeddable Threaded Metal Barrels with Connector and DC Outputs

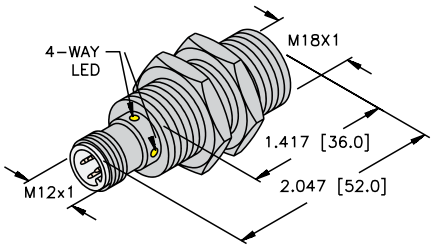
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi8U-EM18E-AP6X-H1141** 1634865 | Uprox+ | 8 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | SS | LCP | N/A | YE | A | 3 | A4 |
| **Bi8-M18E-AN6X-H1141** 4615190 | Extended Range | 8 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 2 | A4 |
| **Bi8-EM18HE-AN6X-H1141** 4615194 | Ext. Range, Stoneface | 8 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | SS | SF | N/A | YE | A | 2 | A4 |
| **Bi8-EM18E-AN6X-H1141/S1589** 4615193 | Ext. Range, Weldguard | 8 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | SS | WG | N/A | YE | A | 2 | A4 |
| **Bi8-EM18E-AP6X-H1141** 46150952 | Extended Range | 8 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 3 | A4 |
| **Bi8-EM18HE-AP6X-H1141** 4615095 | Ext. Range, Stoneface | 8 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | SS | SF | N/A | YE | A | 3 | A4 |
| **Bi8-EM18E-AP6X-H1141/S1589** 4615096 | Ext. Range, Weldguard | 8 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | SS | WG | N/A | YE | A | 3 | A4 |
| **Bi7-M18E-AD4X-H1141** 4414580 | Extended Range | 7 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A2 |
| **Bi5U-M18E-AN6X-H1141** 1635122 | Uprox | 5 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | A | 2 | A4 |
| **Bi5U-M18E-AP6X-H1141** 1635103 | Uprox | 5 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | A | 3 | A4 |
| **Bi5-M18E-AD4X-H1141** 4414591 | | 5 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A2 |
| **Bi5-M18E-AN6X-H1141** 4614697 | | 5 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 2 | A4 |



We reserve the right to make technical alterations without prior notice.

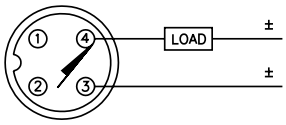
# Inductive Barrel Sensors | 18 mm

**Embeddable Threaded PTFE Coated Metal Barrels with Connector and DC Outputs**

| Housing Style | Dimension Drawings |
|---|---|
| | A   18 mm - Embeddable, M12 Eurofast Connection, PTFE Coated |

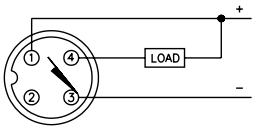
**Wiring Diagrams/Mating Cordsets**

1



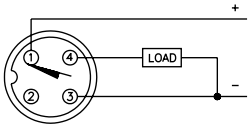

Mating Cordset: RK 4.2T-*

2




Mating Cordset: RK 4T-*; RKC 4T-*/S1587

3




Mating Cordset: RK 4T-*

**A2 — 2-wire DC - (AD, RD, AG)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

**A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

## Embeddable Threaded PTFE Coated Metal Barrels with Connector and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BI10U-MT18-AN6X-H1141** 1644858 | Uprox3, PTFE | 10 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -25 to +70 | IP68 | TC | TC | N/A | YE | A | 2 | A4 |
| **Bi10U-MT18-AP6X-H1141** 1644831 | Uprox3, PTFE | 10 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -25 to +70 | IP68 | TC | TC | N/A | YE | A | 3 | A4 |
| **Bi10U-MT18-AP6X2-H1141** 1644905 | Uprox3, PTFE | 10 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -25 to +70 | IP68 | TC | TC | GN | YE | A | 3 | A4 |
| **Bi8U-MT18-AN6X-H1141** 1644739 | Uprox+, PTFE | 8 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | TC | TC | N/A | YE | A | 2 | A4 |
| **Bi8U-MT18-AP6X-H1141** 1644730 | Uprox+, PTFE | 8 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | TC | TC | N/A | YE | A | 3 | A4 |
| **Bi8U-MT18-AN6X-H1141/S1589** 1644791 | Uprox+, PTFE, Weldguard | 8 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | TC | WG | N/A | YE | A | 2 | A4 |
| **Bi7-MT18H-AD4X-H1141** 44145801 | Ext. Range, PTFE | 7 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | TC | SF | N/A | YE | A | 1 | A2 |
| **Bi5U-MT18-AN6X-H1141** 1635250 | Uprox, PTFE | 5 | 3-wire DC NPN | 10-30 VDC | 2500 | ≤200 | -30 to +85 | IP67 | TC | TC | N/A | YE | A | 2 | A4 |
| **Bi5U-MT18-AP6X-H1141** 1635240 | Uprox, PTFE | 5 | 3-wire DC PNP | 10-30 VDC | 2500 | ≤200 | -30 to +85 | IP67 | TC | TC | N/A | YE | A | 3 | A4 |
| **Bi5U-MT18-AP6X2-H1141** 1635245 | Uprox, PTFE | 5 | 3-wire DC PNP | 10-30 VDC | 2500 | ≤200 | -30 to +85 | IP67 | TC | TC | GN | YE | A | 3 | A4 |



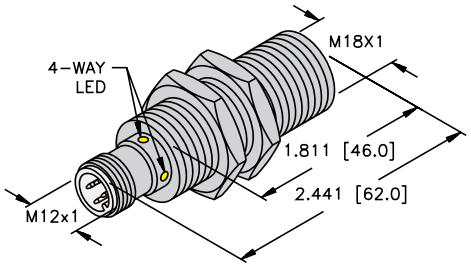
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

**Embeddable Threaded PTFE Coated Metal Barrels with Connector and DC Outputs**

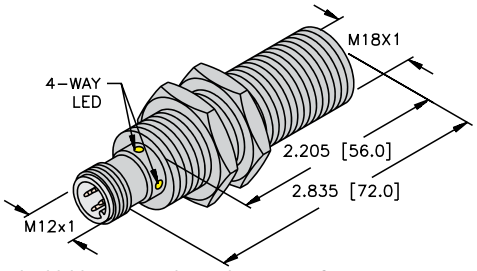
| Housing Style | Dimension Drawings |
|---|---|

A




18 mm - Embeddable, M12 Eurofast Connection, PTFE Coated

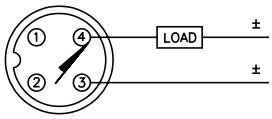
B




18 mm - Embeddable, Ext. Barrel Length, M12 Eurofast Connection, PTFE Coated

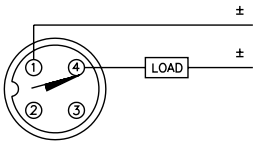
**Wiring Diagrams/Mating Cordsets**

1



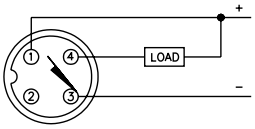

Mating Cordset: RK 4.2T-*

2



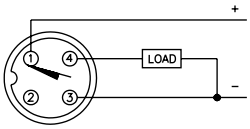

Mating Cordset: RK 4.23T-*

3




Mating Cordset: RK 4T-*; RKC 4T-*/S1587

4




Mating Cordset: RK 4T-*; RKC 4T-*/S1587

**A2 — 2-wire DC - (AD, RD, AG)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

**A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

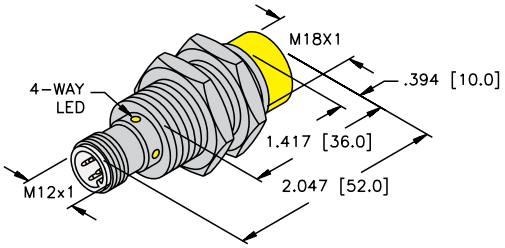
## Embeddable Threaded PTFE Coated Metal Barrels with Connector and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi8U-MT18M-AP6X2-H1141** 1644740 | Uprox+, PTFE | 8 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | TC | LCP | GN | YE | A | 4 | A4 |
| **Bi8U-MT18M-AP6X2-H1141/S1589** 16447411 | Uprox+, PTFE, Weldguard | 8 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | TC | WG | GN | YE | A | 4 | A4 |
| **Bi7-MT18HE-AD4X-H1141** 4414597 | PTFE, Stoneface | 7 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | TC | SF | N/A | YE | B | 1 | A2 |
| **Bi7-MT18HE-AD4X-H1144** 4414598 | PTFE, Stoneface | 7 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | TC | SF | N/A | YE | B | 2 | A2 |
| **Bi7-MT18HE-AD4X-H1141/S1589** 4414588 | PTFE, Weldguard | 7 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | TC | WG | N/A | YE | B | 1 | A2 |
| **Bi7-MT18HE-AD4X-H1144/S1589** 4414599 | PTFE, Weldguard | 7 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | TC | WG | N/A | YE | B | 2 | A2 |
| **Bi5U-MT18E-AP6X2-H1141** 1635247 | Uprox, PTFE | 5 | 3-wire DC PNP | 10-30 VDC | 2500 | ≤200 | -30 to +85 | IP68 | TC | TC | GN | YE | B | 4 | A4 |
| **Bi5U-MT18M-AP6X2-H1141** 1635252 | Uprox, PTFE | 5 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | TC | TC | GN | YE | A | 4 | A4 |
| **Bi5U-MT18H-AN6X2-H1141/S395** 1635225 | Uprox, PTFE, Stoneface | 5 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | TC | SF | GN | YE | A | 3 | A4 |
| **Bi5U-MT18-AN6X2-H1141/S395/S1589** 1635290 | Uprox, PTFE, Weldguard | 5 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | TC | WG | GN | YE | A | 3 | A4 |
| **Bi5U-MT18-AP6X-H1141/S395** 1635231 | Uprox, PTFE | 5 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | TC | TC | N/A | YE | A | 4 | A4 |
| **Bi5U-MT18H-AP6X2-H1141/S395** 1635220 | Uprox, PTFE, Stoneface | 5 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | TC | SF | GN | YE | A | 4 | A4 |
| **Bi5U-MT18-AP6X2-H1141/S395/S1589** 1635291 | Uprox, PTFE, Weldguard | 5 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | TC | WG | GN | YE | A | 4 | A4 |

We reserve the right to make technical alterations without prior notice.

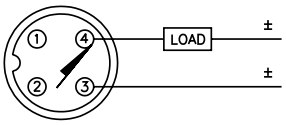
# Inductive Barrel Sensors | 18 mm

## Nonembeddable Threaded Metal Barrels with Connector and DC Outputs

| Housing Style | Dimension Drawings |
|---|---|
| | A   18 mm - Nonembeddable, M12 Eurofast Connection |

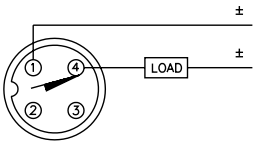
### Wiring Diagrams/Mating Cordsets

1



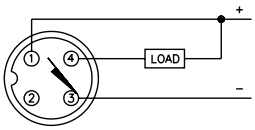

Mating Cordset: RK 4.2T-*

2



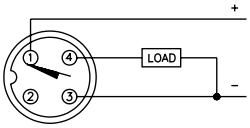

Mating Cordset: RK 4.23T-*

3



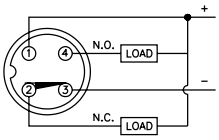

Mating Cordset: RK 4T-*; RKV 4T-*

4



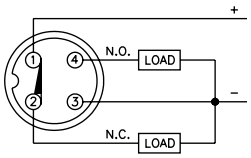

Mating Cordset: RK 4T-*; RKV 4T-*

5




Mating Cordset: RK 4.4T-*

6




Mating Cordset: RK 4.4T-*

### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

## Nonembeddable Threaded Metal Barrels with Connector and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni15U-M18-AN6X-H1141** 1635335 | Uprox+ | 15 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | A | 3 | A4 |
| **Ni15U-EM18-AN6X-H1141** 1635336 | Uprox+ | 15 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | SS | LCP | N/A | YE | A | 3 | A4 |
| **Ni15U-M18-AP6X-H1141** 1635331 | Uprox+ | 15 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | A | 4 | A4 |
| **Ni15U-EM18-AP6X-H1141** 1635332 | Uprox+ | 15 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | SS | LCP | N/A | YE | A | 4 | A4 |
| **Ni14-M18-AD4X-H1141** 4417241 | Extended Range | 14 | 2-wire DC | 10-65 VDC | 500 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A2 |
| **Ni14-M18-AD4X-H1144** 4417290 | Extended Range | 14 | 2-wire DC | 10-65 VDC | 500 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 2 | A2 |
| **Ni14-M18-AN6X-H1141** 4611410 | Extended Range | 14 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 3 | A4 |
| **Ni14-M18-AP6X-H1141** 4611400 | Extended Range | 14 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 4 | A4 |
| **Ni14-M18-VN4X-H1141** 4590603 | Ext. Range, Comp. Outputs | 14 | 4-wire DC NPN | 10-65 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 5 | A4 |
| **Ni14-M18-VP4X-H1141** 4590602 | Ext. Range, Comp. Outputs | 14 | 4-wire DC PNP | 10-65 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 6 | A4 |
| **Ni12U-M18-AN6X-H1141** 1645150 | Uprox | 12 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | CPB | LCP | N/A | YE | A | 3 | A4 |
| **Ni12U-EM18-AN6X-H1141** 1645350 | Uprox | 12 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | SS | PBT | N/A | YE | A | 3 | A4 |
| **Ni12U-M18-AP6X-H1141** 1645140 | Uprox | 12 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | CPB | LCP | N/A | YE | A | 4 | A4 |
| **Ni12U-M18-AP6X2-H1141** 1645145 | Uprox | 12 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | CPB | LCP | GN | YE | A | 4 | A4 |
| **Ni12U-EM18-AP6X-H1141** 1645340 | Uprox | 12 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | SS | PBT | N/A | YE | A | 4 | A4 |
| **Ni12U-EM18-AP6X2-H1141** 1645345 | Uprox | 12 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | SS | PBT | GN | YE | A | 4 | A4 |
| **Ni10-M18-AN6X-H1141** 4614892 | | 10 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 3 | A4 |
| **Ni10-M18-AP6X-H1141** 4641291 | | 10 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 4 | A4 |
| **Ni8-M18-AD4X-H1141** 44147 | | 8 | 2-wire DC | 10-65 VDC | 500 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A2 |
| **Ni8-M18-AD4X-H1144** 4411288 | | 8 | 2-wire DC | 10-65 VDC | 500 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 2 | A2 |
| **Ni8-M18-AN6X-H1141** 46148 | | 8 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 3 | A4 |
| **Ni8-M18-AP6X-H1141** 46147 | | 8 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 4 | A4 |
| **Ni8-M18-VN4X-H1141** 15719 | Comp. Outputs | 8 | 4-wire DC NPN | 10-65 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 5 | A4 |
| **Ni8-M18-VP4X-H1141** 15619 | Comp. Outputs | 8 | 4-wire DC PNP | 10-65 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 6 | A4 |

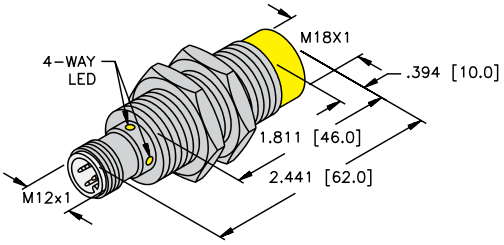
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

## Nonembeddable Threaded Metal Barrels with Connector and DC Outputs

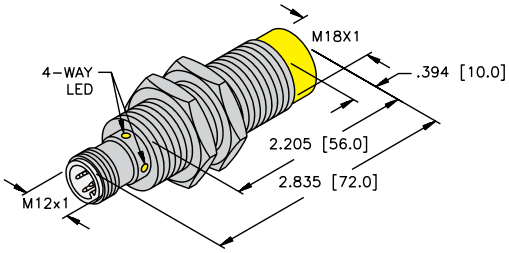
| Housing Style | Dimension Drawings |
|---|---|

A




18 mm - Nonembeddable, M12 Eurofast Connection

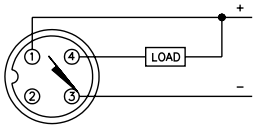
B




18 mm - Nonembeddable, Ext. Barrel Length M12 Eurofast Connection

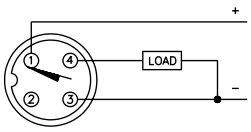
### Wiring Diagrams/Mating Cordsets

1



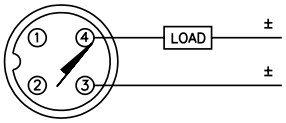

Mating Cordset: RK 4T-*; RKC 4T-*/S1587

2



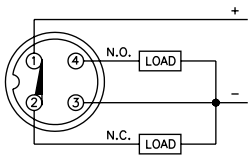

Mating Cordset: RK 4T-*; RKC 4T-*/S1587

3




Mating Cordset: RK 4.2T-*

4




Mating Cordset: RK 4.4T-*

### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

## Nonembeddable Threaded Metal Barrels with Connector and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni14-M18E-AD4X-H1141** 4417292 | Extended Range | 14 | 2-wire DC | 10-65 VDC | 500 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | B | 3 | A2 |
| **Ni14-M18E-AN6X-H1141** 4611483 | Extended Range | 14 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | B | 1 | A4 |
| **Ni14-EM18E-AN6X-H1141/S1589** 4611494 | Ext. Range, Weldguard | 14 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | SS | WG | N/A | YE | B | 1 | A4 |
| **Ni14-M18E-AP6X-H1141** 4611489 | Extended Range | 14 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | B | 2 | A4 |
| **Ni14-EM18E-AP6X-H1141/S1589** 4611495 | Ext. Range, Weldguard | 14 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | SS | WG | N/A | YE | B | 2 | A4 |
| **Ni12U-M18-AN6X-H1141/S395** 1645151 | Uprox | 12 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | A | 1 | A4 |
| **Ni12U-EM18-AP6X2-H1141/S395** 1645304 | Uprox | 12 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | SS | PBT | GN | YE | A | 2 | A4 |
| **Ni12U-EM18-AN6X2-H1141/S395/S1589** 1645490 | Uprox, Weldguard | 12 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | SS | WG | GN | YE | A | 1 | A4 |
| **Ni12U-EM18-AP6X2-H1141/S395/S1589** 1645491 | Uprox, Weldguard | 12 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | SS | WG | GN | YE | A | 2 | A4 |
| **Ni12U-M18E-AP6X-H1141** 1645143 | Uprox | 12 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | CPB | LCP | N/A | YE | B | 2 | A4 |
| **Ni12U-M18-AP6X-H1141/S395** 1645142 | Uprox | 12 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | A | 2 | A4 |
| **Ni12U-M18M-VP4X-H1141** 1581458 | Uprox, Comp. Outputs | 12 | 4-wire DC PNP | 10-65 VDC | 1500 | ≤200 | -30 to +85 | IP68 | CPB | PBT | N/A | YE | A | 4 | A4 |
| **Ni10-M18E-AN6X-H1141** 4614894 | | 10 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | B | 1 | A4 |
| **Ni10-M18E-AP6X-H1141** 4641294 | | 10 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | B | 2 | A4 |
| **Ni8-M18E-AD4X-H1141** 4411210 | | 8 | 2-wire DC | 10-65 VDC | 500 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | B | 3 | A2 |
| **Ni8-M18E-VP4X-H1141** 1561990 | Comp. Outputs | 8 | 4-wire DC PNP | 10-65 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | B | 4 | A4 |

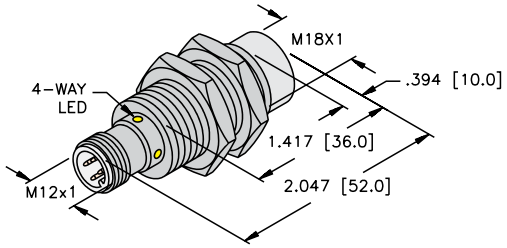
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

## Nonembeddable Threaded PTFE Coated Metal Barrels with Connector and DC Outputs

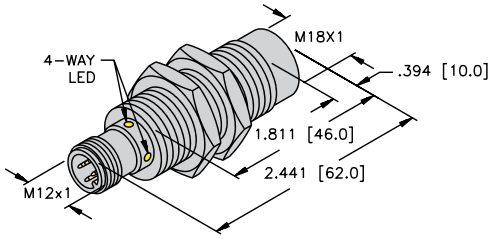
| Housing Style | Dimension Drawings |
|---|---|

A



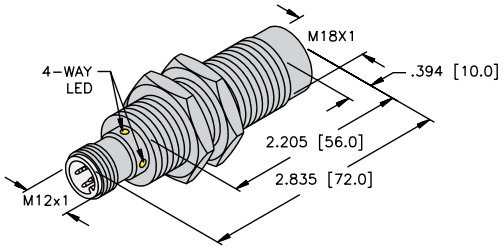

18 mm - Nonembeddable, M12 Eurofast Connection, PTFE Coated

B




18 mm - Nonembeddable, M12 Eurofast Connection, PTFE Coated

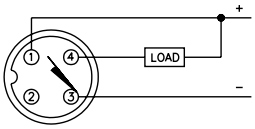
C




18 mm - Nonembeddable, Ext. Barrel Length M12 Eurofast Connection, PTFE Coated

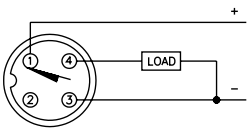
### Wiring Diagrams/Mating Cordsets

1




Mating Cordset: RK 4T-*; RKC 4T-*/S1587

2




Mating Cordset: RK 4T-*; RKC 4T-*/S1587

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current |
| | ≥170 mA on 150 mA Load Current |
| | ≥120 mA on 100 mA Load Current |
| Off-State (Leakage) Current: | ≤0.1 mA |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) |
| | ≤20 mA (Uprox+, Uprox3) |
| Time Delay Before Availability: | ≤8 ms |
| Power-On Effect: | Per IEC 947-5-2 |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Transient Protection: | Per EN 60947-5-2 |
| Temperature Drift: | ≤±10% |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

## Nonembeddable Threaded PTFE Coated Metal Barrels with Connector and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni15U-MT18-AN6X-H1141** 1635337 | Uprox+, PTFE | 15 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | TC | TC | N/A | YE | A | 1 | A4 |
| **Ni15U-MT18-AN6X-H1141/S1589** 16353370 | Uprox+, PTFE, Weldguard | 15 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | TC | WG | N/A | YE | A | 1 | A4 |
| **Ni15U-MT18-AP6X-H1141** 1635333 | Uprox+, PTFE | 15 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | TC | TC | N/A | YE | A | 2 | A4 |
| **Ni15U-MT18-AP6X-H1141/S1589** 1635333-1 | Uprox+, PTFE, Weldguard | 15 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | TC | WG | N/A | YE | A | 2 | A4 |
| **Ni15U-MT18M-AP6X2-H1141** 1635338 | Uprox+, PTFE | 15 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | TC | TC | GN | YE | B | 2 | A4 |
| **Ni15U-MT18M-AP6X2-H1141/S1589** 16352920 | Uprox+, PTFE, Weldguard | 15 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | TC | WG | GN | YE | B | 2 | A4 |
| **Ni14-MT18E-AP6X-H1141/S1589** 4611497 | Ext. Range, PTFE, Weldguard | 14 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | TC | WG | N/A | YE | C | 2 | A4 |
| **Ni12U-MT18-AN6X-H1141** 1645250 | Uprox, PTFE | 12 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | TC | TC | N/A | YE | A | 1 | A4 |
| **Ni12U-MT18-AP6X-H1141** 1645240 | Uprox, PTFE | 12 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | TC | TC | N/A | YE | A | 2 | A4 |
| **Ni12U-MT18-AP6X-H1141/S1589** 1645292 | Uprox, Weldguard | 12 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | TC | WG | N/A | YE | A | 2 | A4 |
| **Ni12U-MT18-AP6X2-H1141** 1645245 | Uprox, PTFE | 12 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | TC | TC | GN | YE | A | 2 | A4 |
| **Ni12U-MT18-AP6X2-H1141/S1589** 1645293 | Uprox, Weldguard | 12 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | TC | WG | GN | YE | A | 2 | A4 |
| **Ni12U-MT18-AP6X-H1141/S395** 1645242 | Uprox, PTFE | 12 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | TC | TC | N/A | YE | B | 2 | A4 |
| **Ni12U-MT18-AP6X2-H1141/S395** 1645246 | Uprox, PTFE | 12 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | TC | TC | GN | YE | B | 2 | A4 |
| **Ni12U-MT18-AP6X2-H1141/S395/ S1589** 1645291 | Uprox, PTFE, Weldguard | 12 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | TC | WG | GN | YE | B | 2 | A4 |

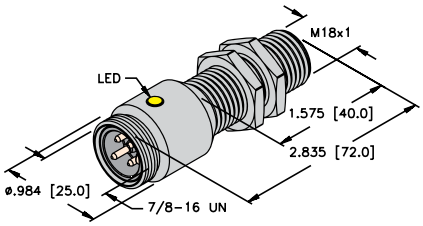
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

## Fully Threaded Metal Barrels with Connector and AC/DC Outputs

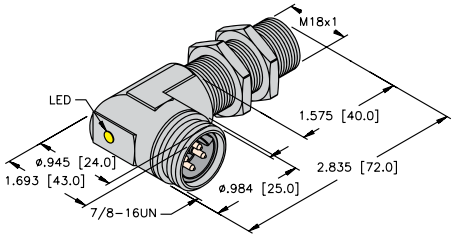
| Housing Style | Dimension Drawings |
|---|---|

A



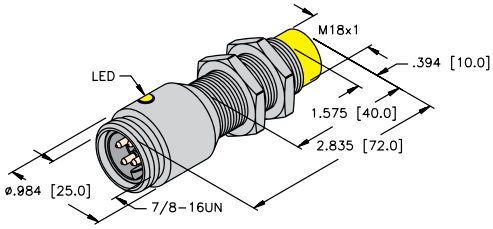

18 mm - Embeddable, 7/8" Minifast Connection

B



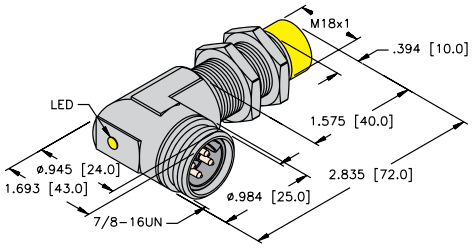

18 mm - Embeddable, Right Angle, 7/8" Minifast Connection

C




18 mm - Nonembeddable, 7/8" Minifast Connection

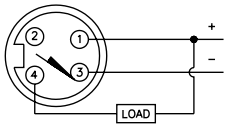
D




18 mm - Nonembeddable, 7/8" Minifast Right Angle Connection

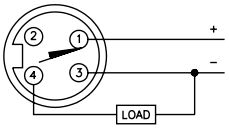
### Wiring Diagrams/Mating Cordsets

1



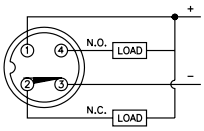

Mating Cordset: RKM 40-*M

2



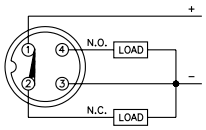

Mating Cordset: RKM 40-*M

3




Mating Cordset: RKM 40-*M

4




Mating Cordset: RKM 40-*M

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current |
| | ≥170 mA on 150 mA Load Current |
| | ≥120 mA on 100 mA Load Current |
| Off-State (Leakage) Current: | ≤0.1 mA |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) |
| | ≤20 mA (Uprox+, Uprox3) |
| Time Delay Before Availability: | ≤8 ms |
| Power-On Effect: | Per IEC 947-5-2 |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Transient Protection: | Per EN 60947-5-2 |
| Temperature Drift: | ≤±10% |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

**Fully Threaded Metal Barrels with Connector and AC/DC Outputs**

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi5-G18-AN6X-B1341** 46952 | | 5 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A4 |
| **Bi5-G18-AP6X-B1341** 46963 | | 5 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 2 | A4 |
| **Bi5-G18-AN6X-B1441** 46956 | | 5 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | B | 1 | A4 |
| **Bi5-G18-AP6X-B1441** 46967 | | 5 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | B | 2 | A4 |
| **Ni10-G18-AN6X-B1341** 46953 | | 10 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | C | 1 | A4 |
| **Ni10-G18-AP6X-B1341** 46964 | | 10 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | C | 2 | A4 |
| **Ni10-G18-AN6X-B1441** 46957 | | 10 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | D | 1 | A4 |
| **Ni10-G18-AP6X-B1441** 46968 | | 10 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | D | 2 | A4 |
| **Ni10-G18-VN6X-B1441** 46991 | Comp. Outputs | 10 | 4-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | D | 3 | A4 |
| **Ni10-G18-VP6X-B1441** 4699190 | Comp. Outputs | 10 | 4-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | D | 4 | A4 |



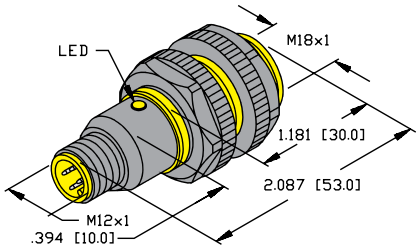
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

## Threaded Plastic Barrels with Connector and DC Outputs

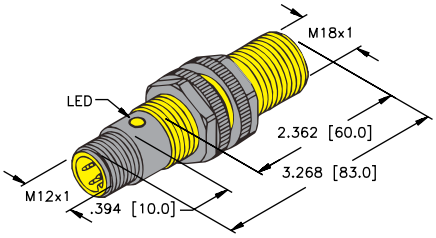
| Housing Style | Dimension Drawings |
|---|---|

A



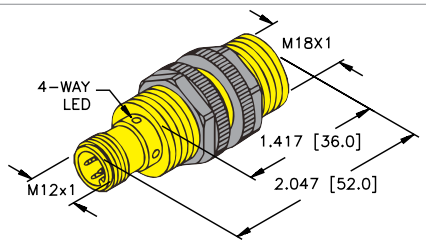

18 mm - Embeddable and Nonembeddable, Partial Threading, M12 Eurofast Connection

B



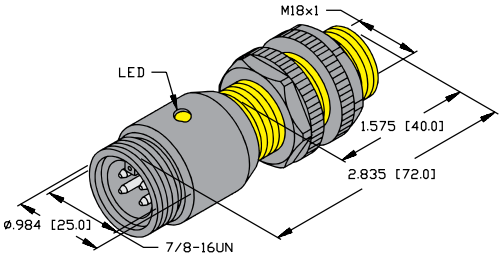

18 mm - Embeddable and Nonembeddable, Partial Threading, M12 Eurofast Connection

C




18 mm - Embeddable and Nonembeddable, Partial Threading, M12 Eurofast Connection

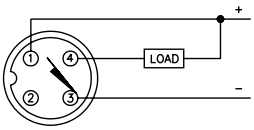
D




18 mm - Embeddable and Nonembeddable, Full Threading, 7/8" Minifast Connection

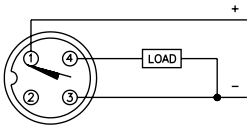
### Wiring Diagrams/Mating Cordsets

1



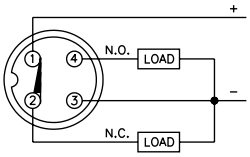

Mating Cordset: RKK 4T-*

2



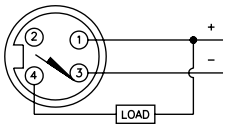

Mating Cordset: RKK 4T-*

3



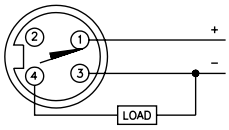

Mating Cordset: RKK 4.4T-*

4




Mating Cordset: RK 40-*M

5




Mating Cordset: RK 40-*M

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current |
| | ≥170 mA on 150 mA Load Current |
| | ≥120 mA on 100 mA Load Current |
| Off-State (Leakage) Current: | ≤0.1 mA |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) |
| | ≤20 mA (Uprox+, Uprox3) |
| Time Delay Before Availability: | ≤8 ms |
| Power-On Effect: | Per IEC 947-5-2 |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Transient Protection: | Per EN 60947-5-2 |
| Temperature Drift: | ≤±10% |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

## Threaded Plastic Barrels with Connector and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi5U-S18-AN6X-H1141** 1635620 | Uprox | 5 | 3-wire DC NPN | 10-30 VDC | 2500 | ≤200 | -30 to +85 | IP68 | PA 12 | PA 12 | N/A | YE | C | 1 | A4 |
| **Bi5U-S18-AP6X-H1141** 1635600 | Uprox | 5 | 3-wire DC PNP | 10-30 VDC | 2500 | ≤200 | -30 to +85 | IP68 | PA 12 | PA 12 | N/A | YE | C | 2 | A4 |
| **Bi5-S18-AN6X-H1141** 46525 | | 5 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | A | 1 | A4 |
| **Bi5-S18-AP6X-H1141** 46524 | | 5 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | A | 2 | A4 |
| **Bi5-S18-VP4X-H1141** 1513401 | Comp. Outputs | 5 | 4-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | B | 3 | A4 |
| **Bi5-P18-AN6X-B2341** 46972 | | 5 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | D | 4 | A4 |
| **Bi5-P18-AP6X-B2341** 46973 | | 5 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | D | 5 | A4 |
| **Ni12U-S18-AN6X-H1141** 1645620 | Uprox | 12 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | PA 12 | PA 12 | N/A | YE | C | 1 | A4 |
| **Ni12U-S18-AP6X-H1141** 1645600 | Uprox | 12 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | PA 12 | PA 12 | N/A | YE | C | 2 | A4 |
| **Ni10-P18-AN6X-B2341** 4697800 | | 10 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | D | 4 | A4 |
| **Ni10-P18-AP6X-B2341** 4697900 | | 10 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | D | 5 | A4 |
| **Ni8-S18-AN6X-H1141** 46527 | | 8 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | A | 1 | A4 |
| **Ni8-S18-AP6X-H1141** 46526 | | 8 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | A | 2 | A4 |

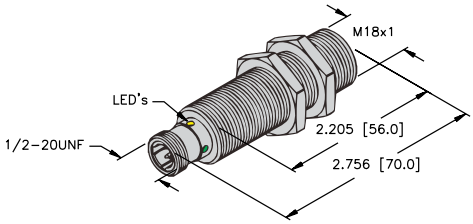
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

**Embeddable Fully Threaded Metal Barrels with Connector and AC/DC Outputs**

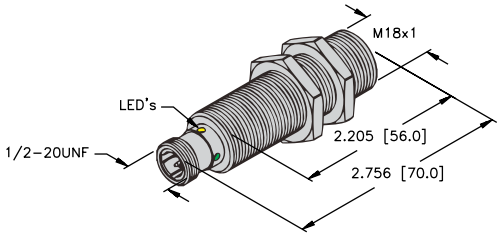
| Housing Style | Dimension Drawings |
|---|---|

A



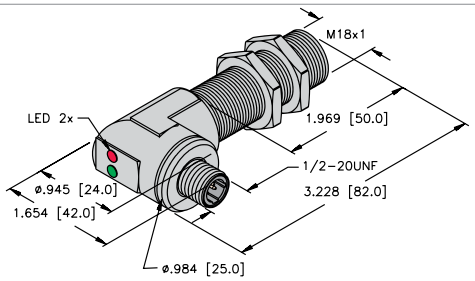

18 mm - Embeddable, 1/2" Microfast Connection

B



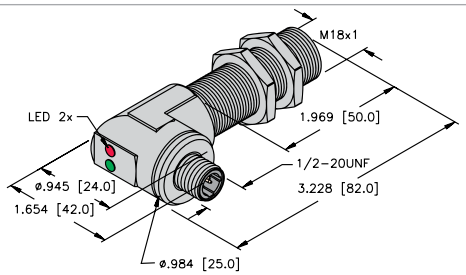

18 mm - Embeddable, 1/2" Microfast Connection, PTFE Coated

C




18 mm - Embeddable, 1/2" Microfast Connection

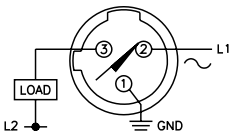
D




18 mm - Embeddable, 1/2" Microfast Right Angle Connection, PTFE Coated

**Wiring Diagrams/Mating Cordsets**

1




Mating Cordset: KB 3T-*; KBE 3T-*/S600

**A5** — **2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)**

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Minimum Load Current: | ≥3.0 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Inrush Current: | ≤3 A (≤20 ms, max 5 Hz) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | Power-On Effect: | Per IEC 947-5-2 |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA | Transient Protection: | Per EN 60947-5-2 |
| | AC: ≥120 mA; DC: ≥120 mA | Shock: | 30 g, 11 ms |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | AC: ≤100 mA; DC: ≤100 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Off-State (Leakage) Current: | ≤1.7 mA (AC) | | |
| | ≤1.5 mA (DC) | | |

**A6** — **2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)**

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Power-On Effect: | Per IEC 947-5-2 |
| | AC: ≤100 mA; DC: ≤100 mA | Transient Protection: | Per EN 60947-5-2 |
| Off-State (Leakage) Current: | ≤1.7 mA | Shock: | 30 g, 11 ms |
| Minimum Load Current: | ≥3.0 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

## Embeddable Fully Threaded Metal Barrels with Connector and AC/DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi8-G18-ADZ30X2-B3331** 4209301 | Extended Range | 8 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | SS | PA 12 | GN | RD | A | 1 | A5 |
| **Bi5U-G18-ADZ30X2-B3331** 4281213 | Uprox | 5 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP67 | CPB | PBT | GN | YE | A | 1 | A5 |
| **Bi5U-GT18-ADZ30X2-B3331** 4281223 | Uprox, PTFE | 5 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP67 | TC | TC | GN | YE | B | 1 | A5 |
| **Bi5-G18-ADZ30X2-B3331** 4208092 | | 5 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | GN | RD | A | 1 | A5 |
| **Bi5-GT18-ADZ30X2-B3331** 4255491 | PTFE | 5 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | TC | TC | GN | RD | B | 1 | A5 |
| **Bi5-GT18-ADZ30X2-B3331/S34** 4255400 | PTFE, WFI | 5 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | TC | TC | GN | RD | B | 1 | A5 |
| **Bi5-GT18H-ADZ30X2-B3331/S34** 4255289 | PTFE, WFI, Stoneface | 5 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | TC | SF | GN | RD | B | 1 | A5 |
| **Bi5-GT18H-ADZ30X2-B3331/S34/S1589** 4255283 | PTFE, Weldguard | 5 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | TC | WG | GN | RD | B | 1 | A5 |
| **Bi5-GT18-ADZ30X2-B3431/S34** 4255605 | PTFE, WFI | 5 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | TC | TC | GN | RD | D | 1 | A5 |
| **Bi5-G18-AZ3X-B3331** 4372098 | | 5 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | A | 1 | A6 |
| **Bi5-G18-AZ3X-B3431** 4372090 | | 5 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | C | 1 | A6 |



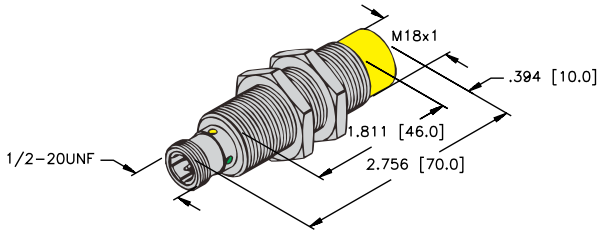
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

## Nonembeddable Fully Threaded Metal Barrels with Connector and AC/DC Outputs

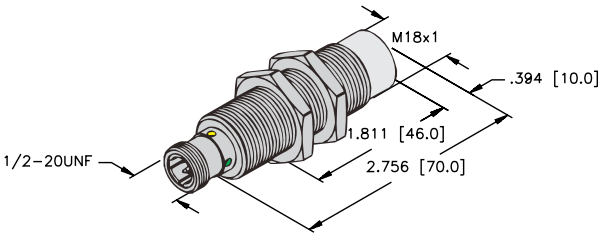
| Housing Style | Dimension Drawings |
|---|---|

A



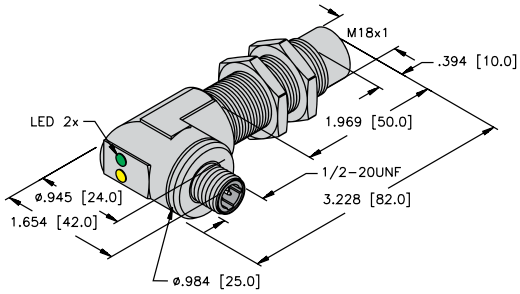

18 mm - Nonembeddable, 1/2" Microfast connection

B




18 mm - Nonembeddable, 1/2" Microfast connection, PTFE Coated

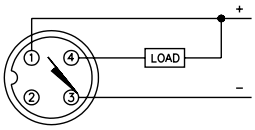
C




18 mm - Nonembeddable, PTFE Coated, 1/2" Microfast Right Angle Connection

### Wiring Diagrams/Mating Cordsets

1




Mating Cordset: KB 3T-*

### A5 — 2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA |
| | AC: ≥120 mA; DC: ≥120 mA |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA (AC) |
| | ≤1.5 mA (DC) |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤3 A (≤20 ms, max 5 Hz) |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

### A6 — 2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

## Nonembeddable Fully Threaded Metal Barrels with Connector and AC/DC Outputs

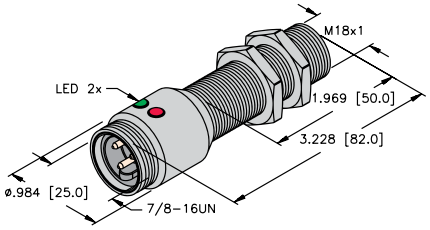
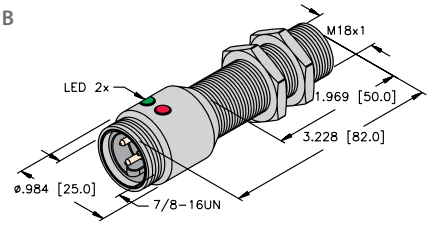
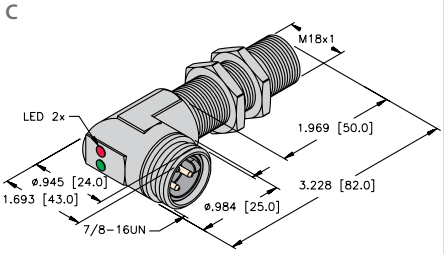
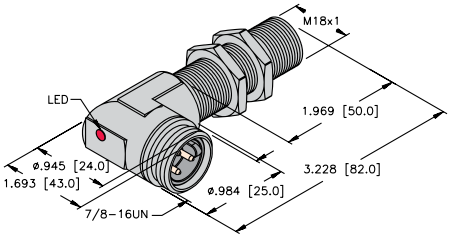
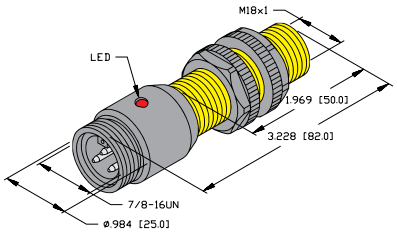
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni14-G18-ADZ30X2-B3331** 4205403 | Extended Range | 14 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | GN | RD | A | 1 | A5 |
| **Ni12U-G18-ADZ30X2-B3331** 4281413 | Uprox | 12 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP67 | CPB | PBT | GN | YE | A | 1 | A5 |
| **Ni12U-GT18-ADZ30X2-B3331** 4281423 | Uprox, PTFE | 12 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP67 | TC | TC | GN | YE | B | 1 | A5 |
| **Ni10-G18-AZ3X-B3331** 4372192 | | 10 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | A | 1 | A6 |
| **Ni8-G18-ADZ30X2-B3331/S34** 4209100 | WFI | 8 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | GN | RD | A | 1 | A5 |
| **Ni8-GT18-ADZ30X2-B3331/S34** 4209101 | PTFE, WFI | 8 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | TC | TC | GN | RD | B | 1 | A5 |
| **Ni8-GT18-ADZ30X2-B3431/S34** 4209201 | PTFE, WFI | 8 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | TC | TC | GN | RD | C | 1 | A5 |
| **Ni8-G18-AZ3X-B3331** 4350588 | | 8 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | A | 1 | A6 |



We reserve the right to make technical alterations without prior notice.

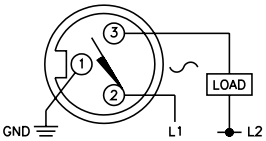
# Inductive Barrel Sensors | 18 mm

## Embeddable Fully Threaded Barrels with Connector and AC/DC Outputs

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   18 mm - Embeddable, 7/8" Minifast Connection | B   18 mm - Embeddable, 7/8" Minifast Connection, PTFE Coated |
| C   18 mm - Embeddable, 7/8" Minifast Right Angle Connection | D   18 mm - Embeddable, 7/8" Minifast Right Angle Connection, PTFE Coated | E   18 mm - Embeddable and Nonembeddable, Full Threading, 7/8" Minifast Connection |

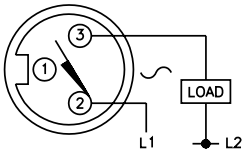
### Wiring Diagrams/Mating Cordsets

1




Mating Cordset: RKM 30-*M; RKM 311-*M/S600

2




Mating Cordset: RK 30-*M

### A5 — 2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Minimum Load Current: | ≥3.0 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Inrush Current: | ≤3 A (≤20 ms, max 5 Hz) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | Power-On Effect: | Per IEC 947-5-2 |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA | Transient Protection: | Per EN 60947-5-2 |
| | AC: ≥120 mA; DC: ≥120 mA | Shock: | 30 g, 11 ms |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | AC: ≤100 mA; DC: ≤100 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Off-State (Leakage) Current: | ≤1.7 mA (AC) | | |
| | ≤1.5 mA (DC) | | |

### A6 — 2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Power-On Effect: | Per IEC 947-5-2 |
| | AC: ≤100 mA; DC: ≤100 mA | Transient Protection: | Per EN 60947-5-2 |
| Off-State (Leakage) Current: | ≤1.7 mA | Shock: | 30 g, 11 ms |
| Minimum Load Current: | ≥3.0 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

## Embeddable Fully Threaded Barrels with Connector and AC/DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi5U-G18-ADZ30X2-B1331** 4281212 | Uprox | 5 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/ 10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP67 | CPB | PBT | GN | YE | A | 1 | A5 |
| **Bi5U-GT18-ADZ30X2-B1331** 4281222 | Uprox, PTFE | 5 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/ 10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP67 | TC | TC | GN | YE | B | 1 | A5 |
| **Bi5-G18-ADZ30X2-B1331** 42080 | | 5 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | GN | RD | A | 1 | A5 |
| **Bi5-GT18-ADZ30X2-B1331** 4255290 | PTFE | 5 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | TC | TC | GN | RD | B | 1 | A5 |
| **Bi5-GT18-ADZ30X2-B1331/S34** 4255200 | PTFE, WFI | 5 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | TC | TC | GN | RD | B | 1 | A5 |
| **Bi5-GT18H-ADZ30X2-B1331/S34/S1589** 4255284 | PTFE, WFI, Weldguard | 5 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | TC | WG | GN | RD | B | 1 | A5 |
| **Bi5-GT18-ADZ30X2-B1431** 4255690 | PTFE | 5 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | TC | TC | GN | RD | D | 1 | A5 |
| **Bi5-GT18-ADZ30X2-B1431/S34** 4255600 | PTFE, WFI | 5 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | TC | TC | GN | RD | D | 1 | A5 |
| **Bi5-GT18H-ADZ30X2-B1431/S34/S1589** 4255285 | PTFE, Weldguard | 5 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | TC | WG | GN | RD | D | 1 | A5 |
| **Bi5-G18-AZ3X-B1331** 43720 | | 5 | 2-wire AC/DC | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | A | 1 | A6 |
| **Bi5-G18-AZ3X-B1431** 43724 | | 5 | 2-wire AC/DC | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | C | 1 | A6 |
| **Bi5-P18-AZ3X-B2331** 43748 | | 5 | 2-wire AC/DC | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | RD | E | 2 | A6 |

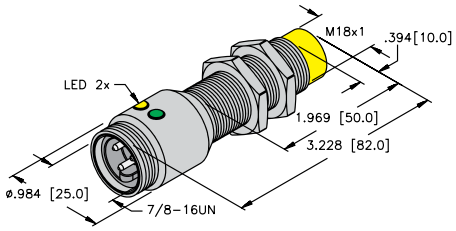
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

## Nonembeddable Fully Threaded Barrels with Connector and AC/DC Outputs

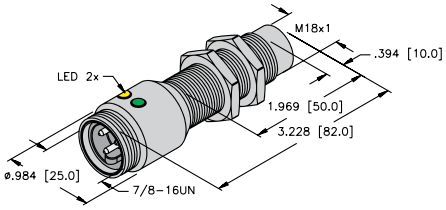
| Housing Style | Dimension Drawings |
|---|---|

A



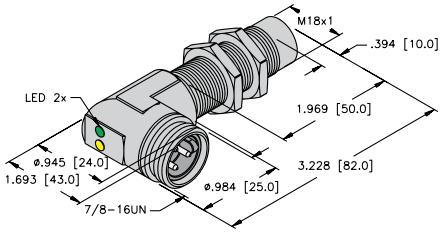

18 mm - Nonembeddable 7/8" Minifast Connection

B



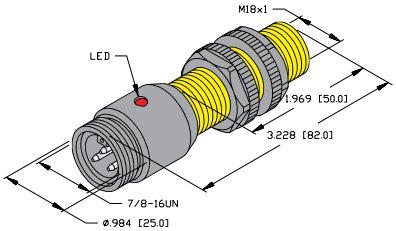

18 mm - Nonembeddable 7/8" Minifast Connection, PTFE Coated

C




18 mm - Nonembeddable, PTFE Coated 7/8" Minifast Right Angle Connection

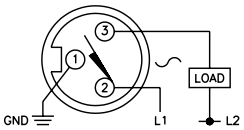
D




18 mm - Embeddable and Nonembeddable, Full Threading, 7/8" Minifast Connection

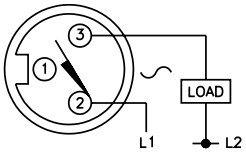
### Wiring Diagrams/Mating Cordsets

1




Mating Cordset: RKM 30-*M; RKM 311-*M/S600

2




Mating Cordset: RK 30-*M

### A5 — 2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA |
| | AC: ≥120 mA; DC: ≥120 mA |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA (AC) |
| | ≤1.5 mA (DC) |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤3 A (≤20 ms, max 5 Hz) |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

### A6 — 2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

## Nonembeddable Fully Threaded Barrels with Connector and AC/DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni14-G18-ADZ30X2-B1331** 4205407 | Extended Range | 14 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | GN | RD | A | 1 | A5 |
| **Ni14-GT18H-ADZ30X2-B1331/S1589** 4205484 | PTFE, Weldguard | 14 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | TC | WG | GN | RD | B | 1 | A5 |
| **Ni12U-G18-ADZ30X2-B1331** 4281412 | Uprox | 12 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/ 10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP67 | CPB | PBT | GN | YE | A | 1 | A5 |
| **Ni12U-GT18-ADZ30X2-B1331** 4281422 | Uprox | 12 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/ 10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP67 | TC | TC | GN | YE | B | 1 | A5 |
| **Ni10-G18-AZ3X-B1331** 43721 | | 10 | 2-wire AC/DC | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | A | 1 | A6 |
| **Ni10-P18-AZ3X-B2331** 43752 | | 10 | 2-wire AC/DC | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | RD | D | 2 | A6 |
| **Ni8-GT18-ADZ30X2-B1331/S34** 4208801 | PTFE, WFI | 8 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | TC | TC | GN | RD | B | 1 | A5 |
| **Ni8-GT18H-ADZ30X2-B1331/S34/S1589** 4208890 | PTFE, Weldguard | 8 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | TC | WG | GN | RD | B | 1 | A5 |
| **Ni8-GT18-ADZ30X2-B1431/S34** 4208901 | PTFE, WFI | 8 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | TC | TC | GN | RD | C | 1 | A5 |
| **Ni8-GT18H-ADZ30X2-B1431/S34/S1589** 4208990 | Weldguard | 8 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | TC | WG | GN | RD | C | 1 | A5 |



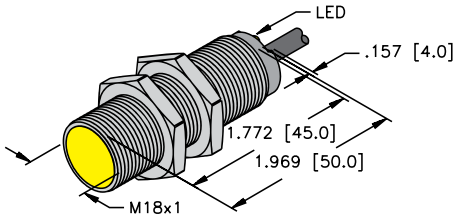
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

**Embeddable Threaded Metal Barrels with Cable and DC Outputs**

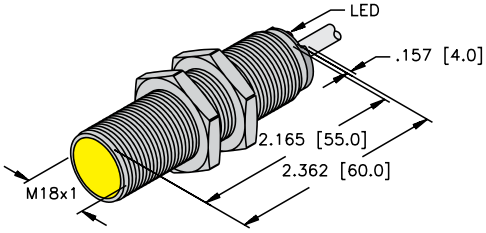
| Housing Style | Dimension Drawings |
|---|---|

A



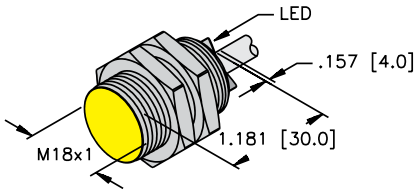

18 mm - Embeddable, Potted-in Cable

B



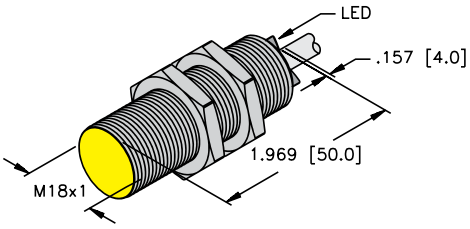

18 mm - Embeddable, Potted-In Cable, Extended Length Barrel, Partial Threading

C




18 mm - Embeddable, Full Threading, Potted-In Cable

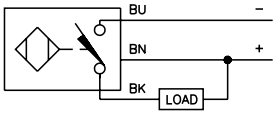
D



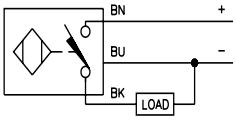

18 mm - Embeddable, Full Threading, Potted-In Cable

**Wiring Diagrams/Mating Cordsets**

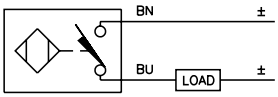
1



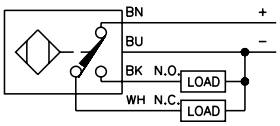

2




3




4




**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

## Embeddable Threaded Metal Barrels with Cable and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi10U-M18-AN6X** 1644845 | Uprox3 | 10 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -25 to +70 | IP68 | CPB | LCP | N/A | YE | 2M/PVC | A | 1 | A4 |
| **BI10U-M18-AP6X** 1644840 | Uprox3 | 10 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -25 to +70 | IP68 | CPB | LCP | N/A | YE | 2M/PVC | A | 2 | A4 |
| **BI10U-M18-VP6X** 1644842 | Uprox3, Comp. Outputs | 10 | 4-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -25 to +70 | IP68 | CPB | LCP | N/A | YE | 2M/PVC | A | 4 | A4 |
| **Bi8U-M18-AN6X** 1644736 | Uprox+ | 8 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | 2M/PVC | A | 1 | A4 |
| **Bi8U-M18-AP6X** 1644733 | Uprox+ | 8 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Bi8-M18-AN6X** 4615130 | Extended Range | 8 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/PVC | A | 1 | A4 |
| **Bi8-M18-AP6X** 4615030 | Extended Range | 8 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Bi8-M18-VN4X** 4590703 | Comp. Outputs | 8 | 4-wire DC NPN | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Bi8-M18-VP4X** 4590704 | Comp. Outputs | 8 | 4-wire DC PNP | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/PVC | A | 4 | A4 |
| **Bi8-G18-AN6X** 4616101 | Extended Range | 8 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/PVC | D | 1 | A4 |
| **Bi8-G18-AP6X** 4615088 | | 8 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/PVC | D | 2 | A4 |
| **Bi5U-M18-AN6X** 1635120 | Uprox | 5 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | 2M/PVC | A | 1 | A4 |
| **Bi5U-EM18-AP6X** 1635300 | Uprox | 5 | 3-wire DC PNP | 10-30 VDC | 2500 | ≤200 | -30 to +85 | IP68 | SS | PBT | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Bi5U-M18-AP6X** 1635100 | Uprox | 5 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Bi5U-M18E-AP6X** 1635101 | Uprox | 5 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | 2M/PVC | B | 1 | A4 |
| **Bi5-G18-AN6X** 4641500 | | 5 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | D | 1 | A4 |
| **Bi5-G18-AN7X** 4740500 | TTL Compatible | 5 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤150 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | D | 1 | A4 |
| **Bi5-G18-AP6X** 4641400 | | 5 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | D | 2 | A4 |
| **Bi5-EG18-AN6X** 4611101 | | 5 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/PVC | D | 1 | A4 |
| **Bi5-EG18-AP6X** 4611001 | | 5 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/PVC | D | 2 | A4 |
| **Bi5-M18E-VP4X** 1561190 | Comp. Outputs | 5 | 4-wire DC PNP | 10-65 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | B | 4 | A4 |
| **Bi5-G18K-AN6X** 46714 | Short Barrel | 5 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | C | 1 | A4 |
| **Bi5-G18K-AP6X** 46704 | Short Barrel | 5 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | C | 2 | A4 |

We reserve the right to make technical alterations without prior notice.

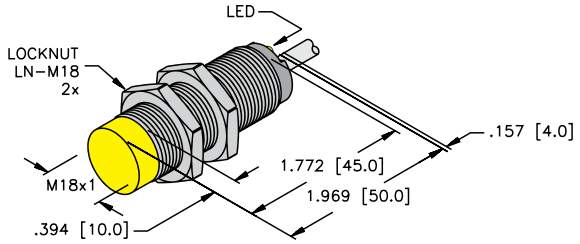
# Inductive Barrel Sensors | 18 mm

## Nonembeddable Threaded Metal Barrels with Cable and DC Outputs

**Housing Style**

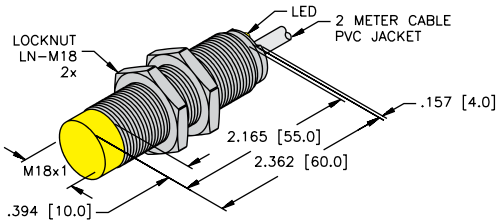
**Dimension Drawings**

A



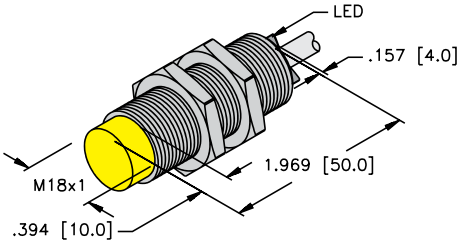

18 mm - Nonembeddable, Potted-in Cable

B




18 mm - Nonembeddable, Extended Barrel Length, Partial Threading, Potted-In Cable

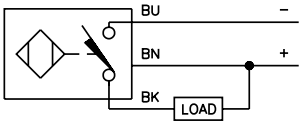
C




18 mm - Nonembeddable, Full Threading, Potted-In Cable

**Wiring Diagrams/Mating Cordsets**

1

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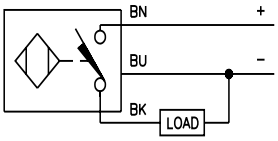


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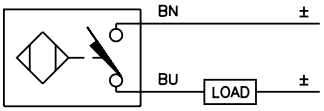



**A2 — 2-wire DC - (AD, RD, AG)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

**A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

## Nonembeddable Threaded Metal Barrels with Cable and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni15U-M18-AN6X** 1635334 | Uprox+ | 15 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | 2M/PVC | A | 1 | A4 |
| **Ni15U-M18-AP6X** 1635330 | Uprox+ | 15 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Ni14-M18-AD4X** 4417235 | Extended Range | 14 | 2-wire DC | 10-65 VDC | 500 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 3 | A2 |
| **Ni14-M18-AN6X** 4611411 | Extended Range | 14 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 1 | A4 |
| **Ni14-M18-AP6X** 4611401 | Extended Range | 14 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Ni12U-M18-AN6X** 1645120 | Uprox | 12 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | 2M/PVC | A | 1 | A4 |
| **Ni12U-M18-AP6X** 1645100 | Uprox | 12 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Ni12U-M18E-AN6X** 1645110 | Uprox | 12 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | 2M/PVC | B | 1 | A4 |
| **Ni12U-M18E-AP6X** 1645106 | Uprox | 12 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | 2M/PVC | B | 2 | A4 |
| **Ni12U-EM18-AN6X** 1645320 | Uprox | 12 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP67 | SS | PBT | N/A | YE | 2M/PVC | A | 1 | A4 |
| **Ni12U-EM18-AP6X** 1645300 | Uprox | 12 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP67 | SS | PBT | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Ni10-G18-AN6X** 4641700 | | 10 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | C | 1 | A4 |
| **Ni10-G18-AN7X** 4740700 | TTL Compatible | 10 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤150 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | C | 1 | A4 |
| **Ni10-G18-AP6X** 4641600 | | 10 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | C | 2 | A4 |
| **Ni8-M18-AD4X** 44112 | | 8 | 2-wire DC | 10-65 VDC | 500 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 3 | A2 |

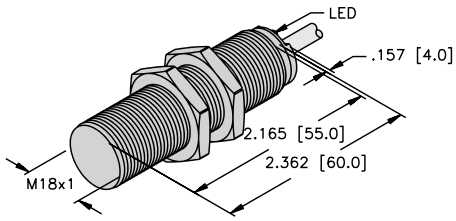
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

**Threaded Barrels with Cable and AC/DC Outputs**

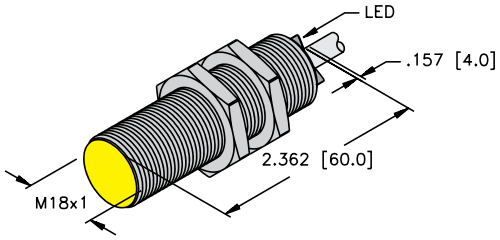
| Housing Style | Dimension Drawings |
|---|---|

A



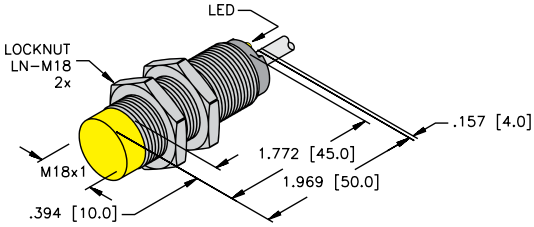

18 mm - Embeddable, Potted-In Cable, Partial Threading, PTFE Coated

B



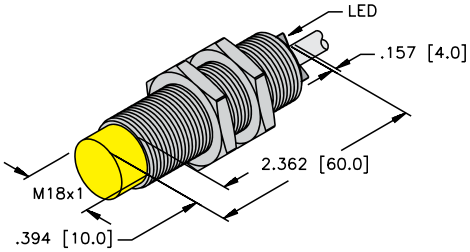

18 mm - Embeddable, Full Threading, Potted-In Cable

C



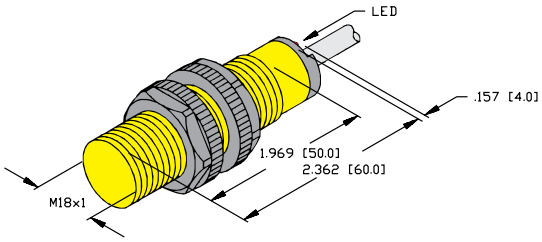

18 mm - Nonembeddable, Partial Threading, Potted-In Cable

D




18 mm - Nonembeddable, Full Threading, Potted-In Cable

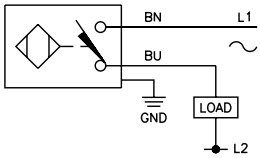
E




18 mm - Embeddable and Nonembeddable, Partial Threading, Potted-In Cable

**Wiring Diagrams/Mating Cordsets**

1

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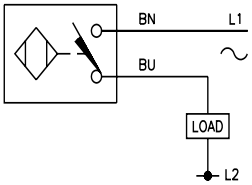



**A5** — **2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)**

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA |
| | AC: ≥120 mA; DC: ≥120 mA |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA (AC) |
| | ≤1.5 mA (DC) |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤3 A (≤20 ms, max 5 Hz) |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

**A6** — **2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)**

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

## Threaded Barrels with Cable and AC/DC Outputs

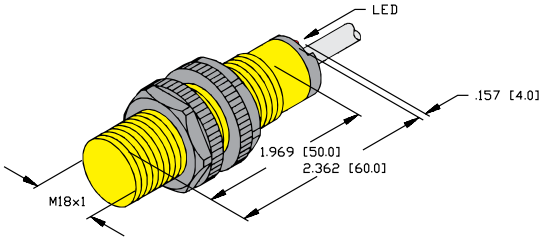
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi5U-MT18-ADZ30X2** 4209410 | Uprox | 5 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/ 10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP67 | TC | TC | GN | YE | 2M/PVC | A | 1 | A5 |
| **Bi5-G18-ADZ30X2** 4212000 | | 5 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | GN | RD | 2M/PVC | B | 1 | A5 |
| **Bi5-G18-AZ3X** 4330400 | | 5 | 2-wire AC/DC | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | 2M/PVC | B | 1 | A6 |
| **Bi5-G18-AZ3X2** 1374195 | | 5 | 2-wire AC/DC | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | GN | YE | 2M/PVC | B | 1 | A6 |
| **Bi5-EG18-AZ3X** 4611190 | | 5 | 2-wire AC/DC | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | SS | PA 12 | N/A | RD | 2M/PVC | B | 1 | A6 |
| **Bi5-S18-AZ3X** 4350400 | | 5 | 2-wire AC/DC | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | RD | 2M/PVC | E | 2 | A6 |
| **Ni14-G18-ADZ30X2** 4205402 | Extended Range | 14 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | GN | RD | 2M/PVC | D | 1 | A5 |
| **Ni12U-M18-ADZ30X2** 4282410 | Uprox | 12 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/ 10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP67 | CPB | PBT | GN | YE | 2M/PVC | C | 1 | A5 |
| **Ni8-S18-AZ3X** 4350500 | | 8 | 2-wire AC/DC | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | RD | 2M/PVC | E | 2 | A6 |



We reserve the right to make technical alterations without prior notice.

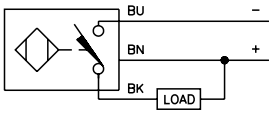
# Inductive Barrel Sensors | 18 mm

## Threaded Plastic Barrels with Cable and DC Outputs

| Housing Style | Dimension Drawings |
|---|---|
| | A   18 mm - Embeddable and Nonembeddable, Partial Threading, Potted-In Cable |

### Wiring Diagrams/Mating Cordsets

1

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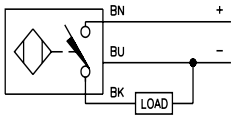
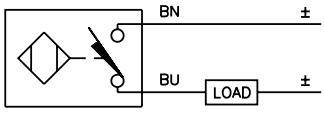



3




### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

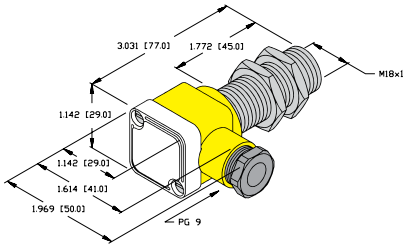
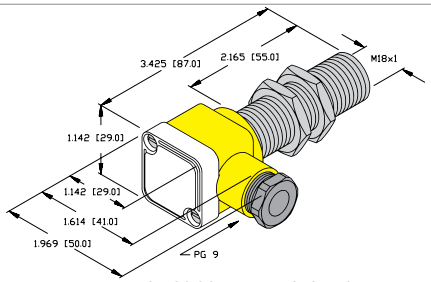
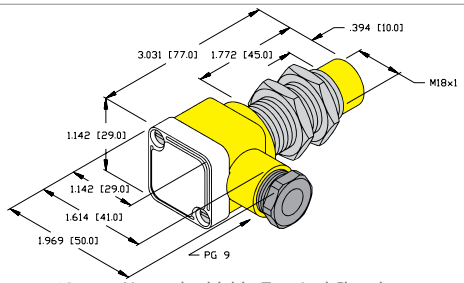
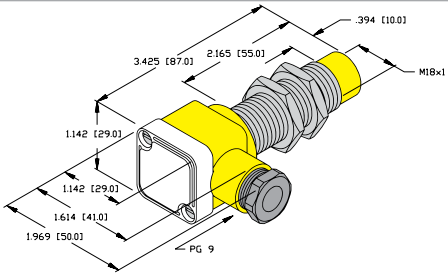
## Threaded Plastic Barrels with Cable and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi5U-S18-AP6X** 1635500 | Uprox | 5 | 3-wire DC PNP | 10-30 VDC | 2500 | ≤200 | -30 to +85 | IP68 | PA 12 | PA 12 | N/A | YE | A | 2 | A4 |
| **Bi5-S18-AD4X** 44560 | | 5 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | A | 3 | A2 |
| **Bi5-S18-AN6X** 46561 | | 5 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | A | 1 | A4 |
| **Bi5-S18-AN7X** 1714000 | TTL Compatible | 5 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤150 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | A | 1 | A4 |
| **Bi5-S18-AN7X/S100** 17734 | High Temp. 100 °C | 5 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤150 | -25 to +100 | IP67 | PA 12 | IRPA | N/A | YE | A | 1 | A4 |
| **Bi5-S18-AP6X** 46560 | | 5 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | A | 2 | A4 |
| **Bi5-S18-AP7X/S100** 1754200 | TTL Compatible, High Temp. 100 °C | 5 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤150 | -25 to +100 | IP67 | PA 12 | IRPA | N/A | YE | A | 2 | A4 |
| **Ni12U-S18-AN6X** 1645520 | Uprox | 12 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | PA 12 | PA 12 | N/A | YE | A | 1 | A4 |
| **Ni12U-S18-AP6X** 1645500 | Uprox | 12 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | PA 12 | PA 12 | N/A | YE | A | 2 | A4 |
| **Ni8-S18-AD4X** 44562 | | 8 | 2-wire DC | 10-65 VDC | 500 | ≤100 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | A | 3 | A2 |
| **Ni8-S18-AN6X** 46563 | | 8 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | A | 1 | A4 |
| **Ni8-S18-AN7X** 1714100 | TTL Compatible | 8 | 3-wire DC NPN | 10-30 VDC | 500 | ≤150 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | A | 1 | A4 |
| **Ni8-S18-AP6X** 46562 | | 8 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | A | 2 | A4 |
| **Ni8-S18-AN7X/S100** 1773250 | TTL Compatible, High Temp. 100 °C | 8 | 3-wire DC NPN | 10-30 VDC | 500 | ≤150 | -25 to +100 | IP67 | PA 12 | IRPA | N/A | YE | A | 1 | A4 |
| **Ni8-S18-AP7X/S100** 1749850 | TTL Compatible, High Temp. 100 °C | 8 | 3-wire DC PNP | 10-30 VDC | 500 | ≤150 | -25 to +100 | IP67 | PA 12 | IRPA | N/A | YE | A | 2 | A4 |

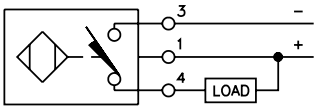
We reserve the right to make technical alterations without prior notice.

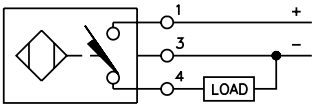
# Inductive Barrel Sensors | 18 mm

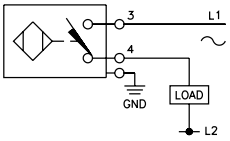
## Threaded Metal Barrels with Terminal Chamber and AC/DC Outputs

| Housing Style | Dimension Drawings |
|---|---|
| | A   18 mm - Embeddable, Terminal Chamber |
| B   18 mm - Embeddable, Terminal Chamber | C   18 mm - Nonembeddable, Terminal Chamber |
| D   18 mm - Nonembeddable, Terminal Chamber | |

### Wiring Diagrams/Mating Cordsets

1 


2 


3 


### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

### A6 — 2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Power-On Effect: | Per IEC 947-5-2 |
| | AC: ≤100 mA; DC: ≤100 mA | Transient Protection: | Per EN 60947-5-2 |
| Off-State (Leakage) Current: | ≤1.7 mA | Shock: | 30 g, 11 ms |
| Minimum Load Current: | ≥3.0 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

## Threaded Metal Barrels with Terminal Chamber and AC/DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi5U-EG18SK-AP6X** 1635400 | Uprox | 5 | 3-wire DC PNP | 10-30 VDC | 2500 | ≤200 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | A | 2 | A4 |
| **Bi5-G18SK-AN6X2** 4642500 | | 5 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | GN | YE | A | 1 | A4 |
| **Bi5-G18SK-AP6X2** 4642400 | | 5 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | GN | YE | A | 2 | A4 |
| **Bi5-G18SK-AZ3X2** 4331400 | | 5 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤500 | -25 to +70 | IP67 | CPB | PA 12 | GN | RD | B | 3 | A6 |
| **Ni10-G18SK-AN6X2** 4642700 | | 10 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | GN | YE | C | 1 | A4 |
| **Ni10-G18SK-AP6X2** 4642600 | | 10 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | GN | YE | C | 2 | A4 |
| **Ni10-G18SK-AZ3X2** 4331500 | | 10 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | GN | RD | D | 3 | A6 |

We reserve the right to make technical alterations without prior notice.

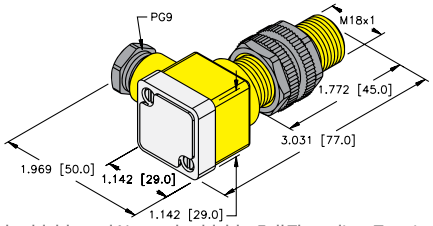
# Inductive Barrel Sensors | 18 mm

## Threaded Metal Barrels with Terminal Chamber and AC/DC Outputs

### Housing Style

### Dimension Drawings

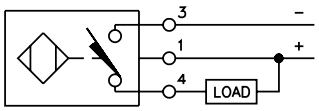
A




18 mm - Embeddable and Nonembeddable, Full Threading, Terminal Chamber

### Wiring Diagrams/Mating Cordsets

1

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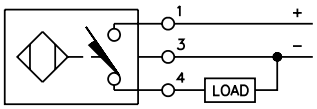


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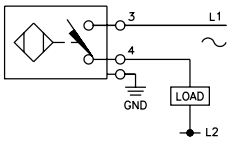



### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current |
| | ≥170 mA on 150 mA Load Current |
| | ≥120 mA on 100 mA Load Current |
| Off-State (Leakage) Current: | ≤0.1 mA |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) |
| | ≤20 mA (Uprox+, Uprox3) |
| Time Delay Before Availability: | ≤8 ms |
| Power-On Effect: | Per IEC 947-5-2 |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Transient Protection: | Per EN 60947-5-2 |
| Temperature Drift: | ≤±10% |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

### A6 — 2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

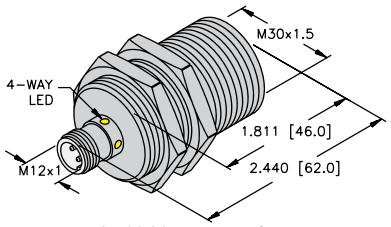
## Threaded Metal Barrels with Terminal Chamber and AC/DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi5U-P18SK-AP6X** 1635700 | Uprox | 5 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP68 | PA 12 | PA 12 | N/A | YE | A | 2 | A4 |
| **Bi5-P18SK-AP6X2** 4656900 | | 5 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | GN | YE | A | 2 | A4 |
| **Bi5-P18SK-AZ3X2** 4351400 | | 5 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PA 12 | PA 12 | GN | RD | A | 3 | A6 |
| **Ni12U-P18SK-AP6X** 1645700 | Uprox | 12 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | PA 12 | PA 12 | N/A | YE | A | 2 | A4 |
| **Ni10-P18SK-AZ3X2** 4351500 | | 10 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PA 12 | PA 12 | GN | RD | A | 3 | A6 |
| **Ni10-P18SK-AN6X2** 4657200 | | 10 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | GN | YE | A | 1 | A4 |
| **Ni10-P18SK-AP6X2** 4657100 | | 10 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | GN | YE | A | 2 | A4 |

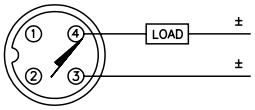
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm

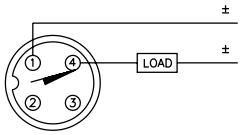
## Embeddable Threaded Metal Barrels with Connector and DC Outputs

| Housing Style | Dimension Drawings |
|---|---|
| | A   30 mm - Embeddable, M12 Eurofast Connection |

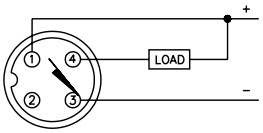
### Wiring Diagrams/Mating Cordsets

1


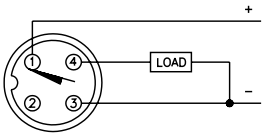
Mating Cordset: RK 4.2T-*

2


Mating Cordset: RK 4.23T-*

3


Mating Cordset: RK 4T-*; RKC 4T-*/S1587

4


Mating Cordset: RK 4T-*; RKC 4T-*/S1587

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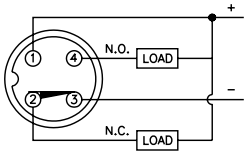
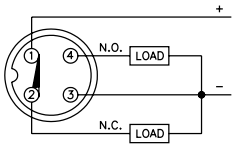


Mating Cordset: RK 4.4T-*

6


Mating Cordset: RK 4.4T-*

### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm

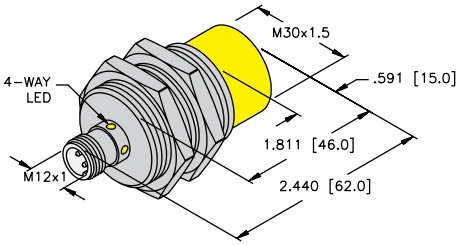
## Embeddable Threaded Metal Barrels with Connector and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi20U-M30-AN6X-H1141** 1644888 | Uprox3 | 20 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP68 | CPB | LCP | N/A | YE | A | 3 | A4 |
| **Bi20U-M30-AP6X-H1141** 1644880 | Uprox3 | 20 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP68 | CPB | LCP | N/A | YE | A | 4 | A4 |
| **Bi15U-M30-AN6X-H1141** 1636736 | Uprox+ | 15 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | A | 3 | A4 |
| **Bi15U-M30-AP6X-H1141** 1636732 | Uprox+ | 15 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | A | 4 | A4 |
| **Bi15U-EM30-AP6X-H1141** 1636733 | Uprox+ | 15 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | SS | LCP | N/A | YE | A | 4 | A4 |
| **Bi15-M30-AN6X-H1141** 4618600 | Extended Range | 15 | 3-wire DC NPN | 10-30 VDC | 300 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 3 | A4 |
| **Bi15-EM30H-AN6X-H1141** 4618692 | Ext. Range, Stoneface | 15 | 3-wire DC NPN | 10-30 VDC | 300 | ≤200 | -25 to +70 | IP67 | SS | SF | N/A | YE | A | 3 | A4 |
| **Bi15-M30-AP6X-H1141** 46185 | Extended Range | 15 | 3-wire DC PNP | 10-30 VDC | 300 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 4 | A4 |
| **Bi15-EM30H-AP6X-H1141** 4618592 | Ext. Range, Stoneface | 15 | 3-wire DC PNP | 10-30 VDC | 300 | ≤200 | -25 to +70 | IP67 | SS | SF | N/A | YE | A | 4 | A4 |
| **Bi15-EM30-AP6X-H1141/S1589** 4618593 | Weldguard | 15 | 3-wire DC PNP | 10-30 VDC | 300 | ≤200 | -25 to +70 | IP67 | SS | WG | N/A | YE | A | 4 | A4 |
| **Bi15-M30-VN4X-H1141** 4570711 | Ext. Range, Comp. Outputs | 15 | 4-wire DC NPN | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 5 | A4 |
| **Bi15-M30-VP4X-H1141** 4570710 | Ext. Range, Comp. Outputs | 15 | 4-wire DC PNP | 10-65 VDC | 300 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 6 | A4 |
| **Bi12-M30-AD4X-H1141** 4417041 | Extended Range | 12 | 2-wire DC | 10-65 VDC | 500 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A2 |
| **Bi10U-M30-AD4X-H1144** 4405072 | Uprox | 10 | 2-wire DC | 10-65 VDC | 10 | ≤100 | -25 to +70 | IP68 | CPB | LCP | N/A | YE | A | 2 | A2 |
| **Bi10U-M30-AN6X-H1141** 1636150 | Uprox | 10 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | A | 3 | A4 |
| **Bi10U-EM30-AN6X-H1141** 1636350 | Uprox | 10 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | SS | PBT | N/A | YE | A | 3 | A4 |
| **Bi10U-M30-AP6X-H1141** 1636140 | Uprox | 10 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | A | 4 | A4 |
| **Bi10U-M30-AP6X2-H1141** 1636145 | Uprox | 10 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP67 | CPB | PBT | GN | YE | A | 4 | A4 |
| **Bi10U-EM30-AP6X-H1141** 1636340 | Uprox | 10 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | SS | PBT | N/A | YE | A | 4 | A4 |
| **Bi10U-M30-VP4X-H1141** 1582253 | Uprox, Comp. Outputs | 10 | 4-wire DC PNP | 10-65 VDC | 1000 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | A | 6 | A4 |
| **Bi10-M30-AD4X-H1141** 44175 | | 10 | 2-wire DC | 10-65 VDC | 500 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A2 |
| **Bi10-M30-AN6X-H1141** 46176 | | 10 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 3 | A4 |
| **Bi10-M30-AP6X-H1141** 46175 | | 10 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 4 | A4 |
| **Bi10-M30-VN4X-H1141** 15716 | Comp. Outputs | 10 | 4-wire DC NPN | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 5 | A4 |
| **Bi10-M30-VP4X-H1141** 15616 | Comp. Outputs | 10 | 4-wire DC PNP | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 6 | A4 |

We reserve the right to make technical alterations without prior notice.

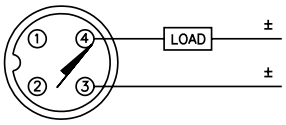
# Inductive Barrel Sensors | 30 mm

## Nonembeddable Threaded Metal Barrels with Connector and DC Outputs

| Housing Style | Dimension Drawings |
|---|---|
| | A   30 mm - Nonembeddable, M12 Eurofast Connection |

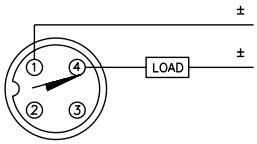
### Wiring Diagrams/Mating Cordsets

1



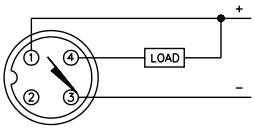

Mating Cordset: RK 4.2T-*

2



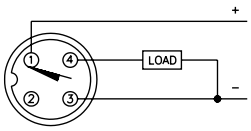

Mating Cordset: RK 4.23T-*

3



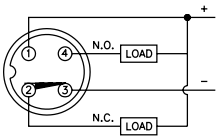

Mating Cordset: RK 4T-*; RKC 4T-*/S1587

4



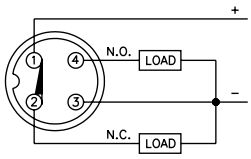

Mating Cordset: RK 4T-*; RKC 4T-*/S1587

5




Mating Cordset: RK 4.4T-*

6




Mating Cordset: RK 4.4T-*

### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm

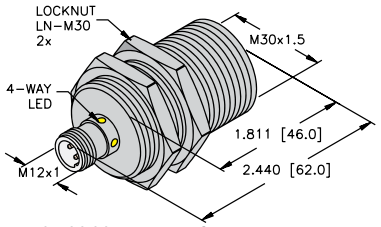
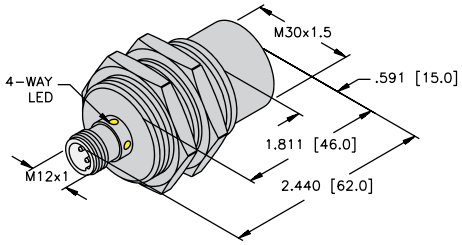
## Nonembeddable Threaded Metal Barrels with Connector and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni30U-M30-AN6X-H1141** 1644635 | Uprox+ | 30 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | A | 3 | A4 |
| **Ni30U-EM30-AN6X-H1141** 1644636 | Uprox+ | 30 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | SS | LCP | N/A | YE | A | 3 | A4 |
| **Ni30U-M30-AP6X-H1141** 1646631 | Uprox+ | 30 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | A | 4 | A4 |
| **Ni30U-EM30-AP6X-H1141** 1646632 | Uprox+ | 30 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | SS | LCP | N/A | YE | A | 4 | A4 |
| **Ni20U-M30-AN6X-H1141** 1646150 | Uprox | 20 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | A | 3 | A4 |
| **Ni20U-M30-AN6X2-H1141** 1646155 | Uprox | 20 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | CPB | PBT | GN | YE | A | 3 | A4 |
| **Ni20U-EM30-AN6X-H1141** 1646350 | Uprox | 20 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | SS | PBT | N/A | YE | A | 3 | A4 |
| **Ni20U-EM30-AN6X2-H1141/S1589** 1646191 | Uprox, Weldguard | 20 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | SS | WG | GN | YE | A | 3 | A4 |
| **Ni20U-M30-AP6X-H1141** 1646140 | Uprox | 20 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | A | 4 | A4 |
| **Ni20U-EM30-AP6X-H1141** 1646340 | Uprox | 20 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | SS | PBT | N/A | YE | A | 4 | A4 |
| **Ni20U-EM30-AP6X2-H1141** 1646345 | Uprox | 20 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | SS | PBT | GN | YE | A | 4 | A4 |
| **Ni20U-EM30-AP6X2-H1141/S1589** 1646490 | Uprox, Weldguard | 20 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | SS | WG | GN | YE | A | 4 | A4 |
| **Ni20U-M30-VP4X-H1141** 1582457 | Uprox | 20 | 4-wire DC PNP | 10-65 VDC | 1000 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | A | 6 | A4 |
| **Ni20-M30-AD4X-H1141** 4466141 | Extended Range | 20 | 2-wire DC | 10-65 VDC | 200 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A2 |
| **Ni20-M30-AD4X-H1144** 4466192 | Extended Range | 20 | 2-wire DC | 10-65 VDC | 200 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 2 | A2 |
| **Ni20-M30-AN6X-H1141** 4670515 | Extended Range | 20 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 3 | A4 |
| **Ni20-M30-AP6X-H1141** 4670510 | Extended Range | 20 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 4 | A4 |
| **Ni20-M30-VN4X-H1141** 4590606 | Ext. Range, Comp. Outputs | 20 | 4-wire DC NPN | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 5 | A4 |
| **Ni20-M30-VP4X-H1141** 4590607 | Ext. Range, Comp. Outputs | 20 | 4-wire DC PNP | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 6 | A4 |
| **Ni15-M30-AD4X-H1141** 44177 | | 15 | 2-wire DC | 10-65 VDC | 200 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A2 |
| **Ni15-M30-AN6X-H1141** 46178 | | 15 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 3 | A4 |
| **Ni15-M30-AP6X-H1141** 46177 | | 15 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 4 | A4 |
| **Ni15-M30-VN4X-H1141** 1571510 | Comp. Outputs | 15 | 4-wire DC NPN | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 5 | A4 |
| **Ni15-M30-VP4X-H1141** 15617 | Comp. Outputs | 15 | 4-wire DC PNP | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 6 | A4 |

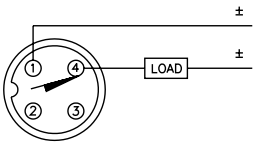
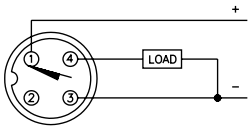
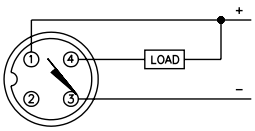
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm

## Threaded PTFE Coated Metal Barrels with Connector and DC Outputs

| Housing Style | Dimension Drawings |
|---|---|
| | A   30 mm - Embeddable, M12 Eurofast Connection, PTFE Coated |
| B   30 mm - Nonembeddable, M12 Eurofast Connection, PTFE Coated | |

### Wiring Diagrams/Mating Cordsets

| 1 | 2 | 3 |
|---|---|---|
|   |   |   |
| Mating Cordset: RK 4.23T-* | Mating Cordset: RK 4T-*; RKC 4T-*/S1587 | Mating Cordset: RK 4T-*; RKC 4T-*/S1587 |

### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm

## Threaded PTFE Coated Metal Barrels with Connector and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi20U-MT30-AN6X-H1141** 1644889 | Uprox3, PTFE | 20 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP68 | TC | TC | N/A | YE | A | 3 | A4 |
| **Bi20U-MT30-AP6X-H1141** 1644881 | Uprox3, PTFE | 20 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP68 | TC | TC | N/A | YE | A | 2 | A4 |
| **Bi15U-MT30-AP6X-H1141** 1636734 | Uprox+, PTFE | 15 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | TC | TC | N/A | YE | A | 2 | A4 |
| **Bi15U-MT30-AP6X2-H1141** 1644741 | Uprox+ | 15 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | TC | TC | GN | YE | A | 2 | A4 |
| **Bi12-MT30H-AD4X-H1144** 4417095 | PTFE, Stoneface | 12 | 2-wire DC | 10-65 VDC | 500 | ≤100 | -25 to +70 | IP67 | TC | SF | N/A | YE | A | 1 | A2 |
| **Bi10U-MT30-AN6X-H1141** 1636250 | Uprox | 10 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP67 | TC | TC | N/A | YE | A | 3 | A4 |
| **Bi10U-MT30-AP6X-H1141** 1636240 | Uprox, PTFE | 10 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP67 | TC | TC | N/A | YE | A | 2 | A4 |
| **Bi10U-MT30-AP6X2-H1141** 1636245 | Uprox, PTFE | 10 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP67 | TC | TC | GN | YE | A | 2 | A4 |
| **Bi10U-MT30H-AP6X2-H1141** 1636220 | Uprox, PTFE, Stoneface | 10 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP67 | TC | SF | GN | YE | A | 2 | A4 |
| **Bi10U-MT30-AP6X2-H1141/S1589** 1636291 | Uprox, PTFE, Weldguard | 10 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP67 | TC | WG | GN | YE | A | 2 | A4 |
| **Ni30U-MT30-AN6X-H1141** 1644637 | Uprox+, PTFE | 30 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | TC | TC | N/A | YE | B | 3 | A4 |
| **Ni30U-MT30-AP6X-H1141** 1646633 | Uprox+, PTFE | 30 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | TC | TC | N/A | YE | B | 2 | A4 |
| **Ni30U-MT30-AP6X2-H1141** 1646635 | Uprox+, PTFE | 30 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | TC | TC | GN | YE | B | 2 | A4 |
| **Ni30U-MT30-AP6X-H1141/S1589** 16466331 | Uprox+, PTFE, Weldguard | 30 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | TC | WG | N/A | YE | B | 2 | A4 |
| **Ni30U-MT30-AP6X2-H1141/S1589** 16466351 | Uprox+, PTFE, Weldguard | 30 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | TC | WG | GN | YE | B | 2 | A4 |
| **Ni20U-MT30-AP6X-H1141** 1646240 | Uprox, PTFE | 20 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP67 | TC | TC | N/A | YE | B | 2 | A4 |
| **Ni20U-MT30-AP6X2-H1141** 1646245 | Uprox, PTFE | 20 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP67 | TC | TC | GN | YE | B | 2 | A4 |
| **Ni20U-MT30-AP6X2-H1141/S1589** 1646291 | Uprox, Weldguard | 20 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP67 | TC | WG | GN | YE | B | 2 | A4 |
| **Ni20-MT30-AN6X-H1141/S1589** 4670589 | PTFE, Weldguard | 20 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | TC | WG | N/A | YE | B | 3 | A4 |
| **Ni15U-MT30-AD4X-H1144** 4405077 | Uprox, PTFE | 15 | 2-wire DC | 10-65 VDC | 10 | ≤100 | -25 to +70 | IP68 | TC | TC | GN | YE | B | 1 | A2 |

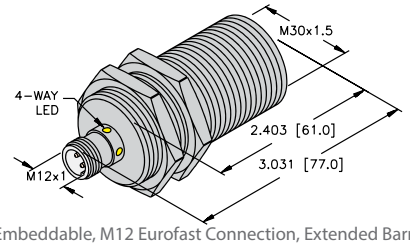
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm

## Threaded Metal Barrels with Connector and DC Outputs

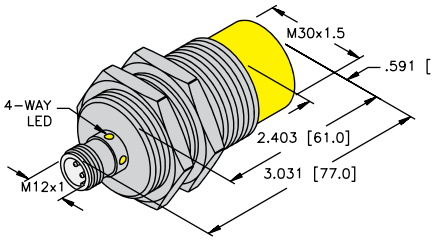
| Housing Style | Dimension Drawings |
|---|---|

A




30 mm - Embeddable, M12 Eurofast Connection, Extended Barrel Length

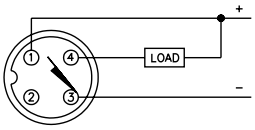
B




30 mm - Nonembeddable, M12 Eurofast Connection, Extended Barrel Length

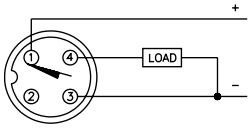
### Wiring Diagrams/Mating Cordsets

1



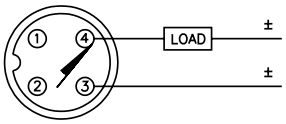

Mating Cordset: RK 4T-*

2



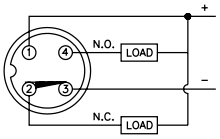

Mating Cordset: RK 4.23T-*

3



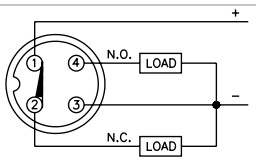

Mating Cordset: RK 4.2T-*

4




Mating Cordset: RK 4.4T-*

5




Mating Cordset: RK 4.4T-*

### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm

## Threaded Metal Barrels with Connector and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi15-M30E-AN6X-H1141** 4618690 | Extended Range | 15 | 3-wire DC NPN | 10-30 VDC | 300 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A4 |
| **Bi15-M30E-AP6X-H1141** 4618590 | Extended Range | 15 | 3-wire DC PNP | 10-30 VDC | 300 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 2 | A4 |
| **Bi10U-EM30E-AP6X-H1141** 1636322 | Uprox | 10 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | SS | PBT | N/A | YE | A | 2 | A4 |
| **Bi10U-EM30HE-AP6X2-H1141** 1636415 | Uprox, Stoneface | 10 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | SS | SF | GN | YE | A | 2 | A4 |
| **Bi10-M30E-AD4X-H1141** 4417501 | | 10 | 2-wire DC | 10-65 VDC | 500 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 3 | A2 |
| **Ni15-M30E-AD4X-H1141** 4417790 | | 15 | 2-wire DC | 10-65 VDC | 200 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | B | 3 | A2 |
| **Ni15-M30E-VN4X-H1141** 1571590 | Comp. Outputs | 15 | 4-wire DC NPN | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | B | 4 | A4 |
| **Ni15-M30E-VP4X-H1141** 1561790 | Comp. Outputs | 15 | 4-wire DC PNP | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | B | 5 | A4 |



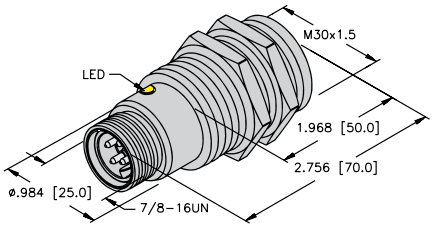
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm

## Threaded Metal Barrels with Connector and DC Outputs

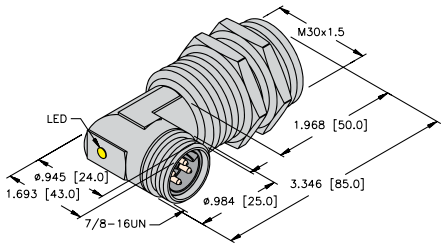
| Housing Style | Dimension Drawings |
|---|---|

A



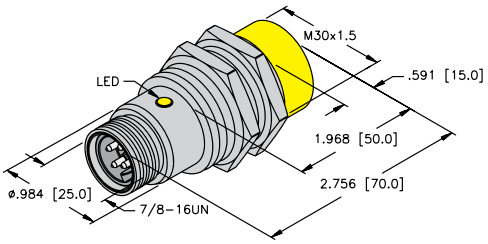

30 mm - Embeddable, 7/8" Minifast Connection

B



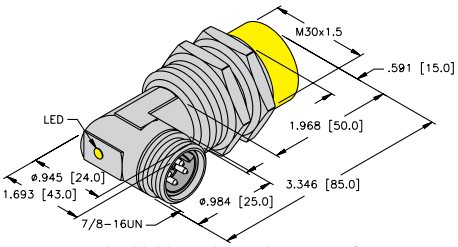

30 mm - Embeddable, 7/8" Minifast Right Angle Connection

C




30 mm - Nonembeddable, 7/8" Minifast Connection

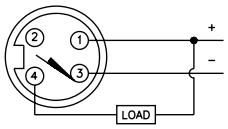
D




30 mm - Nonembeddable, Right Angle 7/8" Minifast Connection

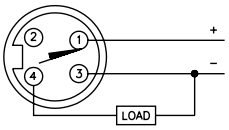
### Wiring Diagrams/Mating Cordsets

1




Mating Cordset: RKM 40-*M

2




Mating Cordset: RKM 40-*M

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm

**Threaded Metal Barrels with Connector and DC Outputs**

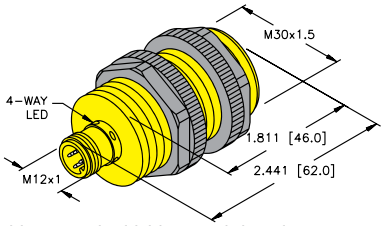
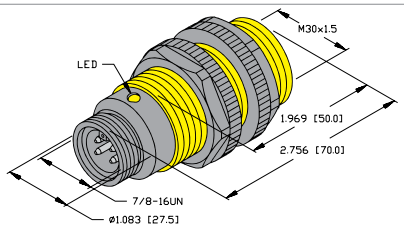
| Part Number/ ID Number | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi10-G30-AN6X-B1141** 46954 | 10 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A4 |
| **Bi10-G30-AP6X-B1141** 46965 | 10 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 2 | A4 |
| **Bi10-G30-AN6X-B1441** 46958 | 10 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | B | 1 | A4 |
| **Bi10-G30-AP6X-B1441** 46969 | 10 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | B | 2 | A4 |
| **Ni15-G30-AN6X-B1141** 46955 | 15 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | C | 1 | A4 |
| **Ni15-G30-AP6X-B1141** 46966 | 15 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | C | 2 | A4 |
| **Ni15-G30-AN6X-B1441** 4695590 | 15 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | D | 1 | A4 |
| **Ni15-G30-AP6X-B1441** 46970 | 15 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | D | 2 | A4 |



We reserve the right to make technical alterations without prior notice.

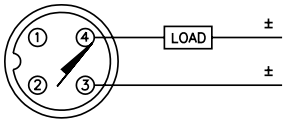
# Inductive Barrel Sensors | 30 mm

## Threaded Plastic Barrels with Connector and DC Outputs

| Housing Style | Dimension Drawings |
|---|---|
| | A   30 mm - Embeddable/Nonembeddable, Partial Threading, M12 Eurofast Connection |
| B   30 mm - Embeddable/Nonembeddable, Full Threading, 7/8" Minifast Connection | |

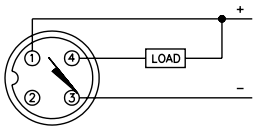
### Wiring Diagrams/Mating Cordsets

1



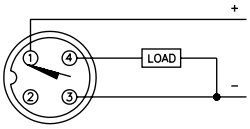

Mating Cordset: RKK 4.2T-*

2



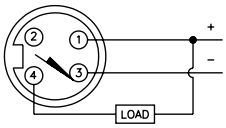

Mating Cordset: RKK 4T-*

3



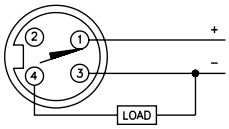

Mating Cordset: RKK 4T-*

4




Mating Cordset: RK 40-*M

5




Mating Cordset: RK 40-*M

### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm

## Threaded Plastic Barrels with Connector and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi10U-S30-AN6X-H1141** 1636620 | Uprox | 10 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | PA 12 | PA 12 | N/A | YE | A | 2 | A4 |
| **Bi10U-S30-AP6X-H1141** 1636600 | Uprox | 10 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | PA 12 | PA 12 | N/A | YE | A | 3 | A4 |
| **Bi10-S30-AD4X-H1141** 4458000 | | 10 | 2-wire DC | 10-65 VDC | 500 | ≤100 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | A | 1 | A2 |
| **Bi10-S30-AN6X-H1141** 46581 | | 10 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | A | 2 | A4 |
| **Bi10-S30-AP6X-H1141** 46580 | | 10 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | A | 3 | A4 |
| **Bi10-P30-AN6X-B2141** 46974 | | 10 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | B | 4 | A4 |
| **Bi10-P30-AP6X-B2141** 46975 | | 10 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | B | 5 | A4 |
| **Ni20U-S30-AN6X-H1141** 1646620 | Uprox | 20 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | PA 12 | PA 12 | N/A | YE | A | 2 | A4 |
| **Ni20U-S30-AP6X-H1141** 1646600 | Uprox | 20 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | PA 12 | PA 12 | N/A | YE | A | 3 | A4 |
| **Ni15-S30-AD4X-H1141** 44582 | | 15 | 2-wire DC | 10-65 VDC | 200 | ≤100 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | A | 1 | A2 |
| **Ni15-S30-AN6X-H1141** 46583 | | 15 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | A | 2 | A4 |
| **Ni15-P30-AN6X-B2141** 46976 | | 15 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | B | 4 | A4 |
| **Ni15-S30-AP6X-H1141** 46582 | | 15 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | A | 3 | A4 |
| **Ni15-P30-AP6X-B2141** 46977 | | 15 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | B | 5 | A4 |

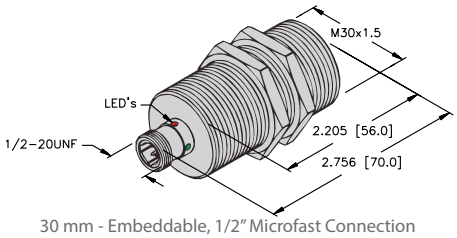
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm

## Threaded Metal Barrels with Connector and AC/DC Outputs

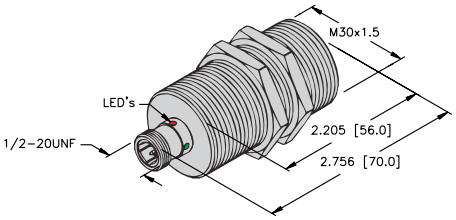
| Housing Style | Dimension Drawings |
|---|---|

A



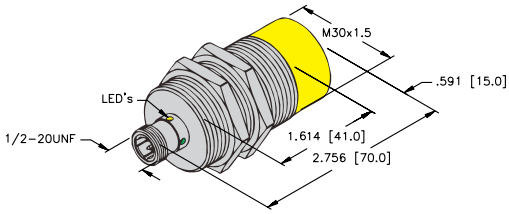

30 mm - Embeddable, 1/2" Microfast Connection

B



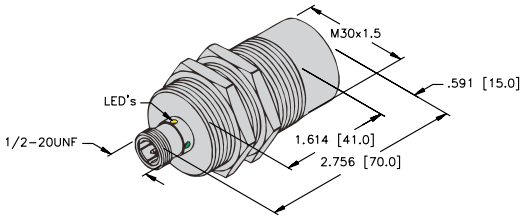

30 mm - Embeddable, 1/2" Microfast Connection, PTFE Coated

C




30 mm - Nonembeddable, 1/2" Microfast Connection

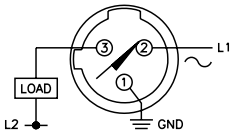
D




30 mm - Nonembeddable, 1/2" Microfast Connection, PTFE Coated

### Wiring Diagrams/Mating Cordsets

1




Mating Cordset: KB 3T-*; KBE 3T-*/S600

### A5 — 2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA |
| | AC: ≥120 mA; DC: ≥120 mA |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA (AC) |
| | ≤1.5 mA (DC) |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤3 A (≤20 ms, max 5 Hz) |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

### A6 — 2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm

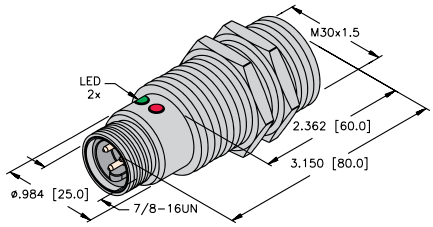
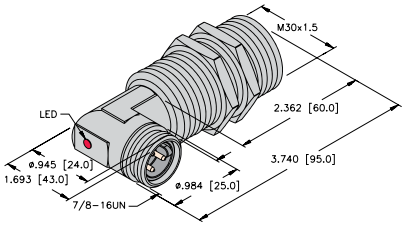
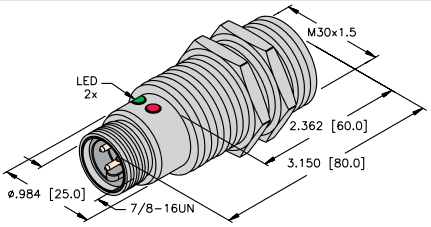
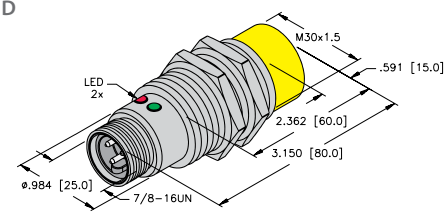
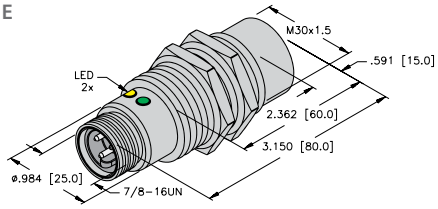
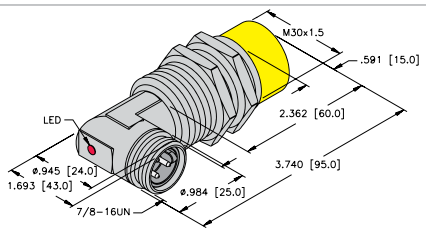
## Threaded Metal Barrels with Connector and AC/DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi15-G30-ADZ30X2-B3131** 4207201 | Extended Range | 15 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | GN | RD | A | 1 | A5 |
| **Bi15-EG30H-ADZ30X2-B3131** 4207284 | Ext. Range, Stoneface | 15 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | SS | SF | GN | RD | A | 1 | A5 |
| **Bi10U-G30-ADZ30X2-B3131** 4281613 | Uprox | 10 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP67 | CPB | PBT | GN | YE | A | 1 | A5 |
| **Bi10U-GT30-ADZ30X2-B3131** 4281623 | Uprox, PTFE | 10 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP67 | TC | TC | GN | YE | B | 1 | A5 |
| **Bi10-G30-ADZ30X2-B3131** T207591 | | 10 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | GN | RD | A | 1 | A5 |
| **Bi10-GT30-ADZ30X2-B3131/S34** 4256203 | PTFE, WFI | 10 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | TC | TC | GN | RD | B | 1 | A5 |
| **Bi10-GT30H-ADZ30X2-B3131/S34** 4256094 | WFI, Stoneface | 10 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | TC | SF | GN | RD | B | 1 | A5 |
| **Bi10-G30-AZ3X-B3131** 4372298 | | 10 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | A | 1 | A6 |
| **Ni20U-G30-ADZ30X2-B3131** 4281813 | Uprox | 20 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP67 | CPB | PBT | GN | YE | C | 1 | A5 |
| **Ni20U-GT30-ADZ30X2-B3131** 4281823 | Uprox, PTFE | 20 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP67 | TC | TC | GN | YE | D | 1 | A5 |
| **Ni20-G30-ADZ30X2-B3131** 4205406 | Extended Range | 20 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | GN | RD | C | 1 | A5 |
| **Ni15-G30-AZ3X-B3131** 1306090 | | 15 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | C | 1 | A6 |

We reserve the right to make technical alterations without prior notice.

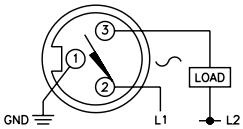
# Inductive Barrel Sensors | 30 mm

## Threaded Metal Barrels with Connector and AC/DC Outputs

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   30 mm - Embeddable, 7/8" Minifast Connection | B   30 mm - Embeddable, 7/8" Minifast Right Angle Connection |
| C   30 mm - Embeddable, 7/8" Minifast Connection, PTFE Coated | D   30 mm - Nonembeddable, 7/8" Minifast Connection | E   30 mm - Nonembeddable, 7/8" Minifast Connection, PTFE Coated |
| F   30 mm - Nonembeddable, 7/8" Minifast Right Angle Connection | | |

### Wiring Diagrams/Mating Cordsets

1




Mating Cordset: RKM 30-*M; RKM 311-*M/S600

### A5 — 2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Minimum Load Current: | ≥3.0 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Inrush Current: | ≤3 A (≤20 ms, max 5 Hz) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | Power-On Effect: | Per IEC 947-5-2 |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA | Transient Protection: | Per EN 60947-5-2 |
| | AC: ≥120 mA; DC: ≥120 mA | Shock: | 30 g, 11 ms |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | AC: ≤100 mA; DC: ≤100 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Off-State (Leakage) Current: | ≤1.7 mA (AC) | | |
| | ≤1.5 mA (DC) | | |

### A6 — 2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Power-On Effect: | Per IEC 947-5-2 |
| | AC: ≤100 mA; DC: ≤100 mA | Transient Protection: | Per EN 60947-5-2 |
| Off-State (Leakage) Current: | ≤1.7 mA | Shock: | 30 g, 11 ms |
| Minimum Load Current: | ≥3.0 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm

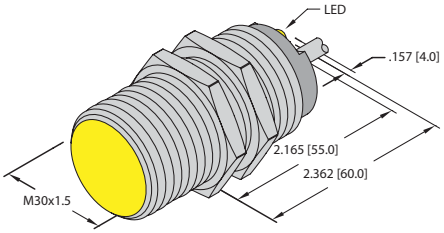
## Threaded Metal Barrels with Connector and AC/DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi15-G30-ADZ30X2-B1131** 4207202 | Extended Range | 15 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | GN | RD | A | 1 | A5 |
| **Bi15-EG30H-ADZ30X2-B1131** 4207292 | Ext. Range, Stoneface | 15 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | SS | SF | GN | RD | A | 1 | A5 |
| **Bi10U-G30-ADZ30X2-B1131** 4281612 | Uprox | 10 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP67 | CPB | PBT | GN | YE | A | 1 | A5 |
| **Bi10-GT30-ADZ30X2-B1131/S34/S1589** 4255280 | PTFE, WFI, Weldguard | 10 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | TC | WG | GN | RD | C | 1 | A5 |
| **Bi10-G30-ADZ30X2-B1131** 42075 | | 10 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | GN | RD | A | 1 | A5 |
| **Bi10-GT30-ADZ30X2-B1131/S34** 4256200 | PTFE, WFI | 10 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | TC | TC | GN | RD | C | 1 | A5 |
| **Bi10-GT30-ADZ30X2-B1131** 4256290 | PTFE | 10 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | TC | TC | GN | RD | C | 1 | A5 |
| **Bi10-G30-AZ3X-B1131** 43722 | | 10 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | A | 1 | A6 |
| **Bi10-G30-AZ3X-B1431** 43726 | | 10 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | B | 1 | A6 |
| **Bi10U-GT30-ADZ30X2-B1131** 4281622 | Uprox, PTFE | 10 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP67 | TC | TC | GN | YE | C | 1 | A5 |
| **Ni20U-G30-ADZ30X2-B1131** 4281812 | Uprox | 20 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP67 | CPB | PBT | GN | YE | D | 1 | A5 |
| **Ni20U-GT30-ADZ30X2-B1131** 4281822 | Uprox | 20 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP67 | TC | TC | GN | YE | E | 1 | A5 |
| **Ni20-G30-ADZ30X2-B1131** 4205405 | Extended Range | 20 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | GN | RD | D | 1 | A5 |
| **Ni15-G30-AZ3X-B1131** 43723 | | 15 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | D | 1 | A6 |
| **Ni15-G30-AZ3X-B1431** 4372700 | | 15 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | F | 1 | A6 |

We reserve the right to make technical alterations without prior notice.

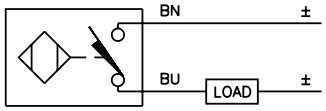
# Inductive Barrel Sensors | 30 mm

## Embeddable Threaded Metal Barrels with Cable and DC Outputs

| Housing Style | Dimension Drawings |
|---|---|
| | A   30 mm - Embeddable, Potted-in Cable |

### Wiring Diagrams/Mating Cordsets

1

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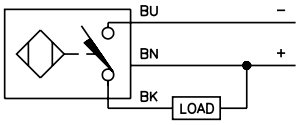
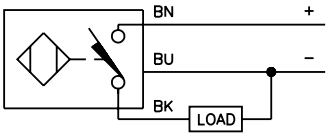
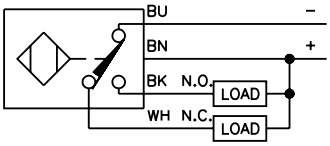


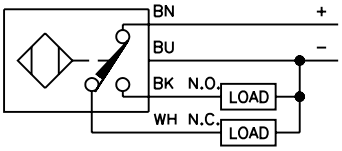

3




4




5




### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm

## Embeddable Threaded Metal Barrels with Cable and DC Outputs

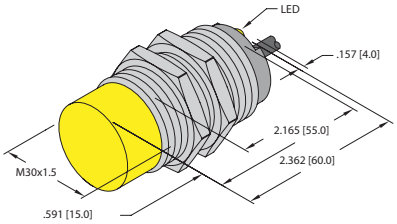
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi20U-M30-AN6X** 1644890 | Uprox3 | 20 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP68 | CPB | LCP | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Bi20U-M30-AP6X** 1644886 | Uprox3 | 20 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP68 | CPB | LCP | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Bi15U-M30-AN6X** 1636735 | Uprox+ | 15 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Bi15U-M30-AP6X** 1636731 | Uprox+ | 15 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Bi15U-EM30-AP6X** 1636741 | Uprox+ | 15 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | SS | LCP | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Bi15-M30-AN6X** 4618620 | Extended Range | 15 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Bi15-M30-AP6X** 4618530 | Extended Range | 15 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Bi15-M30-VN4X** 4570712 | Ext. Range, Comp. Outputs | 15 | 4-wire DC NPN | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 4 | A4 |
| **Bi15-M30-VP4X** 4570713 | Ext. Range, Comp. Outputs | 15 | 4-wire DC PNP | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 5 | A4 |
| **Bi12-M30-AD4X** 4417035 | Extended Range | 12 | 2-wire DC | 10-65 VDC | 400 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 1 | A2 |
| **Bi10U-M30-AD4X** 4405073 | Uprox | 10 | 2-wire DC | 10-65 VDC | 10 | ≤100 | -30 to +85 | IP68 | TC | LCP | N/A | YE | 2M/PVC | A | 1 | A2 |
| **Bi10U-M30-AN6X** 1636120 | Uprox | 10 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Bi10U-EM30-AN6X** 1636320 | Uprox | 10 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | SS | LCP | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Bi10U-M30-AP6X** 1636100 | Uprox | 10 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Bi10U-EM30-AP6X** 1636300 | Uprox | 10 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | SS | LCP | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Bi10-M30-AD4X** 44170 | | 10 | 2-wire DC | 10-65 VDC | 500 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 1 | A2 |
| **Bi10-M30-VN4X** 15714 | Comp. Outputs | 10 | 4-wire DC NPN | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 4 | A4 |
| **Bi10-M30-VP4X** 15614 | Comp. Outputs | 10 | 4-wire DC PNP | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 5 | A4 |



We reserve the right to make technical alterations without prior notice.

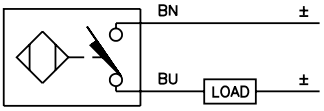
# Inductive Barrel Sensors | 30 mm

## Nonembeddable Threaded Metal Barrels with Cable and DC Outputs

| Housing Style | Dimension Drawings |
|---|---|
| | A   30 mm - Nonembeddable, Potted-In Cable |

### Wiring Diagrams/Mating Cordsets

1

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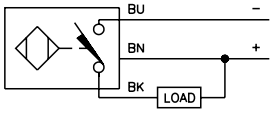


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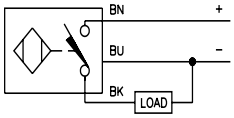


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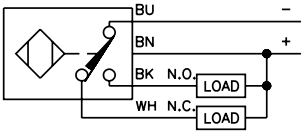


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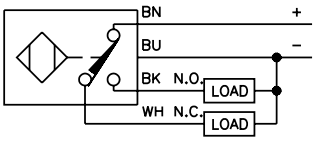



### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm

## Nonembeddable Threaded Metal Barrels with Cable and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni30U-M30-AN6X** 1644634 | Uprox+ | 30 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Ni30U-M30-AP6X** 1646630 | Uprox+ | 30 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Ni20U-M30-AN6X** 1646120 | Uprox | 20 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Ni20U-EM30-AN6X** 1646320 | Uprox | 20 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | SS | PBT | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Ni20U-M30-AP6X** 1646100 | Uprox | 20 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Ni20U-EM30-AP6X** 1646300 | Uprox | 20 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | SS | PBT | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Ni20-M30-AD4X** 4466135 | Extended Range | 20 | 2-wire DC | 10-65 VDC | 200 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 1 | A2 |
| **Ni20-M30-AN6X** 4670516 | Extended Range | 20 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Ni20-M30-AP6X** 4670511 | Extended Range | 20 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Ni20-M30-VN4X** 4590604 | Extended Range | 20 | 4-wire DC NPN | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 4 | A4 |
| **Ni20-M30-VP4X** 4590605 | Extended Range | 20 | 4-wire DC PNP | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 5 | A4 |
| **Ni15-M30-AD4X** 44172 | | 15 | 2-wire DC | 10-65 VDC | 200 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 1 | A2 |
| **Ni15-M30-VN4X** 15715 | Comp. Outputs | 15 | 4-wire DC NPN | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 4 | A4 |
| **Ni15-M30-VP4X** 15615 | Comp. Outputs | 15 | 4-wire DC PNP | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 5 | A4 |

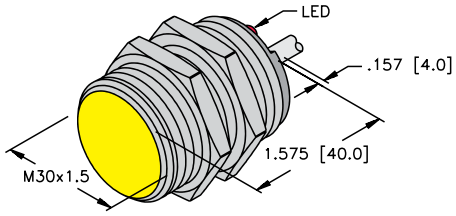
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm

**Threaded Metal Barrels with Cable and DC Outputs**

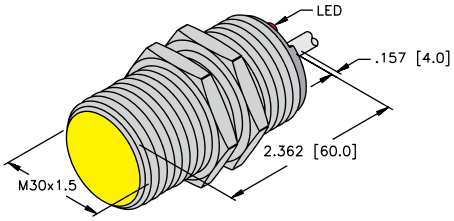
| Housing Style | Dimension Drawings |
|---|---|

A



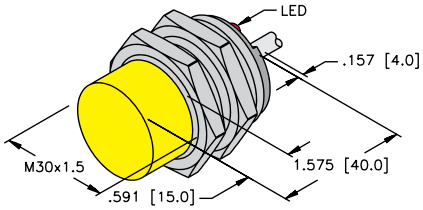

30 mm - Embeddable, Potted-In Cable

B



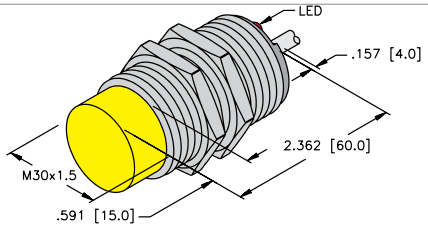

30 mm - Embeddable, Potted-In Cable

C




30 mm - Nonembeddable, Potted-In Cable

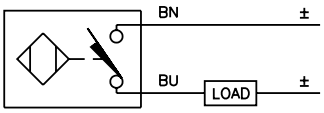
D




30 mm - Nonembeddable, Potted-In Cable

**Wiring Diagrams/Mating Cordsets**

1

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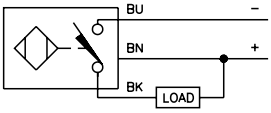


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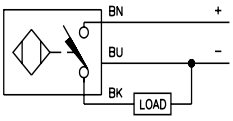



**A2** — **2-wire DC - (AD, RD, AG)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm

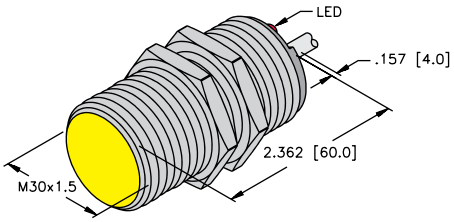
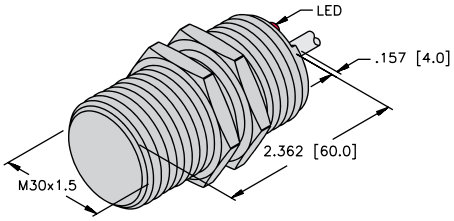
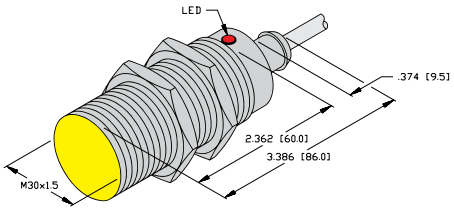
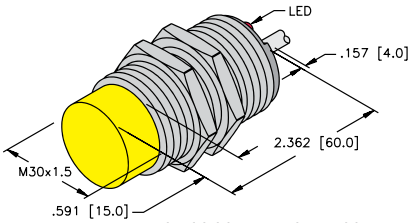
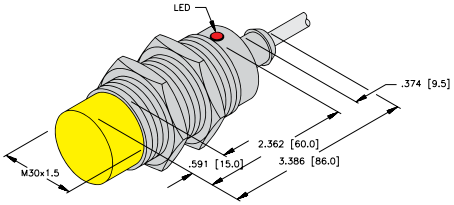
## Threaded Metal Barrels with Cable and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi10-G30K-AD4X** 4670695 | Short Barrel | 10 | 2-wire DC | 10-65 VDC | 500 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 1 | A2 |
| **Bi10-G30K-AN6X** 46716 | Short Barrel | 10 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Bi10-G30K-AP6X** 46706 | Short Barrel | 10 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Bi15-G30K-AP6X** 4207300 | Short Barrel | 15 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Bi10-G30-AN6X** 4647500 | | 10 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | B | 2 | A4 |
| **Bi10-G30-AN7X** 1714800 | TTL Compatible | 10 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | B | 2 | A4 |
| **Bi10-G30-AP6X** 4647400 | | 10 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | B | 3 | A4 |
| **Ni30-G30K-AP6X** 4670711 | Short Barrel | 30 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | C | 3 | A4 |
| **Ni15-G30-AN6X** 46477 | | 15 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | D | 2 | A4 |
| **Ni15-G30-AN7X** 1714900 | | 15 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | D | 2 | A4 |
| **Ni15-G30-AP6X** 4647600 | | 15 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | D | 3 | A4 |
| **Ni15-G30K-AN6X** 46717 | Short Barrel | 15 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | C | 2 | A4 |
| **Ni15-G30K-AP6X** 46707 | Short Barrel | 15 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | C | 3 | A4 |

We reserve the right to make technical alterations without prior notice.

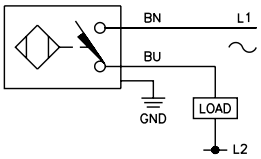
# Inductive Barrel Sensors | 30 mm

## Threaded Metal Barrels with Cable and AC/DC Outputs

| Housing Style | Dimension Drawings |
|---|---|
| | A   30 mm - Embeddable, Potted-In Cable |
| B   30 mm - Embeddable, Potted-In Cable, PTFE Coated | C   30 mm - Embeddable, Potted-In Cable |
| D   30 mm - Nonembeddable, Potted-In Cable | E   30 mm - Nonembeddable, Potted-In Cable |

### Wiring Diagrams/Mating Cordsets

1




### A5 — 2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA |
| | AC: ≥120 mA; DC: ≥120 mA |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA (AC) |
| | ≤1.5 mA (DC) |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤3 A (≤20 ms, max 5 Hz) |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

### A6 — 2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm

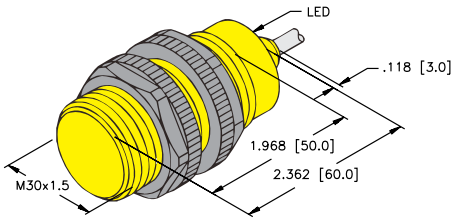
## Threaded Metal Barrels with Cable and AC/DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi10-EG30-ADZ30X2** 4256095 | | 10 | 2-wire AC/DC Short-circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | SS | PA 12 | GN | RD | 2M/PVC | A | 1 | A5 |
| **Bi10-G30-ADZ30X2** 42070 | | 10 | 2-wire AC/DC Short-circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | GN | RD | 2M/PVC | A | 1 | A5 |
| **Bi15-G30-ADZ30X2** 4207200 | | 15 | 2-wire AC/DC Short-circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | GN | RD | 2M/PVC | A | 1 | A5 |
| **Bi10-EG30-AZ3X** 4345699 | | 10 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | SS | PA 12 | N/A | RD | 2M/PVC | A | 1 | A6 |
| **Bi10-G30-AZ3X** 4345400 | | 10 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | 2M/PVC | A | 1 | A6 |
| **Bi10-GT30-ADZ30X2/S34** 4256000 | PTFE, WFI | 10 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | TC | TC | GN | RD | 2M/PVC | B | 1 | A5 |
| **Bi10-M30T-AZ3X** 43170 | | 10 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | 2M/PVC | C | 1 | A6 |
| **Ni20-G30-ADZ30X2** 4205404 | | 20 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | GN | RD | 2M/PVC | D | 1 | A5 |
| **Ni15-M30T-AZ3X** 43171 | | 15 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | 2M/PVC | E | 1 | A6 |

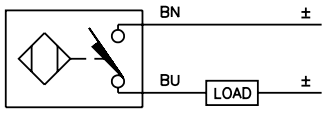
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm

## Threaded Plastic Barrels with Cable and DC Outputs

| Housing Style | Dimension Drawings |
|---|---|
| | A   30 mm - Embeddable/Nonembeddable, Partial Threading, Potted-In Cable |

### Wiring Diagrams/Mating Cordsets

1
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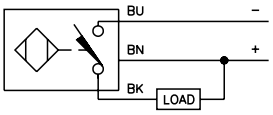


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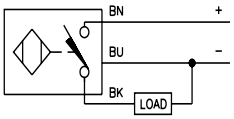


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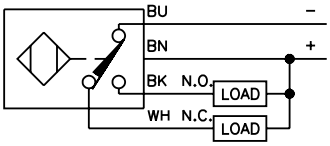
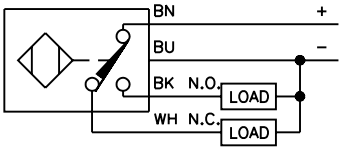



5



### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm

## Threaded Plastic Barrels with Cable and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi10U-S30-AN6X** 1636520 | Uprox | 10 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | PA 12 | PA 12 | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Bi10U-S30-AP6X** 1636500 | Uprox | 10 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | PA 12 | PA 12 | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Bi10-S30-AD4X** 44590 | | 10 | 2-wire DC | 10-65 VDC | 500 | ≤100 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | 2M/PVC | A | 1 | A2 |
| **Bi10-S30-AN6X** 46591 | | 10 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Bi10-S30-AN7X/S100** 17777 | TTL Compatible, High Temp. 100 °C | 10 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +100 | IP67 | PA 12 | IRPA | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Bi10-S30-AP6X** 46590 | | 10 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Bi10-S30-VP4X** 15122 | Comp. Outputs | 10 | 4-wire DC PNP | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | 2M/PVC | A | 5 | A4 |
| **Ni20U-S30-AN6X** 1646520 | Uprox | 20 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | PA 12 | PA 12 | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Ni20U-S30-AP6X** 1646500 | Uprox | 20 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | PA 12 | PA 12 | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Ni15-S30-AD4X** 44592 | | 15 | 2-wire DC | 10-65 VDC | 200 | ≤100 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | 2M/PVC | A | 1 | A2 |
| **Ni15-S30-AN6X** 46593 | | 15 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Ni15-S30-AP6X** 46592 | | 15 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Ni15-S30-VN4X** 15224 | Comp. Outputs | 15 | 4-wire DC NPN | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | 2M/PVC | A | 4 | A4 |
| **Ni15-S30-VP4X** 15630 | Comp. Outputs | 15 | 4-wire DC PNP | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | 2M/PVC | A | 5 | A4 |

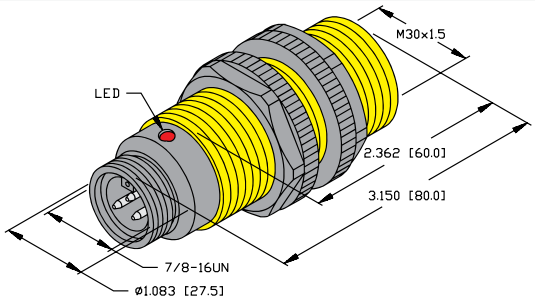
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm

**Threaded Plastic Barrels with AC Outputs**

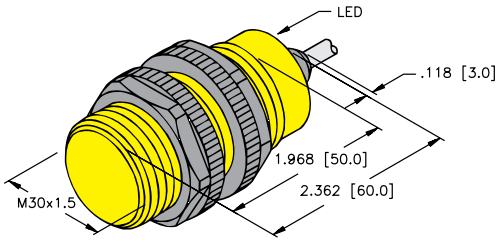
| Housing Style | Dimension Drawings |
|---|---|

A




30 mm - Embeddable/Nonembeddable, Full Threading, 7/8" Minifast Connection

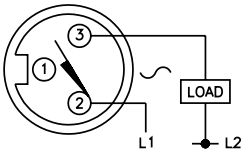
B




30 mm - Embeddable/Nonembeddable, Partial Threading, Potted-In Cable

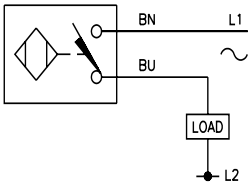
**Wiring Diagrams/Mating Cordsets**

1




Mating Cordset: RK 30-*M

2




**A6** — **2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)**

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Power-On Effect: | Per IEC 947-5-2 |
| | AC: ≤100 mA; DC: ≤100 mA | Transient Protection: | Per EN 60947-5-2 |
| Off-State (Leakage) Current: | ≤1.7 mA | Shock: | 30 g, 11 ms |
| Minimum Load Current: | ≥3.0 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm

**Threaded Plastic Barrels with AC Outputs**

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi10-S30-AZ3X** 43554 | | 10 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | RD | 2M/PVC | B | 2 | A6 |
| **Ni15-S30-AZ3X** 43555 | | 15 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | RD | 2M/PVC | B | 2 | A6 |
| **Bi10-P30-AZ3X-B2131** 43749 | | 10 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | RD | -- | A | 1 | A6 |
| **Ni15-S30-AZ3X/S100** 13758 | High Temp. 100 °C | 15 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +100 | IP67 | PA 12 | PA 12 | N/A | RD | 2M/PVC | B | 2 | A6 |
| **Ni15-P30-AZ3X-B2131** 43754 | | 15 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | RD | -- | A | 1 | A6 |



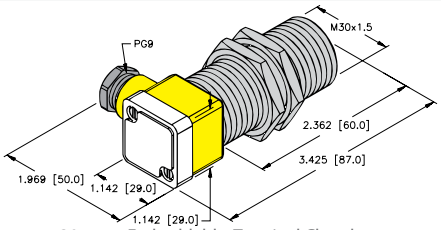
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm

## Threaded Barrels with Terminal Chamber and AC/DC Outputs

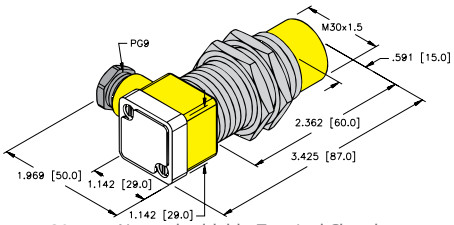
| Housing Style | Dimension Drawings |
|---|---|

A



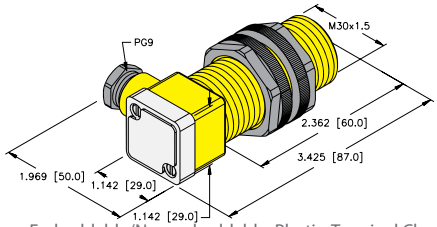

30 mm - Embeddable, Terminal Chamber

B



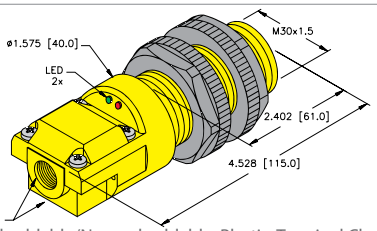

30 mm - Nonembeddable, Terminal Chamber

C




30 mm - Embeddable/Nonembeddable, Plastic, Terminal Chamber

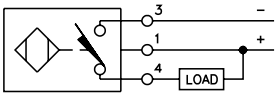
D




30 mm - Embeddable/Nonembeddable, Plastic, Terminal Chamber

### Wiring Diagrams/Mating Cordsets

1

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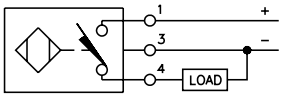


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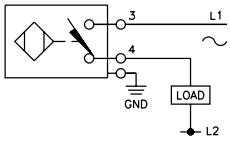


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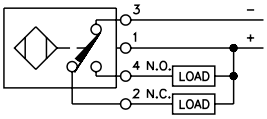
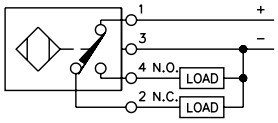



5




### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

### A6 — 2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Power-On Effect: | Per IEC 947-5-2 |
| | AC: ≤100 mA; DC: ≤100 mA | Transient Protection: | Per EN 60947-5-2 |
| Off-State (Leakage) Current: | ≤1.7 mA | Shock: | 30 g, 11 ms |
| Minimum Load Current: | ≥3.0 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm

## Threaded Barrels with Terminal Chamber and AC/DC Outputs

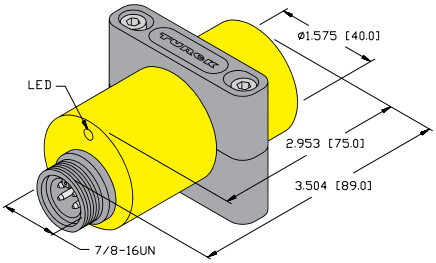
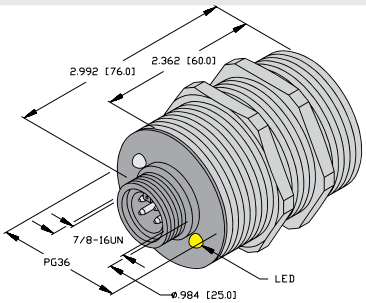
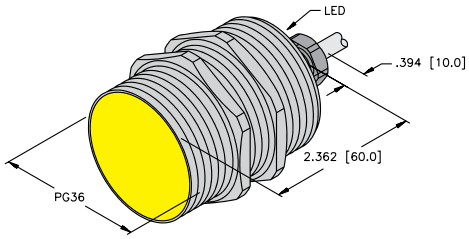
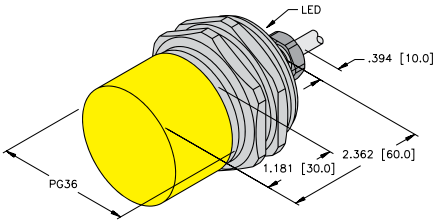
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi10U-EG30SK-AN6X** 1636420 | Uprox | 10 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | SS | LCP | N/A | YE | A | 1 | A4 |
| **Bi10-G30SK-AN6X2** 4648500 | | 10 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | GN | YE | A | 1 | A4 |
| **Bi10-P30SK-AN6X2** 4660000 | | 10 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | GN | YE | C | 1 | A4 |
| **Bi10-G30SK-AP6X2** 4648400 | | 10 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | GN | YE | A | 2 | A4 |
| **Bi10-P30SK-AP6X2** 4659900 | | 10 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | GN | YE | C | 2 | A4 |
| **Bi10-P30SR-VN4X2** 15752 | Comp. Outputs | 10 | 4-wire DC NPN | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | GN | YE | D | 4 | A4 |
| **Bi10-P30SR-VP4X2** 15652 | Comp. Outputs | 10 | 4-wire DC PNP | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | GN | YE | D | 5 | A4 |
| **Bi10-G30SK-AZ3X2** 4346400 | | 10 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | GN | RD | A | 3 | A6 |
| **Bi10-P30SK-AZ3X2** 4356400 | | 10 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PA 12 | PA 12 | GN | RD | C | 3 | A6 |
| **Bi10-P30SR-FZ3X2** 13420 | Programmable Outputs | 10 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤500 | -25 to +70 | IP67 | PA 12 | PA 12 | GN | RD | D | 3 | A6 |
| **Ni20U-P30SK-AP6X** 1646700 | Uprox | 20 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | PA 12 | PA 12 | N/A | YE | C | 2 | A4 |
| **Ni15-P30SK-AN6X2** 4660200 | | 15 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | GN | YE | C | 1 | A4 |
| **Ni15-G30SK-AP6X2** 4648600 | | 15 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | GN | YE | B | 2 | A4 |
| **Ni15-P30SK-AP6X2** 4660100 | | 15 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | GN | YE | C | 2 | A4 |
| **Ni15-P30SR-VN4X2** 15753 | Comp. Outputs | 15 | 4-wire DC NPN | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | GN | YE | D | 4 | A4 |
| **Ni15-P30SR-VP4X2** 15653 | Comp. Outputs | 15 | 4-wire DC PNP | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | GN | YE | D | 5 | A4 |
| **Ni15-G30SK-AZ3X2** 4346500 | | 15 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | GN | RD | B | 3 | A6 |
| **Ni15-P30SK-AZ3X2** 4356500 | | 15 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PA 12 | PA 12 | GN | RD | C | 3 | A6 |
| **Ni15-P30SR-FZ3X2** 13421 | Programmable Outputs | 15 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤500 | -25 to +70 | IP67 | PA 12 | PA 12 | GN | RD | D | 3 | A6 |



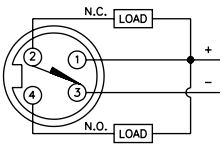
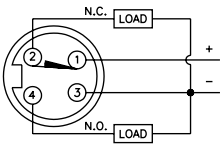
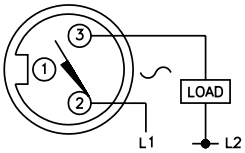
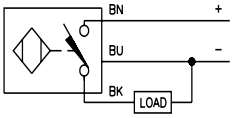
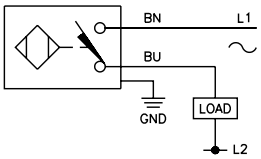
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 40 mm, 47 mm

**Large Diameter Barrels with AC/DC Outputs**

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   40 mm - Nonembeddable, Smooth Plastic Barrel, 7/8" Minifast Connection | B   47 mm - Embeddable, 7/8" Minifast Connection |
| C   47 mm - Embeddable, Potted-In Cable | D   47 mm - Nonembeddable, Potted-In Cable | |

**Wiring Diagrams/Mating Cordsets**

| | | |
|---|---|---|
| 1   Mating Cordset: RKM 40-*M | 2   Mating Cordset: RKM 40-*M | 3   Mating Cordset: RKM 30-*M |
| 4   | 5   | |

**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

**A6** — **2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)**

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Power-On Effect: | Per IEC 947-5-2 |
| | AC: ≤100 mA; DC: ≤100 mA | Transient Protection: | Per EN 60947-5-2 |
| Off-State (Leakage) Current: | ≤1.7 mA | Shock: | 30 g, 11 ms |
| Minimum Load Current: | ≥3.0 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 40 mm, 47 mm

## Large Diameter Barrels with AC/DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi20-G47-AP4X** 15645 | | 20 | 3-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | C | 4 | A4 |
| **Bi20-G47-AZ3X** 13088 | | 20 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | 2M/PVC | C | 5 | A6 |
| **Ni25-G47-AP4X** 15646 | | 25 | 3-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | D | 4 | A4 |
| **Ni25-G47-AZ3X** 13089 | | 25 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | 2M/PVC | D | 5 | A6 |
| **Bi25-G47-VN4X-B2141** 45903 | Comp. Outputs | 25 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | -- | B | 1 | A4 |
| **Bi25-G47-VP4X-B2141** 45902 | Comp. Outputs | 25 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | -- | B | 2 | A4 |
| **Bi20-G47-AZ3X-B2131** 43759 | | 20 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | -- | B | 3 | A6 |
| **Ni30-K40-VN4X-B2141** 45904 | Comp. Outputs | 30 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | ABS | ABS | N/A | YE | -- | A | 1 | A4 |
| **Ni30-K40-VP4X-B2141** 45905 | Comp. Outputs | 30 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | ABS | ABS | N/A | YE | -- | A | 2 | A4 |
| **Ni30-K40-AZ3X-B2131** 43758 | | 30 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | ABS | ABS | N/A | RD | -- | A | 3 | A6 |



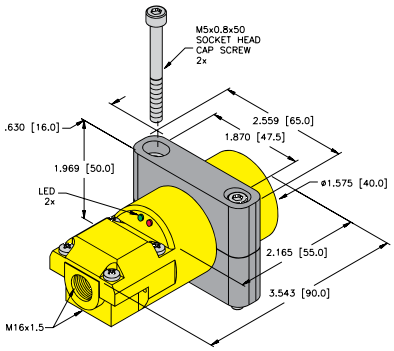
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 40 mm, 47 mm

**Large Diameter Barrels with Terminal Chambers and AC/DC Outputs**

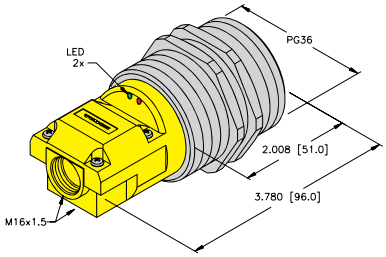
| Housing Style | Dimension Drawings |
|---|---|

A



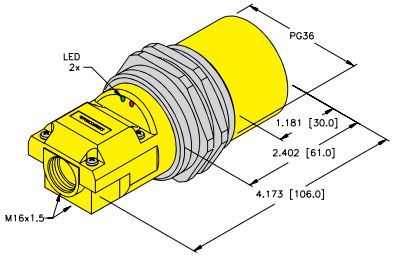

40 mm - Smooth Plastic, Terminal Chamber

B




47 mm - Embeddable, Terminal Chamber

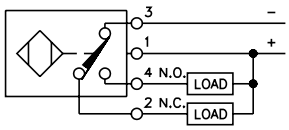
C




47 mm - Nonembeddable, Terminal Chamber

**Wiring Diagrams/Mating Cordsets**

1

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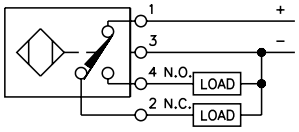


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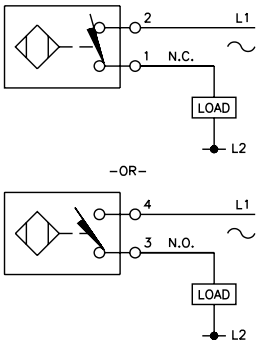



**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

**A6** — **2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)**

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Power-On Effect: | Per IEC 947-5-2 |
| | AC: ≤100 mA; DC: ≤100 mA | Transient Protection: | Per EN 60947-5-2 |
| Off-State (Leakage) Current: | ≤1.7 mA | Shock: | 30 g, 11 ms |
| Minimum Load Current: | ≥3.0 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 40 mm, 47 mm

**Large Diameter Barrels with Terminal Chambers and AC/DC Outputs**

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi25-G47SR-FZ3X2** 13427 | Programmable Outputs | 25 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | GN | RD | B | 3 | A6 |
| **Bi25-G47SR-VN4X2** 15748 | Comp. Outputs | 25 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | GN | YE | B | 1 | A4 |
| **Bi25-G47SR-VP4X2** 15648 | Comp. Outputs | 25 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | GN | YE | B | 2 | A4 |
| **Bi15-K40SR-FZ3X2** 13423 | Programmable Outputs | 15 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | ABS | ABS | GN | RD | A | 3 | A6 |
| **Bi15-K40SR-VP4X2** 15655 | Comp. Outputs | 15 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | ABS | ABS | GN | YE | A | 2 | A4 |
| **Ni40-G47SR-FZ3X2** 13428 | Programmable Outputs | 40 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | GN | RD | C | 3 | A6 |
| **Ni40-G47SR-VP4X2** 15650 | Comp. Outputs | 40 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | GN | YE | C | 2 | A4 |
| **Ni30-K40SR-FZ3X2** 13425 | Programmable Outputs | 30 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | ABS | ABS | GN | RD | A | 3 | A6 |
| **Ni30-K40SR-VN4X2** 15758 | Comp. Outputs | 30 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | ABS | ABS | GN | YE | A | 1 | A4 |
| **Ni30-K40SR-VP4X2** 15658 | Comp. Outputs | 30 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | ABS | ABS | GN | YE | A | 2 | A4 |
| **Ni20-K40SR-FZ3X2** 13424 | Programmable Outputs | 20 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | ABS | ABS | GN | RD | A | 3 | A6 |
| **Ni20-K40SR-VN4X2** 15756 | Comp. Outputs | 20 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | ABS | ABS | GN | YE | A | 1 | A4 |
| **Ni20-K40SR-VP4X2** 15656 | Comp. Outputs | 20 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | ABS | ABS | GN | YE | A | 2 | A4 |

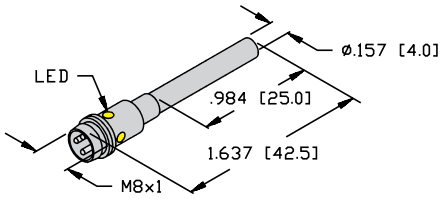
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 4 mm, 5 mm, & 6.5 mm Namur

**Intrinsically Safe**

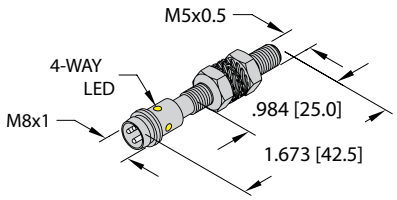
## Dimension Drawings

A



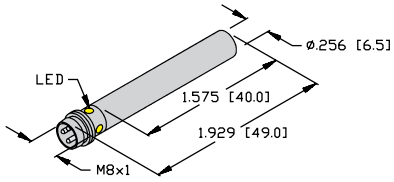

4 mm - Embeddable, Miniature Smooth, M8 Picofast Quick Disconnect

B



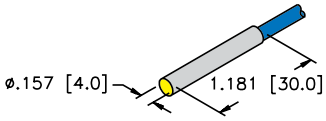

5 mm - Embeddable, Miniature Threaded, M8 Picofast Quick Disconnect

C



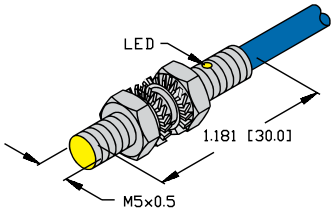

6.5 mm - Embeddable, Miniature Smooth, M8 Picofast Quick Disconnect

D



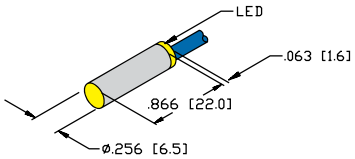

4 mm - Embeddable, Miniature Smooth Barrel, Potted-In Cable

E



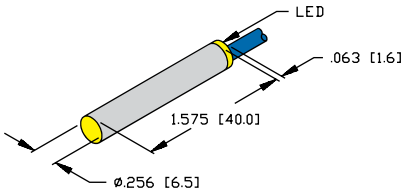

5 mm - Embeddable, Miniature Threaded Barrel, Potted-In Cable

F



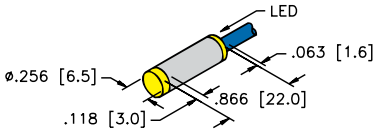

6.5 mm - Embeddable, Miniature Smooth Barrel, Potted-In Cable

G




6.5 mm - Embeddable, Miniature Smooth Barrel, Potted-In Cable

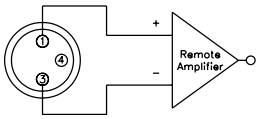
H




6.5 mm - Nonembeddable, Miniature Smooth Barrel, Potted-In Cable

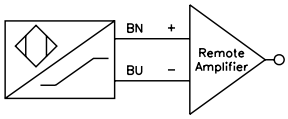
## Wiring Diagrams/Mating Cordsets

1




Mating Cordset: PKG 3M-*

2




## A1 2-wire DC NAMUR - (Y0 and Y1)

| | | | |
|---|---|---|---|
| Differential Travel (Hysteresis): | 1-10% (5% typical) | Power-On Effect: | Realized in Amplifier |
| Nominal Voltage: | 8.2 VDC (EN60947-5-6) | Reverse Polarity Protection: | Incorporated |
| Load Resistance: | 1000 Ω | Wire-Break Protection: | Realized in Amplifier |
| Non-Activated Current Consumption: | ≥2.1 mA | Transient Protection: | Realized in Amplifier |
| Activated Current Consumption: | ≤1.2 mA | Shock: | 30 g, 11 ms |
| Recommended Switching Point for | >1.2 to <2.1 mA, | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Remote Amplifier: | typ. 1.55 mA ON/1.75 mA OFF | Repeatability: | ≤2% of Rated Operating Distance |

**Amplifier Note:**
Inductive sensors with Namur outputs are typically used in hazardous locations and the approval agencies require the use of an amplifier to regulate the signals in the hazardous area. Due to the wide variety of approvals, output options, and amplifier designs, it is not possible to incorporate all of the choices in this catalog. For the most up to date information, please either search for these products under our interface technology product category (www.turck.us) or contact us by phone.

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 4 mm, 5 mm, & 6.5 mm Namur

**Intrinsically Safe** IS

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Cable Length/Jacket | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi1-EH04-Y1-V1330** 1003044 | | 1 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | -- | N/A | A | 1 | A1 |
| **Bi1-EG05-Y1-V1331** 1003241 | | 1 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | -- | N/A | B | 1 | A1 |
| **Bi1.5-EH6.5-Y1-V1130** 1004621 | | 1.5 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | -- | N/A | C | 1 | A1 |
| **Bi1-EH04-Y1** 1003040 | | 1 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | 2M/PVC | N/A | D | 2 | A1 |
| **Bi1-EG05-Y1** 1003240 | | 1 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | 2M/PVC | N/A | E | 2 | A1 |
| **Bi1.5-EH6.5K-Y1** 1004600 | Short Barrel | 1.5 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | 2M/PVC | N/A | F | 2 | A1 |
| **Bi1.5-H6.5-Y1X** 4004810 | | 1.5 | 2-wire DC NAMUR | 5-30 VDC | 3000 | Remote | -25 to +70 | IP67 | SS | PA 12 | 2M/PVC | YE | G | 2 | A1 |
| **Ni3-EH6.5K-Y1** 1004700 | Short Barrel | 3 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | 2M/PVC | N/A | H | 2 | A1 |



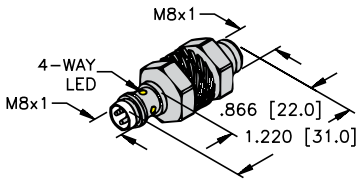
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 8 mm Namur

**Intrinsically Safe**

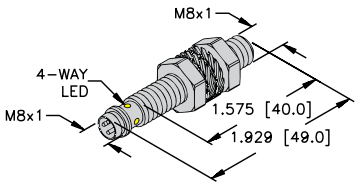
## Dimension Drawings

A



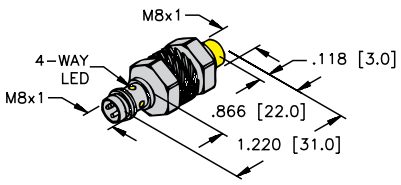

8 mm - Embeddable, Miniature Threaded, M8 Picofast Quick Disconnect

B



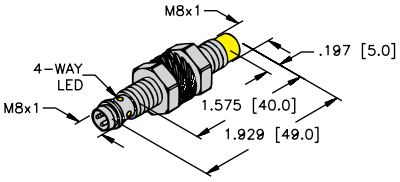

8 mm - Embeddable, Miniature Threaded, M8 Picofast Quick Disconnect

C



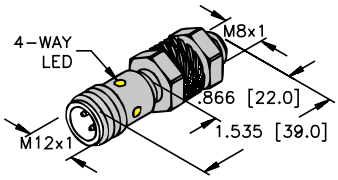

8 mm - Nonembeddable, Miniature Threaded, M8 Picofast Quick Disconnect

D



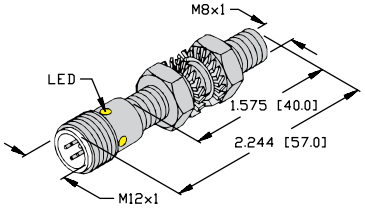

8 mm - Nonembeddable, Miniature Threaded, M8 Picofast Quick Disconnect

E



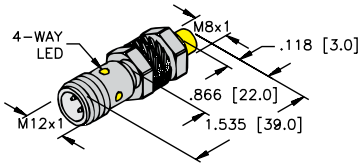

8 mm - Embeddable, Miniature Threaded, M12 Eurofast Quick Disconnect

F



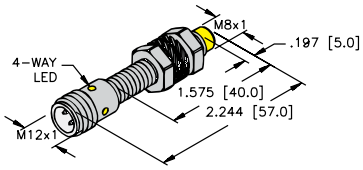

8 mm - Embeddable, Miniature Threaded, M12 Eurofast Quick Disconnect

G




8 mm - Nonembeddable, Miniature Threaded, M12 Eurofast Quick Disconnect

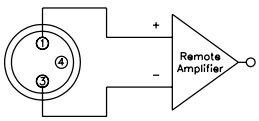
H




8 mm - Nonembeddable, Miniature Threaded, M12 Eurofast Quick Disconnect

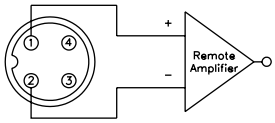
## Wiring Diagrams/Mating Cordsets

1




Mating Cordset: PKG 3M-*

2




Mating Cordset: RK 4.21T-*

## A1 2-wire DC NAMUR - (Y0 and Y1)

| | |
|---|---|
| Differential Travel (Hysteresis): | 1-10% (5% typical) |
| Nominal Voltage: | 8.2 VDC (EN60947-5-6) |
| Load Resistance: | 1000 Ω |
| Non-Activated Current Consumption: | ≥2.1 mA |
| Activated Current Consumption: | ≤1.2 mA |
| Recommended Switching Point for Remote Amplifier: | >1.2 to <2.1 mA, typ. 1.55 mA ON/1.75 mA OFF |
| Power-On Effect: | Realized in Amplifier |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Realized in Amplifier |
| Transient Protection: | Realized in Amplifier |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

**Amplifier Note:**
Inductive sensors with Namur outputs are typically used in hazardous locations and the approval agencies require the use of an amplifier to regulate the signals in the hazardous area. Due to the wide variety of approvals, output options, and amplifier designs, it is not possible to incorporate all of the choices in this catalog. For the most up to date information, please either search for these products under our interface technology product category (www.turck.us) or contact us by phone.

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 8 mm Namur

**Intrinsically Safe** IS

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi1.5-EG08K-Y1-V1131** 1003630 | Short Barrel | 1.5 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | N/A | A | 1 | A1 |
| **Bi1.5-EG08-Y1-V1131** 1003530 | | 1.5 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | N/A | B | 1 | A1 |
| **Ni3-EG08K-Y1-V1130** 1003721 | Short Barrel | 3 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | N/A | C | 1 | A1 |
| **Ni3-EG08-Y1-V1130** 1003732 | | 3 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | N/A | D | 1 | A1 |
| **Bi1.5-EG08K-Y1-H1341** 1003620 | Short Barrel | 1.5 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | N/A | E | 2 | A1 |
| **Bi1.5-EG08K-Y1X-H1341** 1003640 | Short Barrel | 1.5 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | YE | E | 2 | A1 |
| **Bi1.5-EG08-Y1-H1341** 1003502 | | 1.5 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | N/A | F | 2 | A1 |
| **Ni3-EG08K-Y1-H1341** 1003720 | Short Barrel | 3 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | N/A | G | 2 | A1 |
| **Ni3-EG08K-Y1X-H1341** 1003704 | Short Barrel | 3 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | N/A | G | 2 | A1 |
| **Ni3-EG08-Y1-H1341** 1003730 | | 3 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | N/A | H | 2 | A1 |



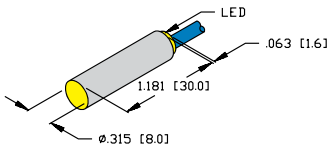
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 8 mm Namur

**Intrinsically Safe**

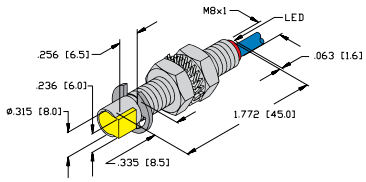
## Dimension Drawings

A



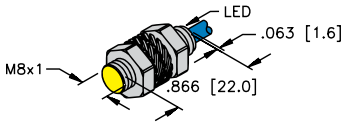

8 mm - Embeddable, Miniature Smooth Barrel, Potted-In Cable

B



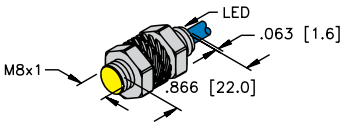

8 mm - Embeddable, Miniature Threaded Barrel, Side Sensing, Potted-In Cable

C



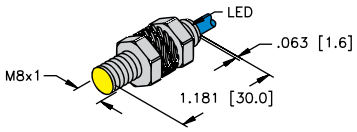

8 mm - Embeddable, Miniature Threaded Barrel, Potted-In Cable

D



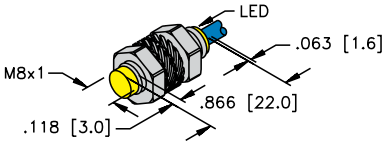

8 mm - Embeddable, Miniature Threaded Barrel, Potted-In Cable

E



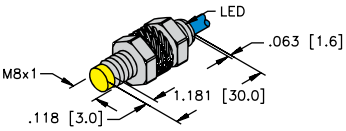

8 mm - Embeddable, Miniature Threaded Barrel, Potted-In Cable

F




8 mm - Nonembeddable, Miniature Threaded Barrel, Potted-In Cable

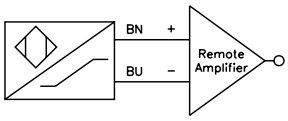
G




8 mm - Nonembeddable, Miniature Threaded Barrel, Potted-In Cable

## Wiring Diagrams/Mating Cordsets

1




## A1 — 2-wire DC NAMUR - (Y0 and Y1)

| | |
|---|---|
| Differential Travel (Hysteresis): | 1-10% (5% typical) |
| Nominal Voltage: | 8.2 VDC (EN60947-5-6) |
| Load Resistance: | 1000 Ω |
| Non-Activated Current Consumption: | ≥2.1 mA |
| Activated Current Consumption: | ≤1.2 mA |
| Recommended Switching Point for Remote Amplifier: | >1.2 to <2.1 mA, typ. 1.55 mA ON/1.75 mA OFF |
| Power-On Effect: | Realized in Amplifier |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Realized in Amplifier |
| Transient Protection: | Realized in Amplifier |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

**Amplifier Note:**
Inductive sensors with Namur outputs are typically used in hazardous locations and the approval agencies require the use of an amplifier to regulate the signals in the hazardous area. Due to the wide variety of approvals, output options, and amplifier designs, it is not possible to incorporate all of the choices in this catalog. For the most up to date information, please either search for these products under our interface technology product category (www.turck.us) or contact us by phone.

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 8 mm Namur

**Intrinsically Safe** IS

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi1.5-H08-Y1** 1021800 | | 1.5 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | N/A | 2M/PVC | A | 1 | A1 |
| **Bi1.5-GS880-Y0** 1004401 | Side Sensing | 1.5 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | N/A | 2M/PVC | B | 1 | A1 |
| **Bi1.5-EG08K-Y1** 1003600 | Short Barrel | 1.5 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | N/A | 2M/PVC | C | 1 | A1 |
| **Bi1.5-EG08-Y1** 1003500 | | 1.5 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | N/A | 2M/PVC | D | 1 | A1 |
| **Bi1.5-G08-Y1** 1005224 | | 1.5 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | N/A | 2M/PVC | E | 1 | A1 |
| **Ni3-EG08K-Y1** 1003700 | Short Barrel | 3 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | N/A | 2M/PVC | F | 1 | A1 |
| **Ni2-G08-Y1** 10053 | | 2 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | N/A | 2M/PVC | G | 1 | A1 |



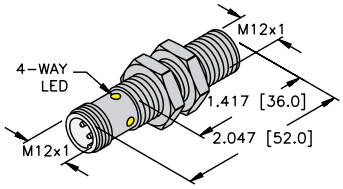
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm Namur

**Intrinsically Safe**

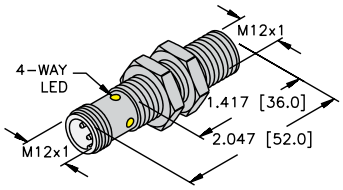
## Dimension Drawings

A



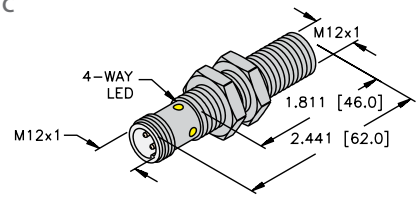

12 mm - Embeddable, M12 Eurofast Connection

B



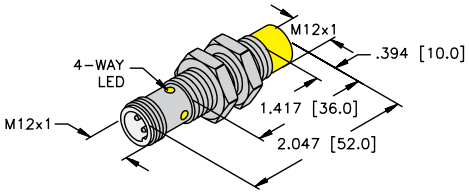

12 mm - Embeddable, M12 Eurofast Connection, PTFE Coated Sensors

C



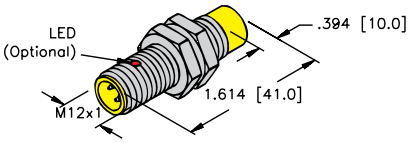

12 mm - Embeddable, M12 Eurofast Connection, Extended Barrel Length

D



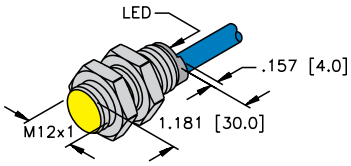

12 mm - Nonembeddable, M12 Eurofast Connection

E



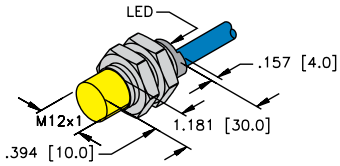

12 mm - Nonembeddable, M12 Eurofast Connection

F



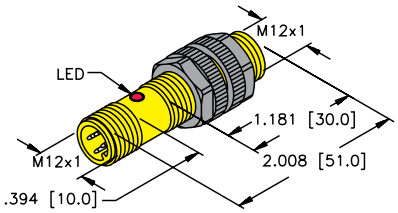

12 mm - Embeddable, Potted-In Cable

G



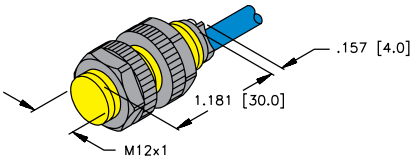

12 mm - Nonembeddable, Potted-In Cable

H




12 mm - Embeddable/Nonembeddable, Plastic, M12 Eurofast Quick Disconnect

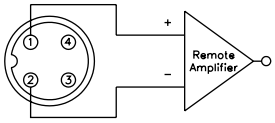
I




12 mm - Embeddable/Nonembeddable, Plastic Potted-In Cable

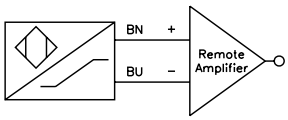
## Wiring Diagrams/Mating Cordsets

1




Mating Cordset: RK 4.21T-*; RKK 4.21T-*

2




## A1 — 2-wire DC NAMUR - (Y0 and Y1)

| | |
|---|---|
| Differential Travel (Hysteresis): | 1-10% (5% typical) |
| Nominal Voltage: | 8.2 VDC (EN60947-5-6) |
| Load Resistance: | 1000 Ω |
| Non-Activated Current Consumption: | ≥2.1 mA |
| Activated Current Consumption: | ≤1.2 mA |
| Recommended Switching Point for Remote Amplifier: | >1.2 to <2.1 mA, typ. 1.55 mA ON/1.75 mA OFF |
| Power-On Effect: | Realized in Amplifier |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Realized in Amplifier |
| Transient Protection: | Realized in Amplifier |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

**Amplifier Note:**
Inductive sensors with Namur outputs are typically used in hazardous locations and the approval agencies require the use of an amplifier to regulate the signals in the hazardous area. Due to the wide variety of approvals, output options, and amplifier designs, it is not possible to incorporate all of the choices in this catalog. For the most up to date information, please either search for these products under our interface technology product category (www.turck.us) or contact us by phone.

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm Namur

**Intrinsically Safe** IS

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi2-M12-Y1X-H1141** 40102 | | 2 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | CPB | PA 12 | YE | -- | A | 1 | A1 |
| **Bi2-MT12-Y0X-H1141** 4010093 | PTFE | 2 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | TC | TC | YE | -- | B | 1 | A1 |
| **Bi2-M12E-Y0X-H1141** 4606490 | | 2 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | CPB | PA 12 | YE | -- | C | 1 | A1 |
| **Bi2-S12-Y0X-H1141** 4030090 | | 2 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | PA | PA | RD | -- | H | 1 | A1 |
| **Ni5-M12-Y1X-H1141** 40103 | | 5 | 2-wire DC NAMUR | 5-30 VDC | 2000 | Remote | -25 to +70 | IP67 | CPB | PA 12 | YE | -- | D | 1 | A1 |
| **Ni5-G12-Y0-H1141** 1005594 | | 5 | 2-wire DC NAMUR | 5-30 VDC | 2000 | Remote | -25 to +70 | IP67 | CPB | PA 12 | N/A | -- | E | 1 | A1 |
| **Ni5-S12-Y0X-H1141** 4030300 | | 5 | 2-wire DC NAMUR | 5-30 VDC | 2000 | Remote | -25 to +70 | IP67 | PA | PA | RD | -- | H | 1 | A1 |
| **Bi2-EG12-Y0X** 4012097 | | 2 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | YE | 2M/PVC | F | 2 | A1 |
| **Bi2-G12-Y0** 1005450 | | 2 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | CPB | PA 12 | N/A | 2M/PVC | F | 2 | A1 |
| **Bi2-G12-Y0X** 4010000 | | 2 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | CPB | PA 12 | YE | 2M/PVC | F | 2 | A1 |
| **Bi2-P12-Y0** 1005456 | | 2 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | 2M/PVC | I | 2 | A1 |
| **Bi2-P12-Y0X** 403000 | | 2 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | PA 12 | PA 12 | YE | 2M/PVC | I | 2 | A1 |
| **Bi2-P12-Y1X/S97** 4030021 | Low Temp. -40 °C | 2 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -40 to +70 | IP67 | PA 12 | PA 12 | YE | 2M/Silicon | I | 2 | A1 |
| **Ni5-G12-Y0** 1005451 | | 5 | 2-wire DC NAMUR | 5-30 VDC | 2000 | Remote | -25 to +70 | IP67 | CPB | PA 12 | N/A | 2M/PVC | G | 2 | A1 |
| **Ni5-G12-Y0X** 1005458 | | 5 | 2-wire DC NAMUR | 5-30 VDC | 2000 | Remote | -25 to +70 | IP67 | CPB | PA 12 | YE | 2M/PVC | G | 2 | A1 |
| **Ni5-P12-Y0X** 1005460 | | 5 | 2-wire DC NAMUR | 5-30 VDC | 2000 | Remote | -25 to +70 | IP67 | PA 12 | PA 12 | YE | 2M/PVC | I | 2 | A1 |
| **Ni5-P12-Y1** 10094 | | 5 | 2-wire DC NAMUR | 5-30 VDC | 2000 | Remote | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | 2M/PVC | I | 2 | A1 |

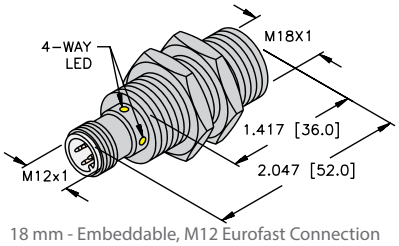
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm Namur

**Intrinsically Safe**

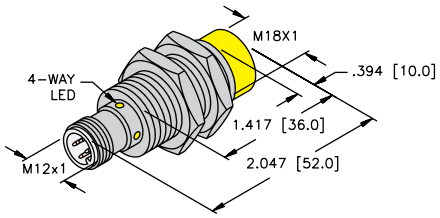
## Dimension Drawings

A



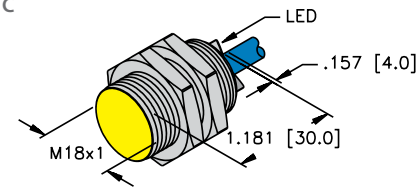

18 mm - Embeddable, M12 Eurofast Connection

B



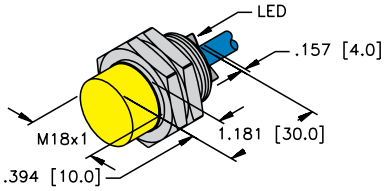

18 mm - Nonembeddable, M12 Eurofast Connection

C



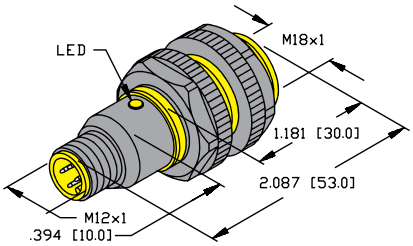

18 mm - Embeddable, Full Threading, Potted-In Cable

D



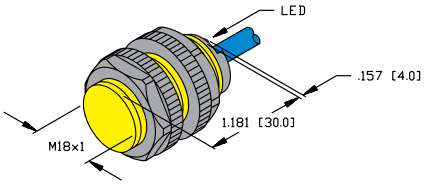

18 mm - Nonembeddable, Full Threading, Potted-In Cable

E



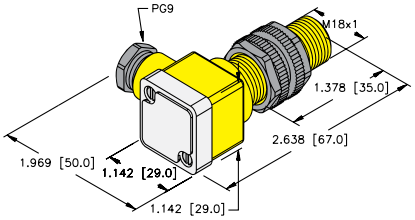

18 mm - Embeddable and Nonembeddable, Partial Threading, M12 Eurofast Connection

F




18 mm - Embeddable and Nonembeddable, Full Threading, Potted-In Cable

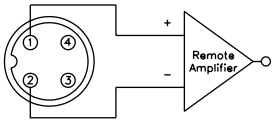
G




18 mm - Embeddable and Nonembeddable, Full Threading, Terminal Chamber

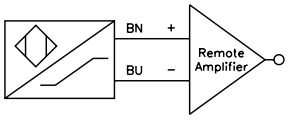
## Wiring Diagrams/Mating Cordsets

1

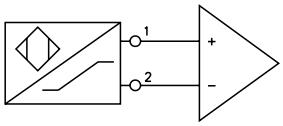



Mating Cordset: RK 4.21T-*; RKK 4.21T-*

2




3




## A1 2-wire DC NAMUR - (Y0 and Y1)

| | |
|---|---|
| Differential Travel (Hysteresis): | 1-10% (5% typical) |
| Nominal Voltage: | 8.2 VDC (EN60947-5-6) |
| Load Resistance: | 1000 Ω |
| Non-Activated Current Consumption: | ≥2.1 mA |
| Activated Current Consumption: | ≤1.2 mA |
| Recommended Switching Point for Remote Amplifier: | >1.2 to <2.1 mA, typ. 1.55 mA ON/1.75 mA OFF |
| Power-On Effect: | Realized in Amplifier |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Realized in Amplifier |
| Transient Protection: | Realized in Amplifier |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

**Amplifier Note:**
Inductive sensors with Namur outputs are typically used in hazardous locations and the approval agencies require the use of an amplifier to regulate the signals in the hazardous area. Due to the wide variety of approvals, output options, and amplifier designs, it is not possible to incorporate all of the choices in this catalog. For the most up to date information, please either search for these products under our interface technology product category (www.turck.us) or contact us by phone.

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm Namur

**Intrinsically Safe** IS

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi5-M18-Y1X-H1141** 40152 | | 5 | 2-wire DC NAMUR | 5-30 VDC | 1000 | Remote | -25 to +70 | IP67 | CPB | PA 12 | YE | -- | A | 1 | A1 |
| **Ni10-M18-Y1X-H1141** 40153 | | 10 | 2-wire DC NAMUR | 5-30 VDC | 500 | Remote | -25 to +70 | IP67 | CPB | PA 12 | YE | -- | B | 1 | A1 |
| **Bi5-EG18-Y0** 100600 | | 5 | 2-wire DC NAMUR | 5-30 VDC | 1000 | Remote | -25 to +70 | IP67 | SS | PA 12 | N/A | 2M/PVC | C | 2 | A1 |
| **Bi5-G18-Y0** 1005452 | | 5 | 2-wire DC NAMUR | 5-30 VDC | 1000 | Remote | -25 to +70 | IP67 | CPB | PA 12 | N/A | 2M/PVC | C | 2 | A1 |
| **Bi5-G18-Y0X** 4015000 | | 5 | 2-wire DC NAMUR | 5-30 VDC | 1000 | Remote | -25 to +70 | IP67 | CPB | PA 12 | YE | 2M/PVC | C | 2 | A1 |
| **Ni10-G18-Y0** 1006100 | | 10 | 2-wire DC NAMUR | 5-30 VDC | 500 | Remote | -25 to +70 | IP67 | CPB | PA 12 | N/A | 2M/PVC | D | 2 | A1 |
| **Ni10-G18-Y0X** 4015100 | | 10 | 2-wire DC NAMUR | 5-30 VDC | 500 | Remote | -25 to +70 | IP67 | CPB | PA 12 | YE | 2M/PVC | D | 2 | A1 |
| **Bi5-S18-Y0X-H1141** 4036095 | | 5 | 2-wire DC NAMUR | 5-30 VDC | 1000 | Remote | -25 to +70 | IP67 | PA 12 | PA 12 | YE | -- | E | 1 | A1 |
| **Bi5-P18-Y0** 1005457 | | 5 | 2-wire DC NAMUR | 5-30 VDC | 1000 | Remote | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | 2M/PVC | F | 2 | A1 |
| **Bi5-P18-Y0X** 1005462 | | 5 | 2-wire DC NAMUR | 5-30 VDC | 1000 | Remote | -25 to +70 | IP67 | PA 12 | PA 12 | YE | 2M/PVC | F | 2 | A1 |
| **Bi5-P18-Y0/S100** 1024500 | High Temp. 100 °C | 5 | 2-wire DC NAMUR | 5-30 VDC | 1000 | Remote | -25 to +100 | IP67 | PA 12 | IRPA | N/A | 2M/PVC | F | 2 | A1 |
| **Ni10-P18-Y0X** 1005463 | | 10 | 2-wire DC NAMUR | 5-30 VDC | 500 | Remote | -25 to +70 | IP67 | PA 12 | PA 12 | YE | 2M/PVC | F | 2 | A1 |
| **Ni10-P18-Y1** 10096 | | 10 | 2-wire DC NAMUR | 5-30 VDC | 500 | Remote | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | 2M/PVC | F | 2 | A1 |
| **Ni10-P18-Y0/S100** 103170 | High Temp. 100 °C | 10 | 2-wire DC NAMUR | 5-30 VDC | 500 | Remote | -25 to +100 | IP67 | PA 12 | IRPA | N/A | 2M/PVC | F | 2 | A1 |
| **Bi5-P18SK-Y1X** 40360 | | 5 | 2-wire DC NAMUR | 5-30 VDC | 1000 | Remote | -25 to +70 | IP67 | PA 12 | PA 12 | YE | -- | G | 3 | A1 |
| **Ni10-P18SK-Y1X** 40361 | | 10 | 2-wire DC NAMUR | 5-30 VDC | 500 | Remote | -25 to +70 | IP67 | PA 12 | PA 12 | YE | -- | G | 3 | A1 |



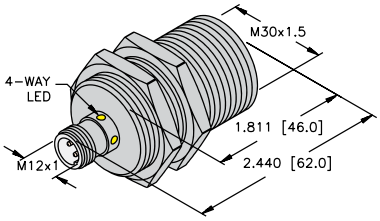
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm Namur

**Intrinsically Safe**

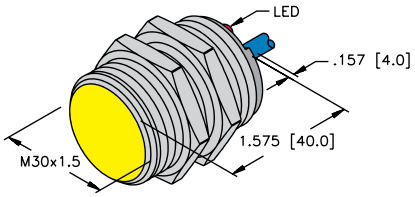
## Dimension Drawings

A



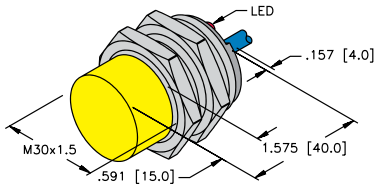

30 mm - Embeddable, M12 Eurofast Connection

B



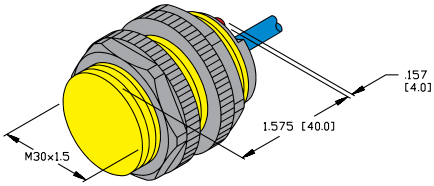

30 mm - Embeddable, Potted-In Cable

C




30 mm - Nonembeddable, Potted-In Cable

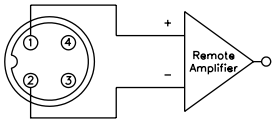
D




30 mm - Embeddable/Nonembeddable, Full Threading, Potted-In Cable

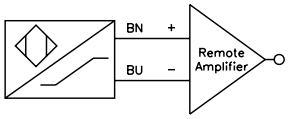
## Wiring Diagrams/Mating Cordsets

1




Mating Cordset: RK 4.21T-*

2




## A1 — 2-wire DC NAMUR - (Y0 and Y1)

| | |
|---|---|
| Differential Travel (Hysteresis): | 1-10% (5% typical) |
| Nominal Voltage: | 8.2 VDC (EN60947-5-6) |
| Load Resistance: | 1000 Ω |
| Non-Activated Current Consumption: | ≥2.1 mA |
| Activated Current Consumption: | ≤1.2 mA |
| Recommended Switching Point for Remote Amplifier: | >1.2 to <2.1 mA, typ. 1.55 mA ON/1.75 mA OFF |
| Power-On Effect: | Realized in Amplifier |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Realized in Amplifier |
| Transient Protection: | Realized in Amplifier |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

**Amplifier Note:**
Inductive sensors with Namur outputs are typically used in hazardous locations and the approval agencies require the use of an amplifier to regulate the signals in the hazardous area. Due to the wide variety of approvals, output options, and amplifier designs, it is not possible to incorporate all of the choices in this catalog. For the most up to date information, please either search for these products under our interface technology product category (www.turck.us) or contact us by phone.

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm Namur

**Intrinsically Safe** IS

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi10-M30-Y1X-H1141** 40202 | | 10 | 2-wire DC NAMUR | 5-30 VDC | 2000 | Remote | -25 to +70 | IP67 | CPB | PA 12 | YE | -- | A | 1 | A1 |
| **Bi10-G30-Y0** 1005453 | Short Barrel | 10 | 2-wire DC NAMUR | 5-30 VDC | 200 | Remote | -25 to +70 | IP67 | CPB | PA 12 | N/A | 2M/PVC | B | 2 | A1 |
| **Bi10-G30-Y0X** 1005459 | Short Barrel | 10 | 2-wire DC NAMUR | 5-30 VDC | 200 | Remote | -25 to +70 | IP67 | CPB | PA 12 | YE | 2M/PVC | B | 2 | A1 |
| **Ni15-G30-Y0** 1005454 | | 15 | 2-wire DC NAMUR | 5-30 VDC | 200 | Remote | -25 to +70 | IP67 | CPB | PA 12 | N/A | 2M/PVC | C | 2 | A1 |
| **Ni15-G30-Y0X** 4020100 | | 15 | 2-wire DC NAMUR | 5-30 VDC | 200 | Remote | -25 to +70 | IP67 | CPB | PA 12 | YE | 2M/PVC | C | 2 | A1 |
| **Bi10-P30-Y0X** 404000 | | 10 | 2-wire DC NAMUR | 5-30 VDC | 500 | Remote | -25 to +70 | IP67 | PA 12 | PA 12 | YE | 2M/PVC | D | 2 | A1 |
| **Bi10-P30-Y1** 10097 | | 10 | 2-wire DC NAMUR | 5-30 VDC | 500 | Remote | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | 2M/PVC | D | 2 | A1 |
| **Ni15-P30-Y0X** 1005465 | | 15 | 2-wire DC NAMUR | 5-30 VDC | 200 | Remote | -25 to +70 | IP67 | PA 12 | PA 12 | YE | 2M/PVC | D | 2 | A1 |
| **Ni15-P30-Y1** 10098 | | 15 | 2-wire DC NAMUR | 5-30 VDC | 200 | Remote | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | 2M/PVC | D | 2 | A1 |



We reserve the right to make technical alterations without prior notice.

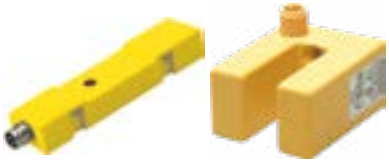
Notes

Notes

# Specialty Sensor Section

| Specialty Sensors | | | |
|---|---|---|---|
| | | | |
| **Housing** | **Barrel and Rectangular** | **12, 18, and 30 mm** | **40, 80, and 160 mm** |
| **Features** | **Washdown Uprox+** | **High Temperature Sensors** | **High Temperature Sensors** |
| **Pages** | **C9 - 14** | **C15 - 20** | **C21** |

| Specialty Sensors | | | |
|---|---|---|---|
| | | | |
| **Housing** | **8, 12, 18, and 30 mm** | **Barrel and Rectangular** | **30 mm** |
| **Features** | **Stainless Steel Face Sensors** | **Mobile Equipment Sensors** | **High Current Solid State Sensors** |
| **Pages** | **C23 - 32** | **C33 - 36** | **C37** |

| Specialty Sensors | | | |
|---|---|---|---|
| | | |  |
| **Housing** | **12,18, and 30 mm** | **Variable** | **Variable** |
| **Features** | **FM, Class I Div 2 Approved Sensors** | **Ring Sensing** | **Tube and Slot Sensing** |
| **Pages** | **C39** | **C41 - 44** | **C45 - 48** |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensor Selection Guide

| Specialty Sensors | | | |
|---|---|---|---|
| | | | |
| **Housing** | **12 mm** | **80 and 130 mm** | **130 mm** |
| **Features** | **Weld Nut Detection Sensor** | **Edge Detection Sensing** | **Can Line Sensing** |
| **Pages** | **C49** | **C51 - 54** | **C55** |

| Specialty Sensors | | | |
|---|---|---|---|
| | | | |
| **Housing** | **8, 12, and 18 mm** | **18 mm** | **Barrel and Rectangular** |
| **Features** | **Magnetic Inductive Sensing** | **Submersible** | **Selective Metal Sensing** |
| **Pages** | **C57 - 60** | **C61** | **C63 - 66** |

| Specialty Sensors | | |
|---|---|---|
| | | |
| **Housing** | **12 and 18 mm** | **18 and 30 mm** |
| **Features** | **In Cylinder Sensor** | **Rotational Speed Monitoring** |
| **Pages** | **C67** | **C69** |



We reserve the right to make technical alterations without prior notice.

# Specialty Sensor Part Number Key

| B | I | 10 | U | - | | G | T | 30 | | - | A | DZ | 30 | X2 | | Wiring Option* | Special Option Code** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

**Mounting**
- B = embeddable
- BID = high pressure sensor
- N = nonembeddable
- S = slot

**Principle of Operation**
- I = inductive
- IM = inductive magnet operated

**Rated Operating Distance (mm)**

**Sensing Characteristics**
- FE = ferrous only
- R = ring sensor
- U =Uprox® Sensor

**Housing Material Modifier**
- E = stainless steel

**Housing Style**

**Barrel - Metal**
- G = full threading, generally chrome plated brass
- H = smooth, chrome plated brass or stainless steel
- M = partial threading, chrome plated brass

**Barrel - Plastic**
- K = smooth
- P = full threading
- S = partial threading

**Rectangular**
- Q = metal or plastic, various rectangular styles

**Limit Switch**
- CA = stubby ®, short aluminum housing, connector
- CK = stubby ®, short plastic housing, connector

**Slot**
- K = slot sensor, plastic housing

**Ring**
- 32SR = large plastic housing, static or dynamic output
- Q = small rectangular plastic housing, static output
- W = small plastic housing, dynamic output

**Primary Barrel Modifier**
- T = PTFE® coated

**Housing Diameter or Height (mm)**

**Number of LEDs**
- (blank) = no LEDs
- X = 1 LED
- X2 = 2 LEDs

**Voltage Range**

**AC/DC: (No SCP**)**
- 3 = 20-250 VAC, 10-300 VDC

**AC/DC: (Latched SCP)**
- 30 = 20-250 VAC, 10-300 VDC 400 mA

**DC:**
- 4 = 10-65 VDC, polarity protected, pulsed SCP**
- 6 = 10-30 VDC, polarity protected, pulsed SCP
- 44 = 10-55 VDC
- 45 = 8.4-65 Volts

**Output**
- D = 2-wire DC (transistor output)
- DZ = 2-wire AC/DC, (power MOSFET output)
- N = NPN transistor (current sinking)
- P = PNP transistor (current sourcing)
- Z = 2-wire AC or 2-wire AC/DC
- M = high current solid state relay

**Output Function**
- A = normally open (N.O.)
- DA = dynamic output (ring sensor), normally open
- R = normally closed (N.C.)
- U = jumper programmable (N.O. or N.C.)
- V = complementary outputs: one N.O., one N.C.
- Y0 = NAMUR output, requires switching amplifier
- Y1 = NAMUR output, requires switching amplifier, ATEX approved

**Secondary Barrel Modifier**
- E = extended barrel length
- EE = extra long barrel length
- FE = stainless steel face, extended barrel length
- FM = stainless steel face, medium barrel length
- M = medium barrel length
- TC = terminal chamber
- WD = washdown IP67/IP68/IP69K
- F = stainless steel face, standard length

**NOTE:**
Part number keys are to assist in identification only.
Verify new part numbers with factory; some configurations are not possible.
* See next page Wiring Options and Special Option Codes.

We reserve the right to make technical alterations without prior notice.

# Specialty Sensor Part Number Key

## Wiring Options*

**A. Connectorized Sensor**

**Bi2 - M12 - AN6X2 - H1 1 4 1**

**Connector Family**

B1 = Minifast®, 7/8"-16UN, metal, male
B2 = Minifast , 7/8"-16UN, plastic, male
B3 = Microfast®, 1/2"-20UNF, metal, male
H1 = Eurofast®, M12x1, metal or plastic, male
V1 = Picofast®, snap and M8x1, metal, male (Q08 snap only)
V2 = Picofast , snap and M8x1, male (Q08 only)

**Connector/Sensor Transition**

1 = straight
3 = straight with adapter
4 = right-angle with adapter

**Wiring Configuration**

**Example:**

0 = non-standard wiring
1 = standard wiring
3 = N.C. DC output on pin 4 (for US)
4 = N.O. 2-wire DC output on pin 4

**Number of Pins**

**3** = **3**
**4** = **4**
**5** = **5**

**B. Potted Cable**

**Bi2 - G12 - AN6X 7M**

**Cable Length**

(blank) = 2 meter cable
7M = 7 meter cable
*M = custom cable lengths available

## Special Option Codes**

**Bi 2-S12-AN7X /S100 or Bi10R-W30-DAN6X-H1141 /F2**

**Example:**

/S90 = TPU cable
/S97 = -40 °C (-40 °F) operating temperature
/S100 = +100 °C (+212 °F) operating temperature
/S120 = +120 °C (+248 °F) operating temperature
/S139 = submersible
/S907 = +160 °C (+320 °F) operating temperature
/S1009 = 250 ms internal off delay
/S1102 =+250 °C (+482 °F) operating temperature
/S1751 = approved for FM Class I, Div 2, groups A, B, C, and D

**Example:**

/F2 = alternate oscillator frequency

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors

## Uprox+ Washdown Sensors

The Uprox+ Washdown product family is with a full line of inductive sensors that senses all metals at the same range (no correction factor), extended temperature rating from -40 to +100 °C, robust construction with IP68 and IP69k sealing ratings, and housing materials compatible with common acidic and alkaline chemicals used in Food and Beverage applications.

## Sensors with Extended Temperature Range

Turck offers sensors for applications that withstand extreme temperatures of -40 to +250 °C. Typically, these sensors are used in applications like cold storage facilities, metal foundries, glass making, outdoor applications, and in painting shops in the automotive industry.

## Stainless Steel Face Sensors

Inductive sensors with one piece stainless steel faced barrels are ideal for applications where physical impact is common or where ingress through the sensing face is a concern. The sensors are available in barrel diameters from 8 mm to 30 mm, standard and extended sensing ranges, rated IP68/IP69K, with optional coatings for welding environments, and 2 and 3-wire designs.

## Mobile Equipment Sensors

Position sensing applications in mobile equipment have different electrical requirements than what is common for industrial sensors. Turck designs and manufactures a diverse line of inductive sensors that meet or exceed the industry requirements for sealing (IP68/IP69K), load dump protection, resistance to shock, vibration, EMC immunity, extended temperature range, wide operating voltage, and extended sensing range.

## Inductive Sensor with 6 A Rated Output

This 30 mm mobile equipment sensor uses a MOSFET component to switch up to 6 amps of current with either a normally open output or a complementary normally open and closed output in a stainless steel housing. The sensor can be configured as an embeddable or nonembeddable sensor.

We reserve the right to make technical alterations without prior notice.

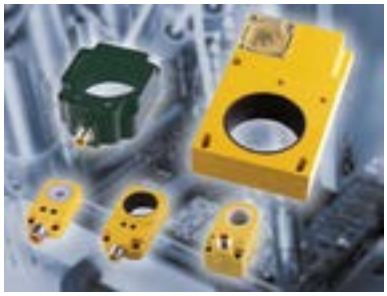
# Specialty Sensors

## FM Class I Div 2

The new FM approval standard permits the use of quick disconnect with a lock fast accessory equipped sensor being used in Class I Div 2, Groups A, B, C, D. The ability to use quick disconnect will enable users to install sensors faster and at a lower cost than traditional conduit methods. We also offer approved cordsets with Eurofast or Minifast connectors (when used with a Lokfast guard). All cables have the ITC-ER rating. For applications where conduit is preferred, we offer sensors with potted-in ITC rated cables.

## Inductive Ring Sensor

Turck offers a variety of ring sensor designs that detect a wide variety of target sizes, with sensor outputs to solve either static or dynamic part feeding applications. In addition to our six different ring sensor housings, Turck offers the TS12 Uprox®+ sensor, which senses all metals at the same range while functioning like a ring sensor but can be strapped onto a tube to simplify installation.



## Inductive Slot Sensors

Turck's slot sensors incorporate a U-shaped design with the active sensing face between the two arms. If the object being detected moves into the U-shaped area, the sensor is actuated. Slot sensors are capable of securely detecting targets whose distance from the active face is not clearly defined upon side approach.

## Weld Nut Sensors

Turck's magnetic weld nut sensors provide efficient and economical detection of weld nuts in automotive applications. The sensors detect ferromagnetic components, such as nuts, bushings and spacer sleeves, to ensure these components are present before robotic welding occurs. These sensors are less complex than existing devices that require additional software or electronics to detect the target.

## Can and Edge Detection Sensor

Turck's Q130 sensor is designed for easy mounting on metal can conveying systems to help detect jam ups or lack of metal cans in the conveyor, while the CK4080 and CK40130 sensors are optimized to detect the edges of metal sheets commonly used in transfer presses found in automotive or white goods stamping applications.

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors

## Inductive-Magnetic Proximity Sensors

Turck's line of BIM barrel sensors are designed to work with external magnets and can be used to solve a wide variety of sensing applications, especially where the user would like long sensing ranges (up to 90 mm with DMR31-15-5 magnet) in small housings, such as 8 or 12 mm.

## Submersible Inductive Sensors

These sensors are rated for submersion in water depths up to 500 meters. The materials used to construct this 18 mm diameter sensor are seawater resistant. Available in a variety of sensing ranges and outputs.

## Selective Metal Sensors

Standard inductive sensors sense all metals. Turck's family of selective metal inductive sensors offer a reliable solution for applications where the user wants to detect ferrous metals or non-ferrous metals only.

## In-Cylinder Inductive Sensors

These inductive sensors are designed for use in a hydraulic cylinder to detect extended or retracted positions. Available in M12 or M18 barrels, these senors can withstand static pressures up to 7,250 psi.

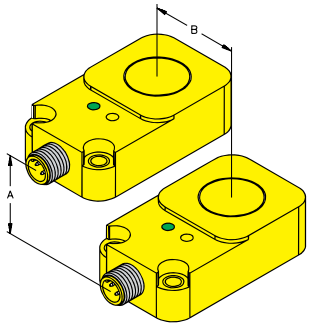
## Rotational Speed Sensors

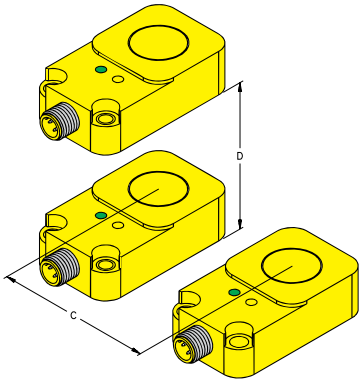
Rotational speed sensors are designed to work with a rotating metal target like a keyway or sprocket. These sensors feature a simple potentiometer for adjusting the set point and are ideal for monitoring applications where the user wants to monitor under speed or over speed conditions. If the speed is below the set point the output is off, and if the speed is above the set point the output turns on.

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors

## Ring and Tube Sensor Mounting Characteristics

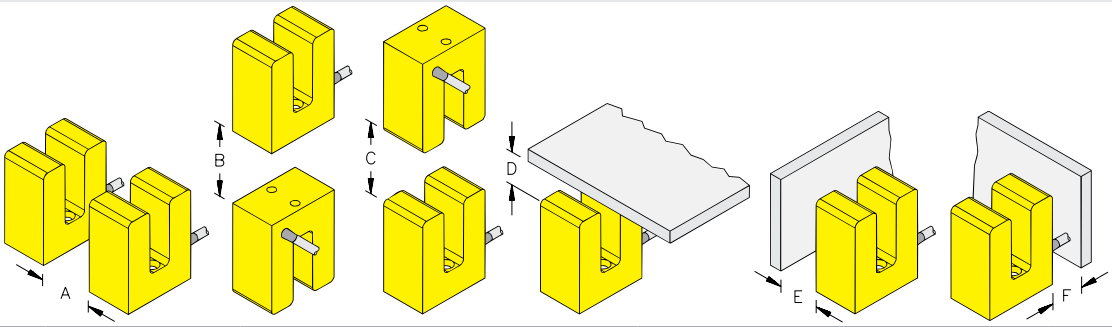



| Sensor Type | A | B | C | D |
|---|---|---|---|---|
| Bi6R-Q14 | 0 | 14 | 45 | 45 |
| Bi6R-W30 | 120 | 6 | 120 | 120 |
| Bi10R-Q14 | 30 | 14 | 45 | 45 |
| Bi10R-W30 | 120 | 10 | 120 | 120 |
| Bi15R-Q14 | 30 | 14 | 45 | 45 |
| Bi15R-W30 | 120 | 15 | 120 | 120 |
| Bi20R-Q14 | 30 | 14 | 45 | 45 |
| Bi20R-W30 | 120 | 20 | 120 | 120 |
| Ni20R-S32SR | 150 | 150 | 150 | 150 |
| Bi30R-Q20 | 40 | 20 | 55 | 55 |
| Bi30R-W30 | 120 | 30 | 120 | 120 |
| Ni40R-S32SR | 150 | 150 | 150 | 150 |
| Bi50R-Q80* | 90 | 50 | 140 | 120 |
| Ni65R-Q80* | 90 | 65 | 140 | 150 |
| Ni65R-S32SR | 150 | 150 | 150 | 150 |
| Ni100R-S32XL** | Consult data sheet | Consult data sheet | 290 | 240 |
| Ni20U-TS12*** (tube) | Consult data sheet | Consult data sheet | 42 | 50 |

Dimensions are in mm.
* Do not use a metal mounting bracket.
** Sensitivity adjustment does affect the recommended mounting spacing. Please consult factory for assistance when using multiple sensors.
*** Spacing of multiple sensors depends on the actual number and orientation. Please contact factory for assistance.

## Slot Sensor Mounting Characteristics



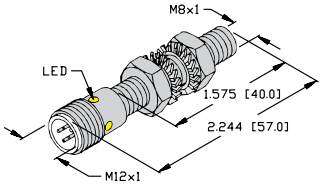
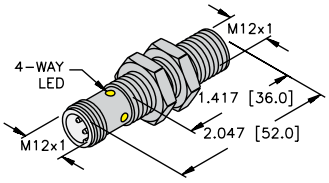
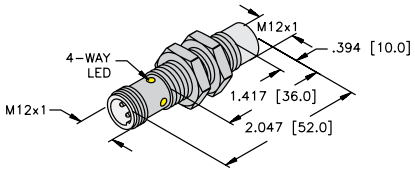
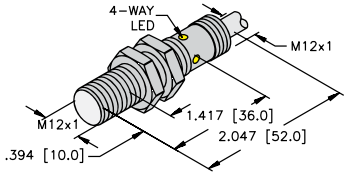
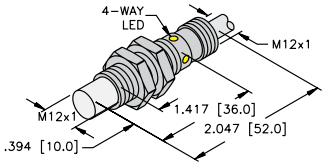

| Sensor Type | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| Si3.5 | 15.00 | 5.00 | 15.00 | 0 | 0 | 0 |
| Si5 | 10.00 | 0 | 5.00 | 0 | 0 | 0 |
| Si15 | 30.00 | 10.00 | 30.00 | 5.00 | 5.00 | 5.00 |

Dimensions are in mm.

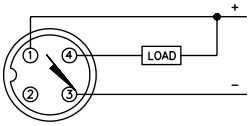
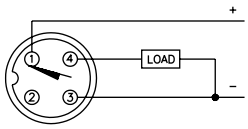
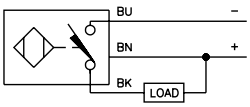
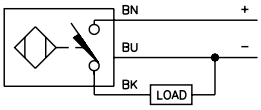
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Washdown

## Threaded Metal Barrels with Cable or Connector and 3-Wire DC Outputs

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   8 mm - Embeddable, M12 Eurofast Connection | B   12 mm - Embeddable, M12 Eurofast Connection |
| C   12 mm - Nonembeddable, M12 Eurofast Connection | D   12 mm - Embeddable, Potted-in Cable | E   12 mm - Nonembeddable, Potted-in Cable |

### Wiring Diagrams/Mating Cordsets

| 1 | 2 | 3 | 4 |
|---|---|---|---|
|   Mating Cordset: RKV 4T-*; RKV 4T-*/S90 |   Mating Cordset: RKV 4T-*; RKV 4T-*/S90 |   |   |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox 3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Washdown

## Threaded Metal Barrels with Cable or Connector and 3-Wire DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi1.5-EG08WD-AN6X-H1341** 4602211 | Washdown | 1.5 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +85 | IP68/69K | SS | PVDF | N/A | YE | - - | A | 1 | A4 |
| **Bi1.5-EG08WD-AP6X-H1341** 4602210 | Washdown | 1.5 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +85 | IP68/69K | SS | PVDF | N/A | YE | - - | A | 2 | A4 |
| **Bi4U-EM12WD-AN6X-H1141** 1634841 | Uprox+, Washdown | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -40 to +100 | IP68/69K | SS | PVDF | N/A | YE | - - | B | 1 | A4 |
| **Bi4U-EM12WD-AP6X-H1141** 1634812 | Uprox+, Washdown | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -40 to +100 | IP68/69K | SS | PVDF | N/A | YE | - - | B | 2 | A4 |
| **Ni10U-EM12WD-AN6X-H1141** 1634837 | Uprox+, Washdown | 10 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -40 to +100 | IP68/69K | SS | PVDF | N/A | YE | - - | C | 1 | A4 |
| **Ni10U-EM12WD-AP6X-H1141** 1634814 | Uprox+, Washdown | 10 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -40 to +100 | IP68/69K | SS | PVDF | N/A | YE | - - | C | 2 | A4 |
| **Bi4U-EM12WD-AN6X** 1634842 | Uprox+, Washdown | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -40 to +100 | IP68/69K | SS | PVDF | N/A | YE | 2M/PP | D | 3 | A4 |
| **Bi4U-EM12WD-AP6X** 1634811 | Uprox+, Washdown | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -40 to +100 | IP68/69K | SS | PVDF | N/A | YE | 2M/PP | D | 4 | A4 |
| **Ni10U-EM12WD-AP6X** 1634813 | Uprox+, Washdown | 10 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -40 to +100 | IP68/69K | SS | PVDF | N/A | YE | 2M/PP | E | 4 | A4 |



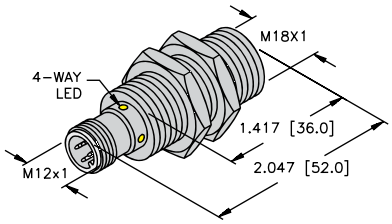
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Washdown

## Threaded Metal Barrels with Cable or Connector and 3-Wire DC Outputs

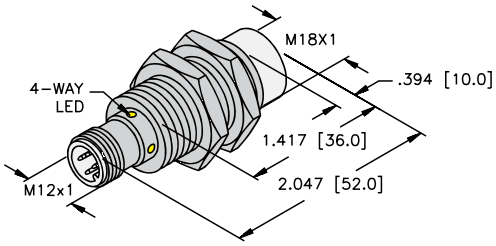
| Housing Style | Dimension Drawings |
|---|---|

A



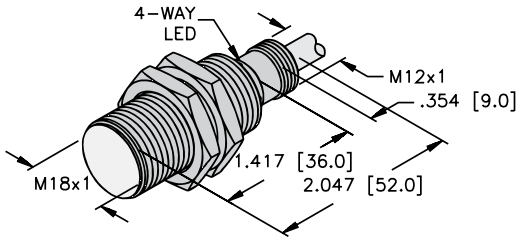

18 mm - Embeddable, M12 Eurofast Connection

B



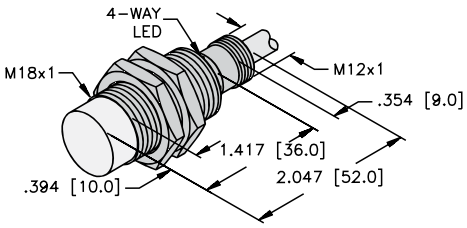

18 mm - Nonembeddable, M12 Eurofast Connection

C




18 mm - Embeddable, Potted-in Cable

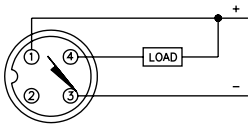
D




18 mm - Nonembeddable, Potted-in Cable

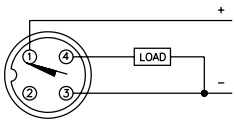
### Wiring Diagrams/Mating Cordsets

1



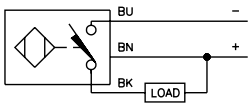

Mating Cordset: RKV 4T-*/S90

2




Mating Cordset: RKV 4T-*/S90

3

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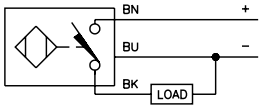



### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current |
| | ≥170 mA on 150 mA Load Current |
| | ≥120 mA on 100 mA Load Current |
| Off-State (Leakage) Current: | ≤0.1 mA |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) |
| | ≤20 mA (Uprox+, Uprox 3) |
| Time Delay Before Availability: | ≤8 ms |
| Power-On Effect: | Per IEC 947-5-2 |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Transient Protection: | Per EN 60947-5-2 |
| Temperature Drift: | ≤±10% |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Washdown

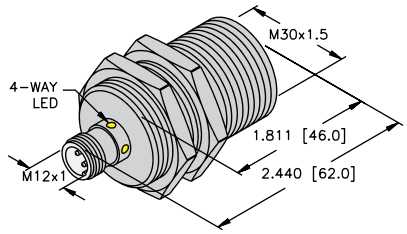
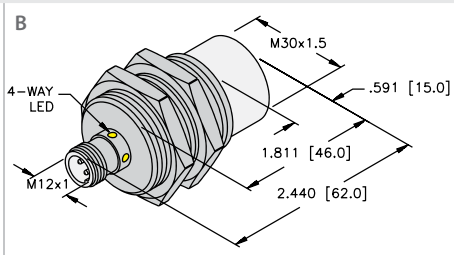
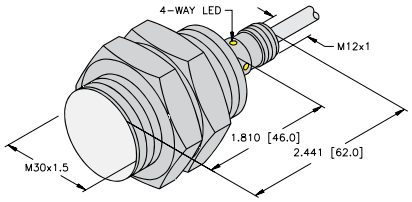
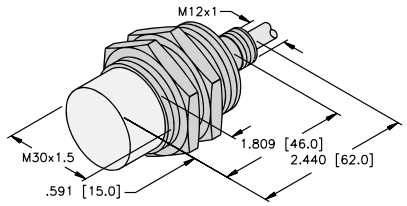
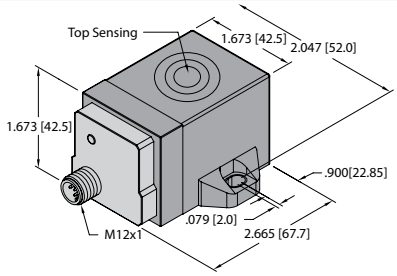
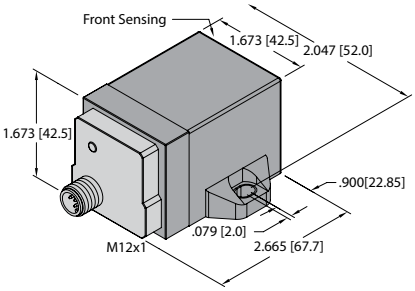
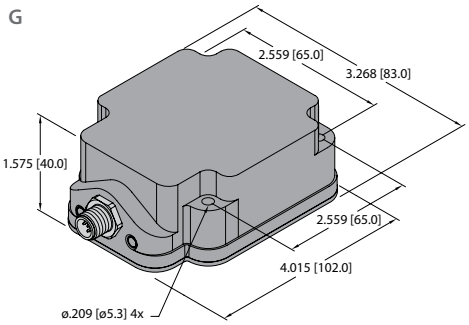
## Threaded Metal Barrels with Cable or Connector and 3-Wire DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi8U-EM18WD-AN6X-H1141** 1634839 | Uprox+, Washdown | 8 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -40 to +100 | IP68/69K | SS | LCP | N/A | YE | - - | A | 1 | A4 |
| **Bi8U-EM18WD-AP6X-H1141** 1634816 | Uprox+, Washdown | 8 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -40 to +100 | IP68/69K | SS | LCP | N/A | YE | - - | A | 2 | A4 |
| **Ni15U-EM18WD-AN6X-H1141** 1634835 | Uprox+, Washdown | 15 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -40 to +100 | IP68/69K | SS | LCP | N/A | YE | - - | B | 1 | A4 |
| **Ni15U-EM18WD-AP6X-H1141** 1634818 | Uprox+, Washdown | 15 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -40 to +100 | IP68/69K | SS | LCP | N/A | YE | - - | B | 2 | A4 |
| **Bi8U-EM18WD-AN6X** 1634840 | Uprox+, Washdown | 8 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -40 to +100 | IP68/69K | SS | LCP | N/A | YE | 2M/PP | C | 3 | A4 |
| **Bi8U-EM18WD-AP6X** 1634815 | Uprox+, Washdown | 8 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -40 to +100 | IP68/69K | SS | LCP | N/A | YE | 2M/PP | C | 4 | A4 |
| **Ni15U-EM18WD-AN6X** 1634836 | Uprox+, Washdown | 15 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -40 to +100 | IP68/69K | SS | LCP | N/A | YE | 2M/PP | D | 3 | A4 |
| **Ni15U-EM18WD-AP6X** 1634817 | Uprox+, Washdown | 15 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -40 to +100 | IP68/69K | SS | LCP | N/A | YE | 2M/PP | D | 4 | A4 |

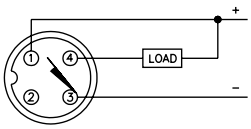
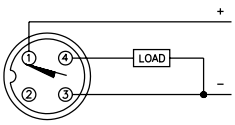
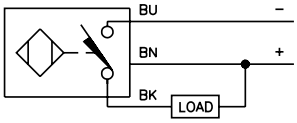
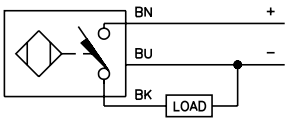
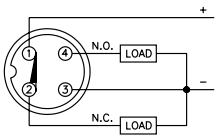
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Washdown

**Rectangular and Threaded Metal Barrels with Cable or Connector and 3-Wire DC Outputs**

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   30 mm - Embeddable, M12 Eurofast Connection | B   30 mm - Nonembeddable, M12 Eurofast Connection |
| C   30 mm - Embeddable, Potted-in Cable | D   30 mm - Nonembeddable, Potted-in Cable | E   Q42T - Nonembeddable, M12 Eurofast Connector |
| F   Q42F - Nonembeddable, M12 Eurofast Connector | G   Q80 - Nonembeddable, M12 Eurofast Connector | |

**Wiring Diagrams/Mating Cordsets**

| | | |
|---|---|---|
| 1   Mating Cordset: RKV 4T-*/S90 | 2   Mating Cordset: RKV 4T-*/S90 | 3   |
| 4   | 5   Mating Cordset: RKV 4.4T-* | |

**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox, Q42) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox 3, Q80) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Washdown

## Rectangular and Threaded Metal Barrels with Cable or Connector and 3-Wire DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi15U-EM30WD-AN6X-H1141** 1634834 | Uprox+, Washdown | 15 | 3-wire DC NPN | 10-30 VDC | 750 | ≤200 | -40 to +100 | IP68/69K | SS | LCP | N/A | YE | - - | A | 1 | A4 |
| **Bi15U-EM30WD-AP6X-H1141** 1634820 | Uprox+, Washdown | 15 | 3-wire DC PNP | 10-30 VDC | 750 | ≤200 | -40 to +100 | IP68/69K | SS | LCP | N/A | YE | - - | A | 2 | A4 |
| **Ni30U-EM30WD-AN6X-H1141** 1634832 | Uprox+, Washdown | 30 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -40 to +100 | IP68/69K | SS | LCP | N/A | YE | - - | B | 1 | A4 |
| **Ni30U-EM30WD-AP6X-H1141** 1634822 | Uprox+, Washdown | 30 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -40 to +100 | IP68/69K | SS | LCP | N/A | YE | - - | B | 2 | A4 |
| **Bi15U-EM30WD-AN6X** 1634843 | Uprox+, Washdown | 15 | 3-wire DC NPN | 10-30 VDC | 750 | ≤200 | -40 to +100 | IP68/69K | SS | LCP | N/A | YE | 2M/PP | C | 3 | A4 |
| **Bi15U-EM30WD-AP6X** 1634819 | Uprox+, Washdown | 15 | 3-wire DC PNP | 10-30 VDC | 750 | ≤200 | -40 to +100 | IP68/69K | SS | LCP | N/A | YE | 2M/PP | C | 4 | A4 |
| **Ni30U-EM30WD-AN6X** 1634833 | Uprox+, Washdown | 30 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -40 to +100 | IP68/69K | SS | LCP | N/A | YE | 2M/PP | D | 3 | A4 |
| **Ni30U-EM30WD-AP6X** 1634821 | Uprox+, Washdown | 30 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -40 to +100 | IP68/69K | SS | LCP | N/A | YE | 2M/PP | D | 4 | A4 |
| **NI50U-Q42TWD-VP6X-H1141** 1538306 | Uprox+, Washdown | 50 | 4-wire DC PNP | 10-30 VDC | 250 | ≤200 | -40 to +100 | IP68/69K | PA 12 | PA 12 | N/A | YE | - - | E | 5 | A4 |
| **NI50U-Q42FWD-VP6X-H1141** 1538305 | Uprox+, Washdown | 50 | 4-wire DC PNP | 10-30 VDC | 250 | ≤200 | -40 to +100 | IP68/69K | PA 12 | PA 12 | N/A | YE | - - | F | 5 | A4 |
| **NI75U-Q80WD-VP6X2-H1141** 1625920 | Uprox+, Washdown | 75 | 4-wire DC PNP | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP68/69K | PPS | PPS | GN | YE | - - | G | 5 | A4 |

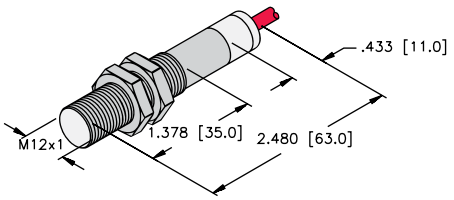
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | High Temperature

## Threaded Metal Barrels with Cable and AC or DC Outputs

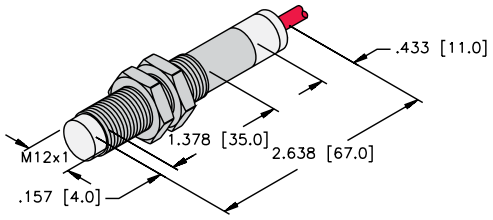
| Housing Style | Dimension Drawings |
|---|---|

A



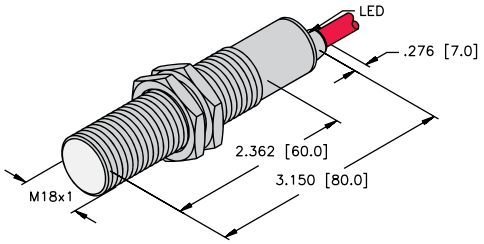

12 mm - Embeddable, Potted-In Cable

B



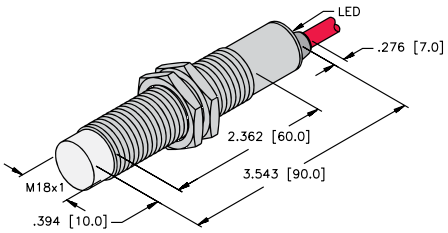

12 mm - Nonembeddable, Potted-In Cable

C




18 mm - Embeddable, Partial Threading, Potted-In Cable

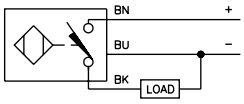
D



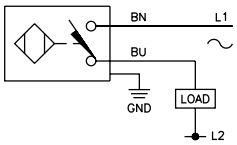

18 mm - Nonembeddable, Partial Threading, Potted-In Cable

### Wiring Diagrams/Mating Cordsets

1




2




### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox 3) | Repeatability: | ≤2% of Rated Operating Distance |

### A6 — 2-wire AC/DC w/o Short-Circuit Protection - (AZ,RZ,FZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Power-On Effect: | Per IEC 947-5-2 |
| | AC: ≤100 mA; DC: ≤100 mA | Transient Protection: | Per EN 60947-5-2 |
| Off-State (Leakage) Current: | ≤1.7 mA | Shock: | 30 g, 11 ms |
| Minimum Load Current: | ≥3.0 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | High Temperature

## Threaded Metal Barrels with Cable and AC or DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | End Cap | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi2-EM12D-AP6/S120** 4614512 | High Temp. 120 °C | 2 | 3-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +120 | IP67 | SS | PTFE | PTFE | N/A | N/A | 2M/PTFE | A | 1 | A4 |
| **Ni4-EM12D-AP6/S120** 1633110 | High Temp. 120 °C | 4 | 3-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +120 | IP67 | SS | PTFE | PTFE | N/A | N/A | 2M/PTFE | B | 1 | A4 |
| **Bi5-M18-AP6X/S120** 4611030 | High Temp. 120 °C | 5 | 3-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +120 | IP67 | CPB | PA 12 | EPTR | N/A | YE | 2M/Silicone | C | 1 | A4 |
| **Bi5-M18-AZ3X/S120** 4310410 | High Temp. 120 °C | 5 | 2-wire AC | 20-250 VAC | 20 | ≤100 | -25 to +120 | IP67 | CPB | PA 12 | EPTR | N/A | YE | 2M/Silicone | C | 2 | A6 |
| **Ni8-M18-AZ3X/S120** 4310530 | High Temp. 120 °C | 8 | 2-wire AC | 20-250 VAC | 20 | ≤400 | -25 to +120 | IP67 | CPB | PA 12 | EPTR | N/A | YE | 2M/Silicone | D | 2 | A6 |
| **Ni8-M18-AP6X/S120** 4611230 | High Temp. 120 °C | 8 | 3-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +120 | IP67 | CPB | PA 12 | EPTR | N/A | YE | 2M/Silicone | D | 1 | A4 |

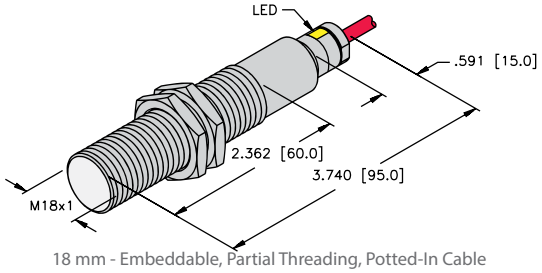
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | High Temperature

## Threaded Metal Barrels with Cable and AC or DC Outputs

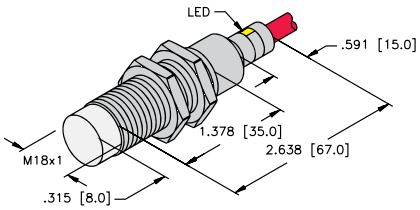
| Housing Style | Dimension Drawings |
|---|---|

A



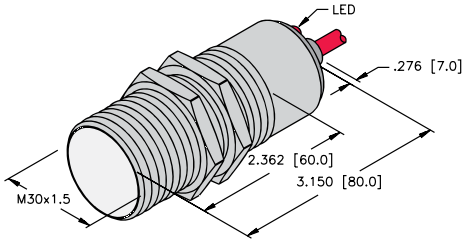

18 mm - Embeddable, Partial Threading, Potted-In Cable

B



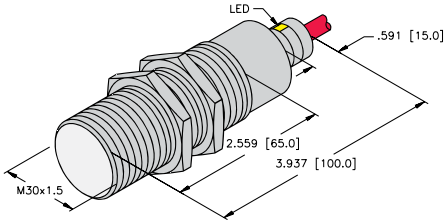

18 mm - Nonembeddable, Partial Threading, Potted-In Cable

C




30 mm - Embeddable, Partial Threading, Potted-In Cable

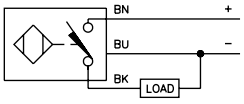
D




30 mm - Embeddable, Partial Threading, Potted-In Cable

### Wiring Diagrams/Mating Cordsets

1

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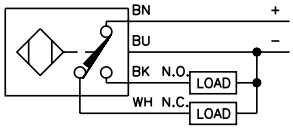
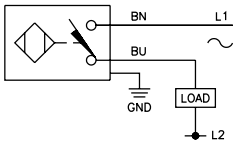



3




### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox 3) | Repeatability: | ≤2% of Rated Operating Distance |

### A6 — 2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Power-On Effect: | Per IEC 947-5-2 |
| | AC: ≤100 mA; DC: ≤100 mA | Transient Protection: | Per EN 60947-5-2 |
| Off-State (Leakage) Current: | ≤1.7 mA | Shock: | 30 g, 11 ms |
| Minimum Load Current: | ≥3.0 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | High Temperature

## Threaded Metal Barrels with Cable and AC or DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | End Cap | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi5-EM18D-VP6X/S120** 4614900 | High Temp. 120 °C | 5 | 4-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +120 | IP68/69K | SS | PTFE | PTFE | N/A | YE | 2M/PTFE | A | 2 | A4 |
| **Ni7-EM18D-VP6X/S120** 4632100 | High Temp. 120 °C | 7 | 4-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +120 | IP68/69K | SS | PTFE | PTFE | N/A | YE | 2M/PTFE | B | 2 | A4 |
| **Bi10-M30-AP6X/S120** 4617010 | High Temp. 120 °C | 10 | 3-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +120 | IP67 | CPB | PA 12 | PA 12 | N/A | YE | 2M/Silicone | C | 1 | A4 |
| **Bi10-M30-AZ3X/S120** 4316410 | High Temp. 120 °C | 10 | 2-wire AC | 20-250 VAC | 20 | ≤400 | -25 to +120 | IP67 | CPB | PA 12 | PA 12 | N/A | YE | 2M/Silicone | C | 3 | A6 |
| **Bi10-EM30D-VP6X/S120** 4617035 | High Temp. 120 °C | 10 | 4-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +120 | IP68/69K | SS | PTFE | PTFE | N/A | YE | 2M/PTFE | D | 2 | A4 |

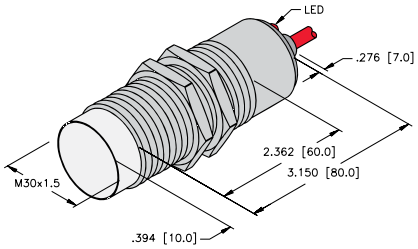
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | High Temperature

## Threaded Metal Barrels with Cable and AC or DC Outputs

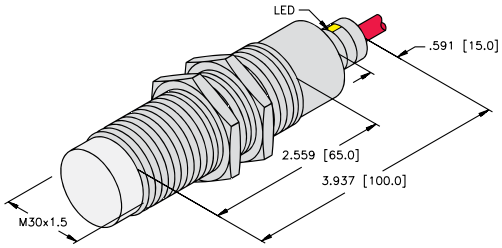
| Housing Style | Dimension Drawings |
|---|---|

A



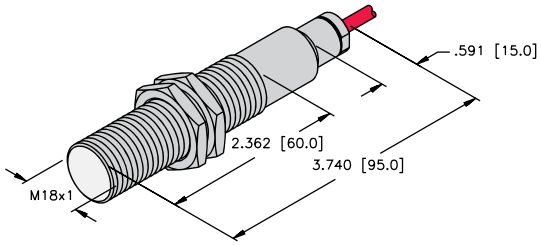

30 mm - Nonembeddable, Potted-In Cable

B



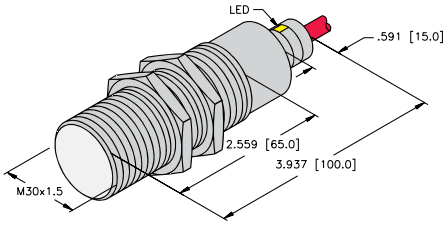

30 mm - Nonembeddable, Potted-In Cable

C



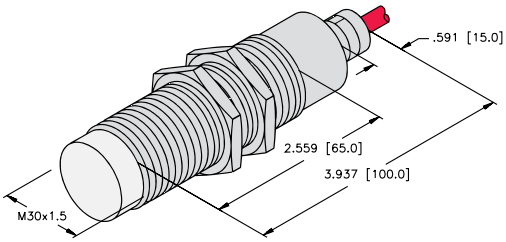

18 mm - Embeddable, Partial Threading, Potted-In Cable

D




30 mm - Embeddable, Partial Threading, Potted-In Cable

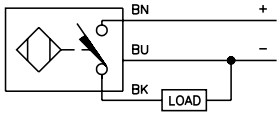
E




30 mm - Non-embeddable, Partial Threading, Potted-In Cable

### Wiring Diagrams/Mating Cordsets

1

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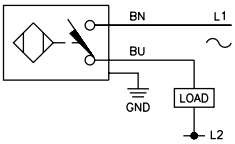
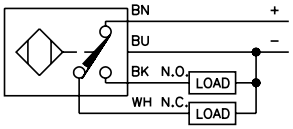



3




### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox 3) | Repeatability: | ≤2% of Rated Operating Distance |

### A6 — 2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Power-On Effect: | Per IEC 947-5-2 |
| | AC: ≤100 mA; DC: ≤100 mA | Transient Protection: | Per EN 60947-5-2 |
| Off-State (Leakage) Current: | ≤1.7 mA | Shock: | 30 g, 11 ms |
| Minimum Load Current: | ≥3.0 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | High Temperature

## Threaded Metal Barrels with Cable and AC or DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | End Cap | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni15-M30-AP6X/S120** 4617210 | High Temp. 120 °C | 15 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +120 | IP67 | CPB | PA 12 | PA 12 | N/A | YE | 2M/Silicone | A | 1 | A4 |
| **Ni15-M30-AZ3X/S120** 4316506 | High Temp. 120 °C | 15 | 2-wire AC | 20-250 VAC | 20 | ≤400 | -25 to +120 | IP67 | CPB | PA 12 | PA 12 | N/A | YE | 2M/Silicone | A | 2 | A6 |
| **Ni15-EM30D-VP6X/S120** 4617410 | High Temp. 120 °C | 15 | 4-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +120 | IP68/69K | SS | PTFE | PTFE | N/A | YE | 2M/PTFE | B | 3 | A4 |
| **Bi5-EM18-AP6/S907** 4617425 | High Temp. 160 °C | 5 | 3-wire DC PNP | 10-30 VDC | 200 | ≤200 | -25 to +160 | IP67 | SS | PEEK | PTFE | N/A | N/A | 2M/PTFE | C | 1 | A4 |
| **Bi10-EM30-AP6/S907** 4614513 | High Temp. 160 °C | 10 | 3-wire DC PNP | 10-30 VDC | 200 | ≤200 | -25 to +160 | IP67 | SS | PEEK | PTFE | N/A | N/A | 2M/PTFE | D | 1 | A4 |
| **Ni15-EM30-AP6/S907** 4617412 | High Temp. 160 °C | 15 | 3-wire DC PNP | 10-30 VDC | 200 | ≤200 | -25 to +160 | IP67 | SS | PEEK | PTFE | N/A | N/A | 2M/PTFE | E | 1 | A4 |

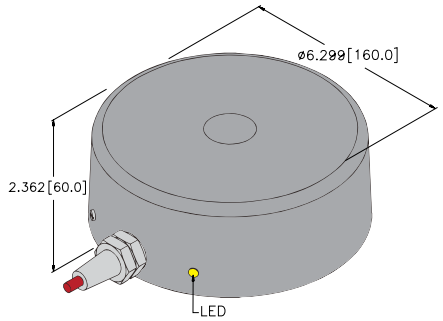
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | High Temperature

## Rectangular and Round Housings

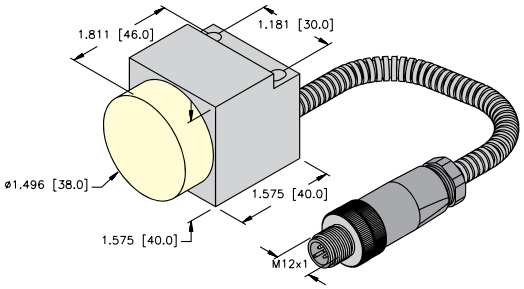
| Housing Style | Dimension Drawings |
|---|---|

A



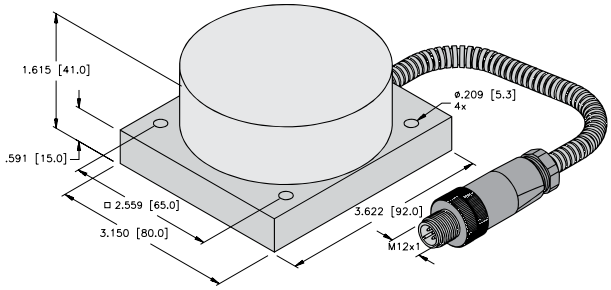

160 mm -Nonembeddable

B



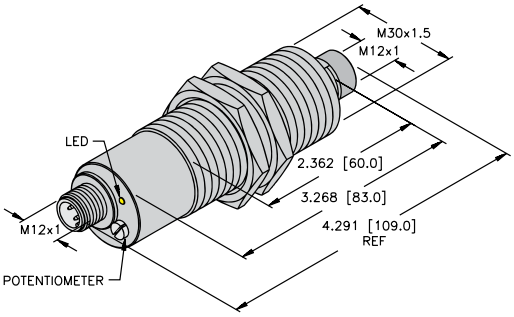

CQ40 - Nonembeddable

C




CQ80 - Nonembeddable

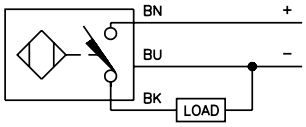
D



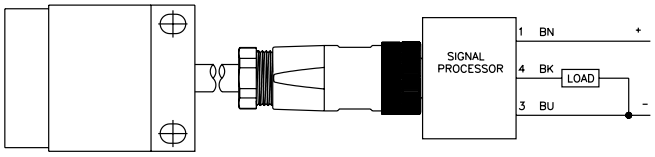

30 mm - Signal Processor

### Wiring Diagrams/Mating Cordsets

1




2




### A20 — 3-wire DC -High Temp (AP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Temperature Drift: | ≤±20% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤2 V (120 °C) | Wire-Break Protection: | Incorporated |
| | ≤1.8 V (250 °C) | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥420 mA on 400 mA Load Current | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | ≥220 mA on 200 mA Load Current | Repeatability: | ≤2% of Rated Operating Distance |
| Off-State (Leakage) Current: | ≤0.1 mA | | |

**Note**:
CQ40 and CQ80 sensors require signal processor for operation.

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | High Temperature

## Rectangular and Round Housings

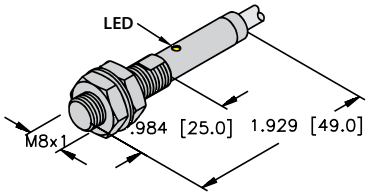
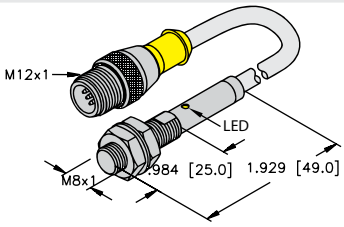
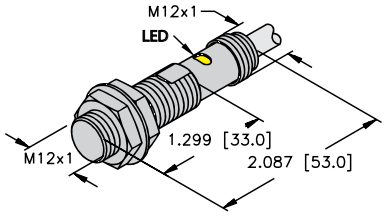
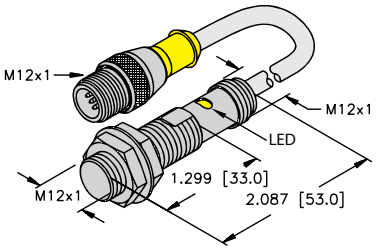
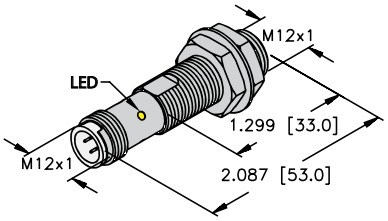
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | End Cap | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni100-Q160-AP44X/S120** 1440012 | High Temp. 120 °C | 100 | 3-wire DC PNP | 10-55 VDC | 50 | ≤400 | -25 to +120 | IP67 | PPO | PPO | - - | N/A | YE | 2M/Silicone | A | 1 | A20 |
| **Ni25-CQ40/S1102 5M** 1602410 | High Temp. 250 °C | 25 | Remote | - - | 40 | Remote | 0 to +250 | IP60 | AL | PEEK | PEEK | N/A | N/A | 5M/PTFE | B | 2 | - - |
| **Ni25-CQ40/S1102 10M** 1602403 | High Temp. 250 °C | 25 | Remote | - - | 40 | Remote | 0 to +250 | IP60 | AL | PEEK | PEEK | N/A | N/A | 10M/PTFE | B | 2 | - - |
| **Ni40-CQ80/S1102 5M** 1602404 | High Temp. 250 °C | 40 | Remote | - - | 40 | Remote | 0 to +250 | IP60 | AL | PEEK | PEEK | N/A | N/A | 5M/PTFE | C | 2 | - - |
| **EM30-AP6X2-H1141/S1102** 1602411 | Signal Processor | N/A | 3-wire DC PNP | 10-30 VDC | 40 | ≤200 | -20 to +70 | IP67 | SS | SS | - - | GN | YE | - - | D | 2 | A20 |



We reserve the right to make technical alterations without prior notice.

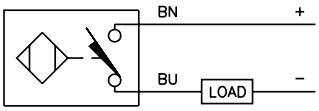
# Specialty Sensors | Stainless Front Face

**Embeddable Threaded Metal Barrels with 2-Wire DC Outputs**

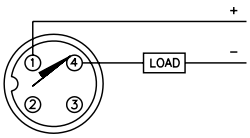
| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   8 mm - Embeddable, Stainless Steel Barrel, Potted-In Cable | B   8 mm - Embeddable, Stainless Steel Barrel, M12 Eurofast Quick Disconnect |
| C   8 mm - Embeddable, Stainless Steel Barrel, Potted-In Cable | D   12 mm - Embeddable, Stainless Steel Barrel, Potted-In Cable | E   12 mm - Embeddable, Stainless Steel Barrel, M12 Eurofast Quick Disconnect |

**Wiring Diagrams/Mating Cordsets**

1




2




Mating Cordset: RKV 4.23T-*

**A21** — **2-wire DC Stainless Front Face (AG)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Temperature Drift: | ≤±20% |
| Differential Travel (Hysteresis): | 1-15% (5% typical) | Off-State (Leakage) Current: | ≤0.8 mA |
| Voltage Drop Across Conducting Sensor: | ≤3.5 V Polarized | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA on 100 mA Load Current | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Stainless Front Face

## Embeddable Threaded Metal Barrels with 2-Wire DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi1.5-EG08F-AG6X** 4614628 | Full Stainless Steel | 1.5 | 2-wire DC | 10-30 VDC | 200 | ≤100 | -25 to +70 | IP68/69K | SS | SS | GN | RD | 2M/ PVC | A | 1 | A21 |
| **Bi1.5-EGT08F-AG6X** 4614677 | Full Stainless Steel, PTFE | 1.5 | 2-wire DC | 10-30 VDC | 200 | ≤100 | -25 to +70 | IP68/69K | TC | SS | GN | RD | 2M/ PVC | A | 1 | A21 |
| **Bi1.5-EG08F-AG6X-0.3-RS4.23T** 4614684 | Full Stainless Steel | 1.5 | 2-wire DC | 10-30 VDC | 200 | ≤100 | -25 to +70 | IP68/69K | SS | SS | GN | RD | 0.3M/ PVC | B | 2 | A21 |
| **Bi1.5-EGT08F-AG6X-0.2-RS4.23T** 4614686 | Full Stainless Steel, PTFE | 1.5 | 2-wire DC | 10-30 VDC | 200 | ≤100 | -25 to +70 | IP68/69K | TC | SS | GN | RD | 0.2M/ PVC | B | 2 | A21 |
| **Bi2-EG08F-AG6X** 4614664 | Full Stainless Steel | 2 | 2-wire DC | 10-30 VDC | 200 | ≤100 | -25 to +70 | IP67 | SS | SS | N/A | RD | 2M/ PVC | A | 1 | A21 |
| **Bi2-EG12F-AG6X** 4614634 | Full Stainless Steel | 2 | 2-wire DC | 10-30 VDC | 100 | ≤100 | -25 to +70 | IP68/69K | SS | SS | GN | RD | 2M/ PVC | C | 1 | A21 |
| **Bi2-EGT12F-AG6X** 46146651 | Full Stainless Steel, PTFE | 2 | 2-wire DC | 10-30 VDC | 100 | ≤100 | -25 to +70 | IP68/69K | TC | SS | GN | RD | 2M/ PVC | C | 1 | A21 |
| **Bi2-EG12F-AG6X-0.3-RS4.23T** 4614693 | Full Stainless Steel | 2 | 2-wire DC | 10-30 VDC | 100 | ≤100 | -25 to +70 | IP68/69K | SS | SS | GN | RD | 0.3M/ PVC | D | 2 | A21 |
| **Bi3-EG12F-AG6X** 4614665 | Full Stainless Steel | 3 | 2-wire DC | 10-30 VDC | 80 | ≤100 | -25 to +70 | IP67 | SS | SS | N/A | RD | 2M/ PVC | C | 1 | A21 |
| **Bi2-EG12F-AG6X-H1141** 4614637 | Full Stainless Steel | 2 | 2-wire DC | 10-30 VDC | 100 | ≤100 | -25 to +70 | IP68/69K | SS | SS | GN | RD | - - | E | 2 | A21 |
| **Bi2-EGT12F-AG6X-H1141** 4614698 | Full Stainless Steel, PTFE | 2 | 2-wire DC | 10-30 VDC | 100 | ≤100 | -25 to +70 | IP68/69K | TC | SS | GN | RD | - - | E | 2 | A21 |



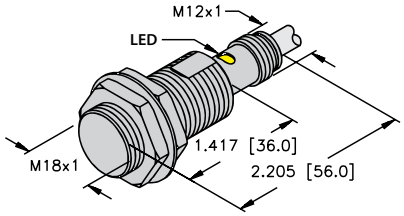
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Stainless Front Face

**Embeddable Threaded Metal Barrels with 2-Wire DC Outputs**

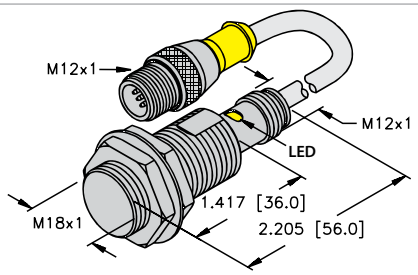
| Housing Style | Dimension Drawings |
|---|---|

A



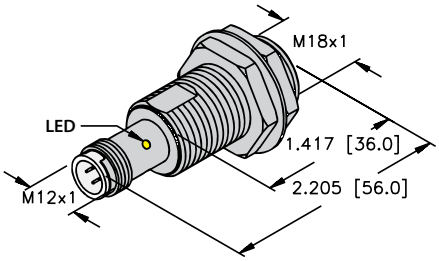

18 mm - Embeddable, Stainless Steel Barrel, Potted-In Cable

B



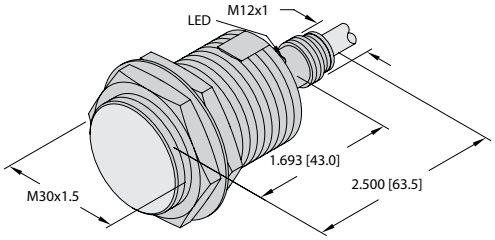

18 mm - Embeddable, Stainless Steel Barrel, M12 Eurofast Quick Disconnect

C



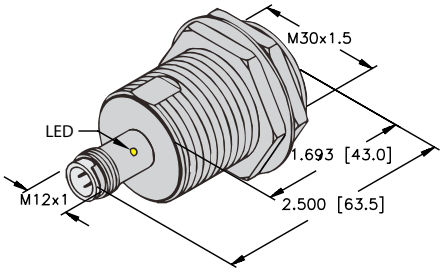

18 mm - Embeddable, Stainless Steel Barrel, M12 Eurofast Quick Disconnect

D




30 mm - Embeddable, Stainless Steel Barrel, Potted-In Cable

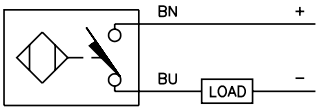
E




30 mm - Embeddable, M12 Eurofast Connection, Stainless Steel

**Wiring Diagrams/Mating Cordsets**

1

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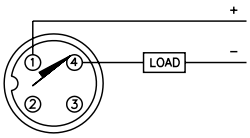



Mating Cordset: RKV 4T-*; RKV 4.23T-*

**A21** — **2-wire DC Stainless Front Face (AG)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Temperature Drift: | ≤±20% |
| Differential Travel (Hysteresis): | 1-15% (5% typical) | Off-State (Leakage) Current: | ≤0.8 mA |
| Voltage Drop Across Conducting Sensor: | ≤3.5 V Polarized | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Pro- | ≥120 mA on 100 mA Load Current | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| tection: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Minimum Load Current: | | | |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Stainless Front Face

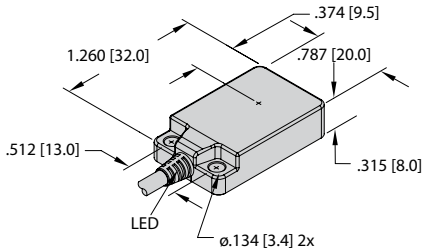
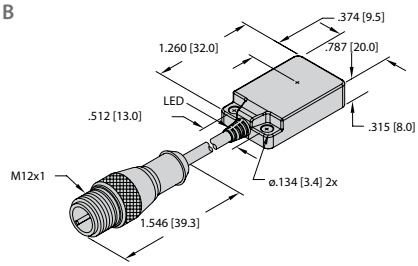
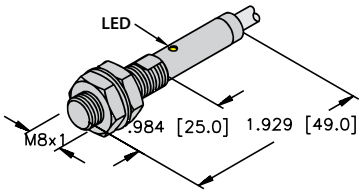
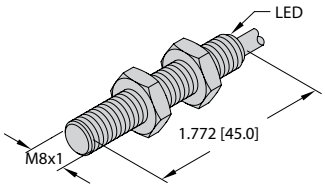
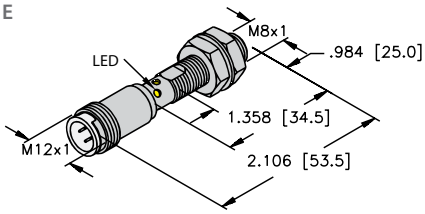
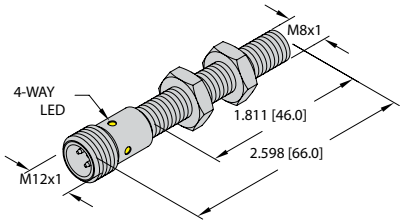
## Embeddable Threaded Metal Barrels with 2-Wire DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi5-EG18F-AG6X** 4614640 | Full Stainless Steel | 5 | 2-wire DC | 10-30 VDC | 100 | ≤100 | -25 to +70 | IP68/69K | SS | SS | GN | RD | 2M/PVC | A | 1 | A21 |
| **Bi5-EGT18F-AG6X** 46146400 | Full Stainless Steel, PTFE | 5 | 2-wire DC | 10-30 VDC | 100 | ≤100 | -25 to +70 | IP68/69K | TC | SS | GN | RD | 2M/PVC | A | 1 | A21 |
| **Bi5-EG18F-AG6X-0.3-RS4.23T** 4614694 | Full Stainless Steel | 5 | 2-wire DC | 10-30 VDC | 100 | ≤100 | -25 to +70 | IP68/69K | SS | SS | GN | RD | 0.3M/ PVC | B | 2 | A21 |
| **Bi7-EG18F-AG6X** 4614666 | Full Stainless Steel | 7 | 2-wire DC | 10-30 VDC | 100 | ≤100 | -25 to +70 | IP67 | SS | SS | N/A | RD | 2M/PVC | A | 1 | A21 |
| **Bi5-EG18F-AG6X-H1141** 4614643 | Full Stainless Steel | 5 | 2-wire DC | 10-30 VDC | 100 | ≤100 | -25 to +70 | IP68/69K | SS | SS | GN | RD | - - | C | 2 | A21 |
| **Bi12-EG30F-AG6X** 4614667 | Full Stainless Steel | 12 | 2-wire DC | 10-30 VDC | 50 | ≤100 | -25 to +70 | IP67 | SS | SS | N/A | RD | 2M/PVC | D | 1 | A21 |
| **Bi10-EG30F-AG6X-H1141** 4614649 | Full Stainless Steel | 10 | 2-wire DC | 10-30 VDC | 50 | ≤100 | -25 to +70 | IP68/69K | SS | SS | GN | RD | - - | E | 2 | A21 |
| **Bi10-EGT30F-AG6X-H1141/ S1589** 46146490 | Full Stainless Steel, PTFE, Weldguard | 10 | 2-wire DC | 10-30 VDC | 50 | ≤100 | -25 to +70 | IP68/69K | TC | WG | GN | RD | - - | E | 2 | A21 |

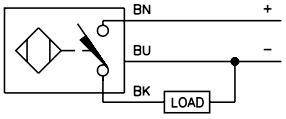
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Stainless Front Face

**Embeddable Rectangular and Threaded Metal Barrels with 3-Wire DC Outputs**

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   8 mm - Embeddable, Stainless Steel, Potted-In Cable | B   8 mm - Embeddable, Stainless Steel, M12 Eurofast Quick Disconnect |
| C   8 mm - Embeddable, Stainless Steel Barrel, Potted-In Cable | D   8 mm - Embeddable, Stainless Steel Barrel, Potted-In Cable | E   8 mm - Embeddable, Stainless Steel Barrel, M12 Eurofast Quick Disconnect |
| F   8 mm - Embeddable, Stainless Steel Barrel, M12 Eurofast Quick Disconnect | | |

**Wiring Diagrams/Mating Cordsets**

1
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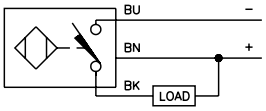


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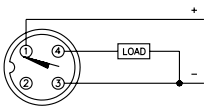
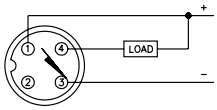


Mating Cordset: RKV 4T-*

4


Mating Cordset: RKV 4T-*

**A22** — **3-wire DC Stainless Front Face (AP, AN, RP, RN)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Temperature Drift: | ≤±10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Off-State (Leakage) Current: | ≤0.1 mA | Repeatability: | ≤2% of Rated Operating Distance |

**A23** — **3-wire DC Stainless Front Face Ext Range (AP, AN, RP, RN)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Temperature Drift: | ≤±10% |
| Differential Travel (Hysteresis): | 20% | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤2 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤10 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Off-State (Leakage) Current: | ≤0.1 mA | Repeatability: | ≤5% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Stainless Front Face

## Embeddable Rectangular and Threaded Metal Barrels with 3-Wire DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi7-Q08F-AN6X** 1608914 | Full Stainless Steel | 7 | 3-wire DC NPN | 10-30 VDC | 200 | ≤200 | -25 to +70 | IP68/69K | SS | SS | N/A | YE | 2M/TPE | A | 2 | A23 |
| **Bi7-Q08F-AP6X** 1608916 | Full Stainless Steel | 7 | 3-wire DC PNP | 10-30 VDC | 200 | ≤200 | -25 to +70 | IP68/69K | SS | SS | N/A | YE | 2M/TPE | A | 1 | A23 |
| **Bi7-Q08F-AP6X-0.2-RS4T** 16089160 | Full Stainless Steel | 7 | 3-wire DC PNP | 10-30 VDC | 200 | ≤200 | -25 to +70 | IP68/69K | SS | SS | N/A | YE | 0.2M/ TPE | B | 3 | A23 |
| **Bi1.5-EG08F-AN6X** 4614627 | Full Stainless Steel | 1.5 | 3-wire DC NPN | 10-30 VDC | 200 | ≤200 | -25 to +70 | IP68/69K | SS | SS | N/A | YE | 2M/PVC | C | 2 | A22 |
| **Bi3-EG08FE-AN6X** 4614712 | Full Stainless Steel | 3 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | SS | SS | N/A | YE | 2M/PVC | D | 2 | A23 |
| **Bi1.5-EG08F-AP6X** 4614626 | Full Stainless Steel | 1.5 | 3-wire DC PNP | 10-30 VDC | 200 | ≤200 | -25 to +70 | IP68/69K | SS | SS | N/A | YE | 2M/PVC | C | 1 | A22 |
| **Bi1.5-EGT08F-AP6X** 4614678 | Full Stainless Steel, PTFE | 1.5 | 3-wire DC PNP | 10-30 VDC | 200 | ≤200 | -25 to +70 | IP68/69K | TC | SS | N/A | YE | 2M/PVC | C | 1 | A22 |
| **Bi3-EG08FE-AP6X** 4614704 | Full Stainless Steel | 3 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | SS | SS | N/A | YE | 2M/PVC | D | 1 | A23 |
| **Bi3-EGT08FE-AP6X** 46147043 | Full Stainless Steel, PTFE | 3 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | TC | SS | N/A | YE | 2M/PVC | D | 1 | A23 |
| **Bi1.5-EG08F-AN6X-H1341** 4614630 | Full Stainless Steel | 1.5 | 3-wire DC NPN | 10-30 VDC | 200 | ≤200 | -25 to +70 | IP68/69K | SS | SS | N/A | YE | - - | E | 4 | A22 |
| **Bi3-EG08FE-AN6X-H1341** 4614711 | Full Stainless Steel | 3 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | SS | SS | N/A | YE | - - | F | 4 | A23 |
| **Bi1.5-EG08F-AP6X-H1341** 4614629 | Full Stainless Steel | 1.5 | 3-wire DC PNP | 10-30 VDC | 200 | ≤200 | -25 to +70 | IP68/69K | SS | SS | N/A | YE | - - | E | 3 | A22 |
| **Bi3-EG08FE-AP6X-H1341** 4614703 | Full Stainless Steel | 3 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | SS | SS | N/A | YE | - - | F | 3 | A23 |
| **Bi3-EGT08FE-AP6X-H1341** 46147030 | Full Stainless Steel, PTFE | 3 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | TC | SS | N/A | YE | - - | F | 3 | A23 |
| **Bi3-EGT08FE-AP6X-H1341/S1589** 46147032 | Full Stainless Steel, PTFE, Weldguard | 3 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | TC | WG | N/A | YE | - - | F | 3 | A23 |

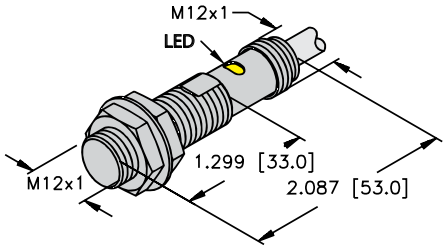
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Stainless Front Face

**Embeddable Threaded Metal Barrels with 3-Wire DC Outputs**

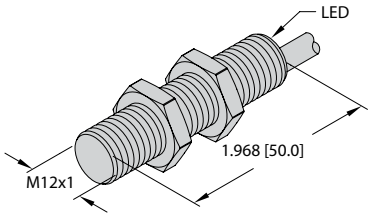
| Housing Style | Dimension Drawings |
|---|---|

A



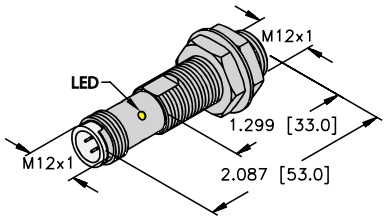

12 mm - Embeddable, Stainless Steel Barrel, Potted-In Cable

B



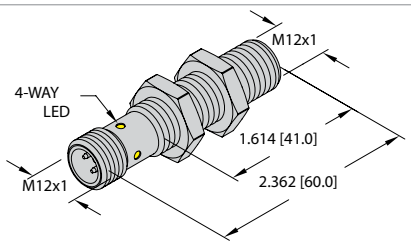

12 mm - Embeddable, Stainless Steel Barrel, Potted-In Cable

C




12 mm - Embeddable, Stainless Steel Barrel, M12 Eurofast Quick Disconnect

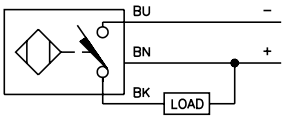
D




12 mm - Embeddable, Stainless Steel Barrel, M12 Eurofast Quick Disconnect

**Wiring Diagrams/Mating Cordsets**

1

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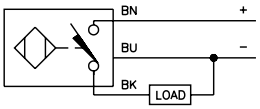
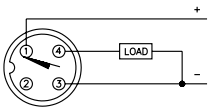
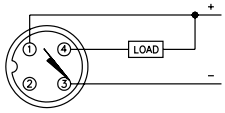



3




Mating Cordset: RKV 4T-*

4




Mating Cordset: RKV 4T-*

| A22 | 3-wire DC Stainless Front Face (AP, AN, RP, RN) | | |
|---|---|---|---|
| Ripple: | ≤10% | Temperature Drift: | ≤±10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Off-State (Leakage) Current: | ≤0.1 mA | Repeatability: | ≤2% of Rated Operating Distance |

| A23 | 3-wire DC Stainless Front Face Ext Range (AP, AN, RP, RN) | | |
|---|---|---|---|
| Ripple: | ≤10% | Temperature Drift: | ≤±10% |
| Differential Travel (Hysteresis): | 20% | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤2 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤10 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Off-State (Leakage) Current: | ≤0.1 mA | Repeatability: | ≤5% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Stainless Front Face

## Embeddable Threaded Metal Barrels with 3-Wire DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi2-EG12F-AN6X** 4614633 | Full Stainless Steel | 2 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP68/69K | SS | SS | N/A | YE | 2M/PVC | A | 2 | A22 |
| **Bi6-EG12FE-AN6X** 4614721 | Full Stainless Steel | 6 | 3-wire DC NPN | 10-30 VDC | 600 | ≤200 | -25 to +70 | IP68/69K | SS | SS | N/A | YE | 2M/PVC | B | 2 | A23 |
| **Bi2-EG12F-AP6X** 4614632 | Full Stainless Steel | 2 | 3-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP68/69K | SS | SS | N/A | YE | 2M/PVC | A | 1 | A22 |
| **Bi6-EG12FE-AP6X** 4614720 | Full Stainless Steel | 6 | 3-wire DC PNP | 10-30 VDC | 600 | ≤200 | -25 to +70 | IP68/69K | SS | SS | N/A | YE | 2M/PVC | B | 1 | A23 |
| **Bi2-EG12F-AN6X-H1141** 4614636 | Full Stainless Steel | 2 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP68/69K | SS | SS | N/A | YE | - - | C | 4 | A22 |
| **Bi6-EG12FE-AN6X-H1141** 4614714 | Full Stainless Steel | 6 | 3-wire DC NPN | 10-30 VDC | 600 | ≤200 | -25 to +70 | IP68/69K | SS | SS | N/A | YE | - - | D | 4 | A23 |
| **Bi6-EGT12FE-AN6X-H1141** 46147140 | Full Stainless Steel, PTFE | 6 | 3-wire DC NPN | 10-30 VDC | 600 | ≤200 | -25 to +70 | IP68/69K | TC | SS | N/A | YE | - - | D | 4 | A23 |
| **Bi2-EG12F-AP6X-H1141** 4614635 | Full Stainless Steel | 2 | 3-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP68/69K | SS | SS | N/A | YE | - - | C | 3 | A22 |
| **Bi2-EGT12F-AP6X-H1141** 46146971 | Full Stainless Steel, PTFE | 2 | 3-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP68/69K | TC | SS | N/A | YE | - - | C | 3 | A22 |
| **Bi6-EG12FE-AP6X-H1141** 4614706 | Full Stainless Steel | 6 | 3-wire DC PNP | 10-30 VDC | 600 | ≤200 | -25 to +70 | IP68/69K | SS | SS | N/A | YE | - - | D | 3 | A23 |
| **Bi6-EGT12FE-AP6X-H1141** 46147060 | Full Stainless Steel, PTFE | 6 | 3-wire DC PNP | 10-30 VDC | 600 | ≤200 | -25 to +70 | IP68/69K | TC | SS | N/A | YE | - - | D | 3 | A23 |
| **Bi6-EGT12FE-AP6X-H1141/S1589** 46147061 | Full Stainless Steel, PTFE, Weldguard | 6 | 3-wire DC PNP | 10-30 VDC | 600 | ≤200 | -25 to +70 | IP68/69K | TC | WG | N/A | YE | - - | D | 3 | A23 |

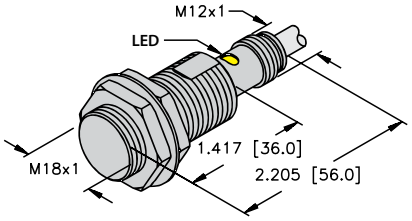
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Stainless Front Face

**Embeddable Threaded Metal Barrels with 3-Wire DC Outputs**

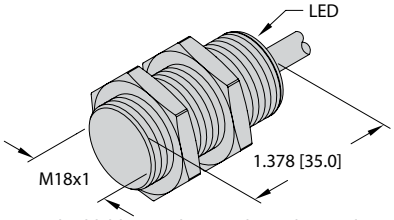
| Housing Style | Dimension Drawings |
|---|---|

A



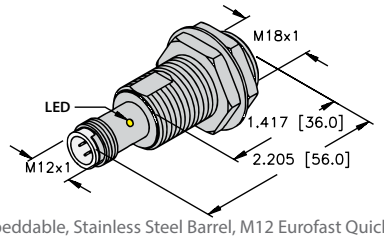

18 mm - Embeddable, Stainless Steel Barrel, Potted-In Cable

B



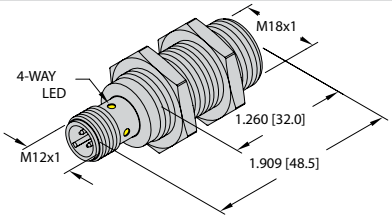

18 mm - Embeddable, Stainless Steel Barrel, Potted-In Cable

C



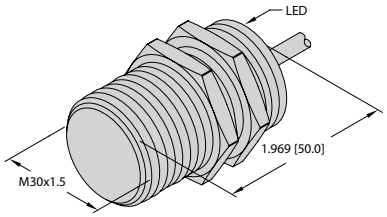

18 mm - Embeddable, Stainless Steel Barrel, M12 Eurofast Quick Disconnect

D



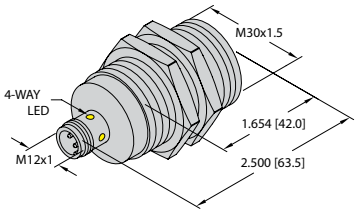

18 mm - Embeddable, Stainless Steel Barrel, M12 Eurofast Quick Disconnect

E




30 mm - Embeddable, Stainless Steel Barrel, Potted-In Cable

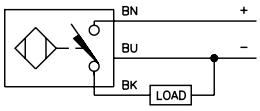
F




30 mm - Embeddable, M12 Eurofast Connection, Stainless Steel

## Wiring Diagrams/Mating Cordsets

1

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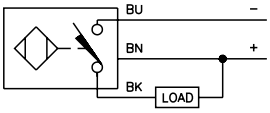


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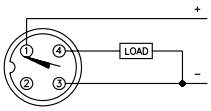
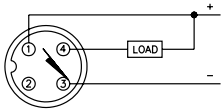



Mating Cordset: RKV 4T-*

4




Mating Cordset: RKV 4T-*

## A22 — 3-wire DC Stainless Front Face (AP, AN, RP, RN)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Temperature Drift: | ≤±10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Off-State (Leakage) Current: | ≤0.1 mA | Repeatability: | ≤2% of Rated Operating Distance |

## A23 — 3-wire DC Stainless Front Face Ext Range (AP, AN, RP, RN)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Temperature Drift: | ≤±10% |
| Differential Travel (Hysteresis): | 20% | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤2 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤10 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Off-State (Leakage) Current: | ≤0.1 mA | Repeatability: | ≤5% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Stainless Front Face

## Embeddable Threaded Metal Barrels with 3-Wire DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi5-EG18F-AN6X** 4614639 | Full Stainless Steel | 5 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP68/69K | SS | SS | N/A | YE | 2M/PVC | A | 2 | A22 |
| **Bi10-EG18F-AN6X** 4614723 | Full Stainless Steel | 10 | 3-wire DC NPN | 10-30 VDC | 200 | ≤200 | -25 to +70 | IP68/69K | SS | SS | N/A | YE | 2M/PVC | B | 2 | A23 |
| **Bi10-EG18F-AP6X** 4614722 | Full Stainless Steel | 10 | 3-wire DC PNP | 10-30 VDC | 200 | ≤200 | -25 to +70 | IP68/69K | SS | SS | N/A | YE | 2M/PVC | B | 1 | A23 |
| **Bi5-EG18F-AN6X-H1141** 4614642 | Full Stainless Steel | 5 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP68/69K | SS | SS | N/A | YE | - - | C | 4 | A22 |
| **Bi5-EGT18F-AN6X-H1141** 4614672 | Full Stainless Steel, PTFE | 5 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP68/69K | TC | SS | N/A | YE | - - | C | 4 | A22 |
| **Bi10-EG18F-AN6X-H1141** 4614716 | Full Stainless Steel | 10 | 3-wire DC NPN | 10-30 VDC | 200 | ≤200 | -25 to +70 | IP68/69K | SS | SS | N/A | YE | - - | D | 4 | A23 |
| **Bi5-EG18F-AP6X-H1141** 4614641 | Full Stainless Steel | 5 | 3-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP68/69K | SS | SS | N/A | YE | - - | C | 3 | A22 |
| **Bi5-EGT18F-AP6X-H1141** 4614675 | Full Stainless Steel, PTFE | 5 | 3-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP68/69K | TC | SS | N/A | YE | - - | C | 3 | A22 |
| **Bi10-EG18F-AP6X-H1141** 4614708 | Full Stainless Steel | 10 | 3-wire DC PNP | 10-30 VDC | 200 | ≤200 | -25 to +70 | IP68/69K | SS | SS | N/A | YE | - - | D | 3 | A23 |
| **Bi10-EGT18F-AP6X-H1141** 46147080 | Full Stainless Steel, PTFE | 10 | 3-wire DC PNP | 10-30 VDC | 200 | ≤200 | -25 to +70 | IP68/69K | TC | SS | N/A | YE | - - | D | 3 | A23 |
| **Bi10-EGT18F-AP6X-H1141/S1589** 46147081 | Full Stainless Steel, PTFE, Weldguard | 10 | 3-wire DC PNP | 10-30 VDC | 200 | ≤200 | -25 to +70 | IP68/69K | TC | WG | N/A | YE | - - | D | 3 | A23 |
| **Bi20-EG30F-AP6X** 4614724 | Full Stainless Steel | 20 | 3-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP68/69K | SS | SS | N/A | YE | 2M/PVC | E | 1 | A23 |
| **Bi20-EG30F-AP6X-H1141** 4614710 | Full Stainless Steel | 20 | 3-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP68/69K | SS | SS | N/A | YE | - - | F | 3 | A23 |
| **Bi20-EGT30F-AP6X-H1141** 46147100 | Full Stainless Steel, PTFE | 20 | 3-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP68/69K | TC | SS | N/A | YE | - - | F | 3 | A23 |
| **Bi20-EGT30F-AP6X-H1141/S1589** 46147101 | Full Stainless Steel, PTFE, Weldguard | 20 | 3-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP68/69K | TC | WG | N/A | YE | - - | F | 3 | A23 |

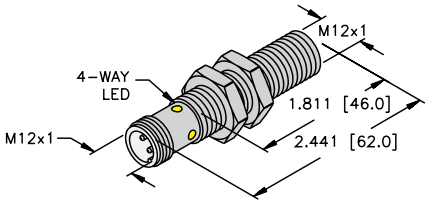
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Mobile Equipment

**Barrel Sensors Designed for use on Vehicles and Equipment**

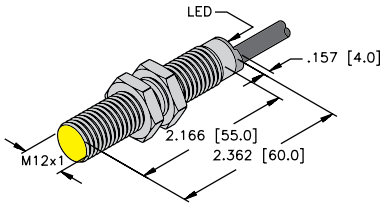
| Housing Style | Dimension Drawings |
|---|---|

A



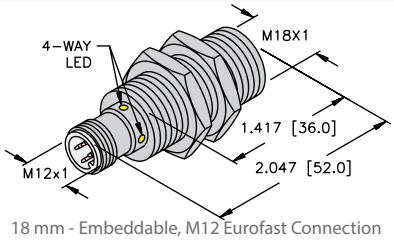

12 mm - Embeddable, M12 Eurofast Connection

B



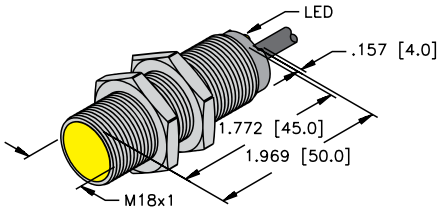

12 mm - Embeddable, Partial Threading, Potted-In Cable

C



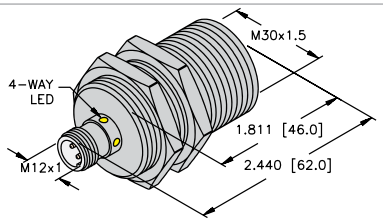

18 mm - Embeddable, M12 Eurofast Connection

D



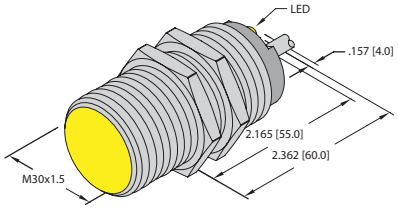

18 mm - Embeddable, Partial Threading, Potted-In Cable

E




30 mm - Embeddable, M12 Eurofast Connection

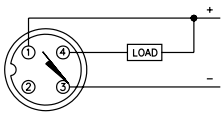
F




30 mm - Embeddable, Partial Threading, Potted-In Cable

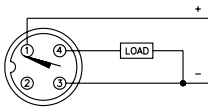
**Wiring Diagrams/Mating Cordsets**

1



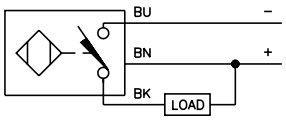

Mating Cordset: RK 4T-*/S90

2




Mating Cordset: RK 4T-*/S90

3

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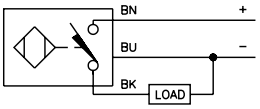



**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox 3) | Repeatability: | ≤2% of Rated Operating Distance |

**Features**

- Load Dump Protection
- Shock Resistant
- EMC Immunity
- Extended Temperature Range
- Broader Operating Voltage
- Improved Sealing and Environmental Protection
- Longer Sensing Range

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Mobile Equipment

## Barrel Sensors Designed for use on Vehicles and Equipment

| Part Number/ ID Number | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi4-EM12E-AN45XLD-H1141** 1584003 | 4 | 3-wire DC NPN | 8.4-65 VDC | 2000 | ≤200 | -40 to +85 | IP68/69K | SS | PA12 | N/A | YE | - - | A | 1 | A4 |
| **Bi4-EM12E-AP45XLD-H1141** 1584000 | 4 | 3-wire DC PNP | 8.4-65 VDC | 2000 | ≤200 | -40 to +85 | IP68/69K | SS | PA12 | N/A | YE | - - | A | 2 | A4 |
| **Bi4-EM12E-AN45XLD** 1584004 | 4 | 3-wire DC NPN | 8.4-65 VDC | 2000 | ≤200 | -40 to +85 | IP68/69K | SS | PA12 | N/A | YE | 2M/TPE | B | 3 | A4 |
| **Bi4-EM12E-AP45XLD** 1584001 | 4 | 3-wire DC PNP | 8.4-65 VDC | 2000 | ≤200 | -40 to +85 | IP68/69K | SS | PA12 | N/A | YE | 2M/TPE | B | 4 | A4 |
| **Bi8-EM18-AN45XLD-H1141** 1584017 | 8 | 3-wire DC NPN | 8.4-65 VDC | 500 | ≤200 | -40 to +85 | IP68/69K | SS | PA12 | N/A | YE | - - | C | 1 | A4 |
| **Bi8-EM18-AP45XLD-H1141** 1584010 | 8 | 3-wire DC PNP | 8.4-65 VDC | 500 | ≤200 | -40 to +85 | IP68/69K | SS | PA12 | N/A | YE | - - | C | 2 | A4 |
| **Bi8-EM18-AN45XLD** 1584014 | 8 | 3-wire DC NPN | 8.4-65 VDC | 500 | ≤200 | -40 to +85 | IP68/69K | SS | PA12 | N/A | YE | 2M/TPE | D | 3 | A4 |
| **Bi8-EM18-AP45XLD** 1584011 | 8 | 3-wire DC PNP | 8.4-65 VDC | 500 | ≤200 | -40 to +85 | IP68/69K | SS | PA12 | N/A | YE | 2M/TPE | D | 4 | A4 |
| **Bi15-EM30-AN45XLD-H1141** 1584024 | 15 | 3-wire DC NPN | 8.4-65 VDC | 500 | ≤200 | -40 to +85 | IP68/69K | SS | PA12 | N/A | YE | - - | E | 1 | A4 |
| **Bi15-EM30-AP45XLD-H1141** 1584020 | 15 | 3-wire DC PNP | 8.4-65 VDC | 500 | ≤200 | -40 to +85 | IP68/69K | SS | PA12 | N/A | YE | - - | E | 2 | A4 |
| **Bi15-EM30-AN45XLD** 1584022 | 15 | 3-wire DC NPN | 8.4-65 VDC | 500 | ≤200 | -40 to +85 | IP68/69K | SS | PA12 | N/A | YE | 2M/TPE | F | 1 | A4 |
| **Bi15-EM30-AP45XLD** 1584021 | 15 | 3-wire DC PNP | 8.4-65 VDC | 500 | ≤200 | -40 to +85 | IP68/69K | SS | PA12 | N/A | YE | 2M/TPE | F | 2 | A4 |

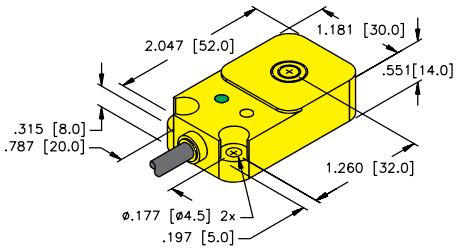
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Mobile Equipment

**Rectangular Sensors Designed for use on Vehicles and Equipment**

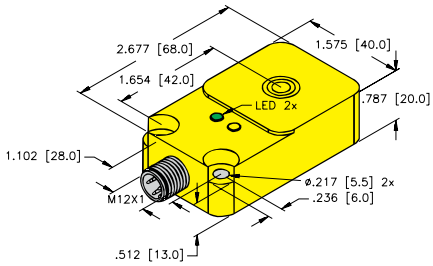
| Housing Style | Dimension Drawings |
|---|---|

A



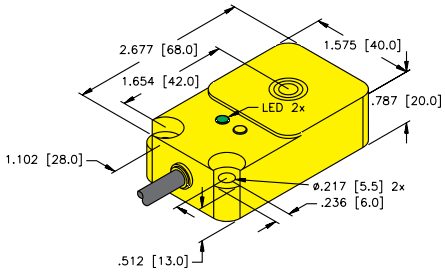

14 mm - Embeddable, Potted-In Cable

B




20 mm - Embeddable, M12 Eurofast Connection

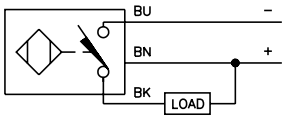
C



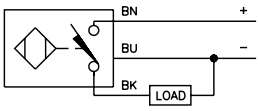

20 mm - Embeddable, Potted-In Cable

## Wiring Diagrams/Mating Cordsets

1




2

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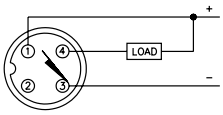
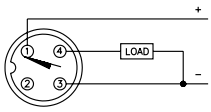


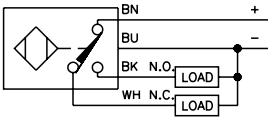

Mating Cordset: RK 4T-*/S90

4




Mating Cordset: RK 4T-*/S90

5




## A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current |
| | ≥170 mA on 150 mA Load Current |
| | ≥120 mA on 100 mA Load Current |
| Off-State (Leakage) Current: | ≤0.1 mA |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) |
| | ≤20 mA (Uprox+, Uprox 3) |
| Time Delay Before Availability: | ≤8 ms |
| Power-On Effect: | Per IEC 947-5-2 |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Transient Protection: | Per EN 60947-5-2 |
| Temperature Drift: | ≤±10% |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

## Features

- Load Dump Protection
- Shock Resistant
- EMC Immunity
- Extended Temperature Range
- Broader Operating Voltage
- Improved Sealing and Environmental Protection
- Longer Sensing Range

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Mobile Equipment

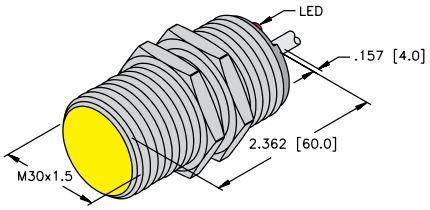
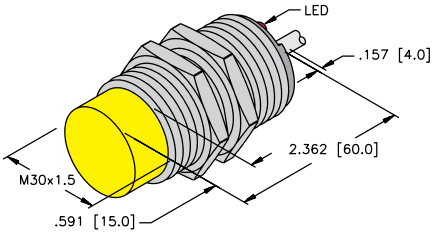
**Rectangular Sensors Designed for use on Vehicles and Equipment**

| Part Number/ ID Number | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi10-Q14-AN45X2LD** 1584032 | 10 | 3-wire DC NPN | 8.4-65 VDC | 500 | ≤200 | -40 to +85 | IP68/69K | PBT | PBT | GN | YE | 2M/TPE | A | 1 | A4 |
| **Bi10-Q14-AP45X2LD** 1584031 | 10 | 3-wire DC PNP | 8.4-65 VDC | 500 | ≤200 | -40 to +85 | IP68/69K | PBT | PBT | GN | YE | 2M/TPE | A | 2 | A4 |
| **Bi20-Q20-AN45X2LD-H1141** 1584042 | 20 | 3-wire DC NPN | 8.4-65 VDC | 500 | ≤200 | -40 to +85 | IP68/69K | PBT | PBT | GN | YE | - - | B | 3 | A4 |
| **Bi20-Q20-AP45X2LD-H1141** 1584040 | 20 | 3-wire DC PNP | 8.4-65 VDC | 500 | ≤200 | -40 to +85 | IP68/69K | PBT | PBT | GN | YE | - - | B | 4 | A4 |
| **Bi20-Q20-AN45X2LD** 1584043 | 20 | 3-wire DC NPN | 8.4-65 VDC | 500 | ≤200 | -40 to +85 | IP68/69K | PBT | PBT | GN | YE | 2M/TPE | C | 1 | A4 |
| **Bi20-Q20-AP45X2LD** 1584041 | 20 | 3-wire DC PNP | 8.4-65 VDC | 500 | ≤200 | -40 to +85 | IP68/69K | PBT | PBT | GN | YE | 2M/TPE | C | 2 | A4 |
| **Bi20-Q20-VP45X2LD** 1584047 | 20 | 4-wire DC PNP | 8.4-65 VDC | 500 | ≤200 | -40 to +85 | IP68/69K | PBT | PBT | GN | YE | 2M/TPE | C | 5 | A4 |

We reserve the right to make technical alterations without prior notice.

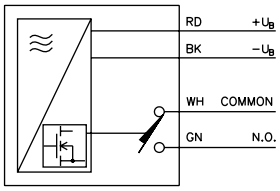
# Specialty Sensors | 6A Solid State

## Threaded Metal Barrel Sensors with Cable

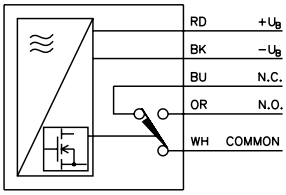
| Housing Style | Dimension Drawings |
|---|---|
| | A   30 mm - Embeddable, Potted-In Cable |
| B   30 mm - Nonembeddable, Potted-In Cable | |

### Wiring Diagrams/Mating Cordsets

1




2




### A10 — Solid State Relay (AM6, VM6)

| | |
|---|---|
| Ripple: | ≤10% |
| Output Voltage: | ≤35 V AC, ≤50 V DC |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤0.4 V |
| Continuous Load Current: | ≤6 Amp |
| Off-State (Leakage) Current: | ≤0.1 mA |
| Inrush Current: | ≤8.0 A (≤10.0 ms max 5 Hz) |
| No-Load Current: | ≤25 mA |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Short Circuit Protected: | No |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | 6A Solid State

## Threaded Metal Barrel Sensors with Cable

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi12-G30-AM6/37X/S97** 1711200 | High current rated | 12 | 4-wire DC | 10-30 VDC | 20 | ≤6000 | -40 to 70 | IP67 | CPB | PA12 | N/A | YE | 2M/PVC | A | 1 | A10 |
| **Bi12-G30-VM6/37X/S97** 1711290 | High current rated | 12 | 5-wire DC | 10-30 VDC | 20 | ≤6000 | -40 to 70 | IP67 | CPB | PA12 | N/A | YE | 2M/PVC | A | 2 | A10 |
| **Ni20-G30-VM6/37X/S97** 4205472 | High current rated | 20 | 5-wire DC | 10-30 VDC | 20 | ≤6000 | -40 to 70 | IP67 | CPB | PA12 | N/A | YE | 2M/PVC | B | 2 | A10 |



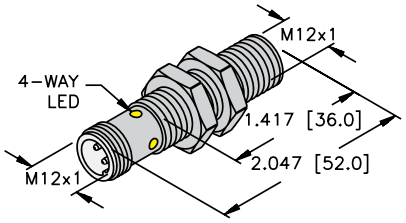
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | FM Approved Class I Div 2

**Threaded Metal Barrels with 3-Wire DC Outputs**

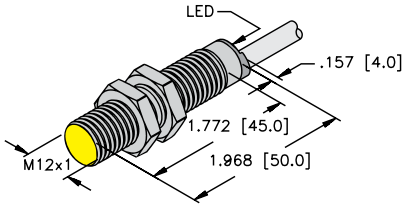
| Housing Style | Dimension Drawings |
|---|---|

A



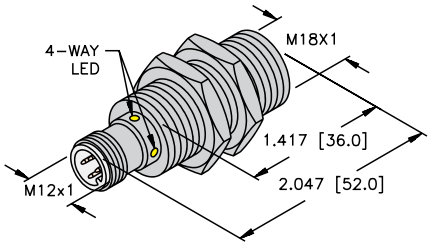

12 mm - Embeddable, M12 Eurofast Connector

B



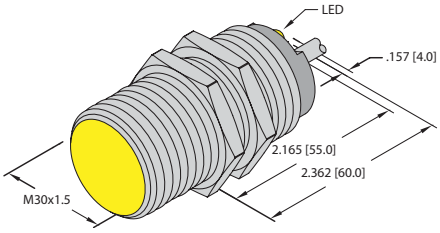

12 mm - Embeddable, Potted-In Cable

C



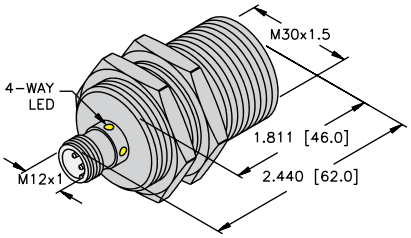

18 mm - Embeddable, M12 Eurofast Connector

D




30 mm - Embeddable, Potted-In Cable

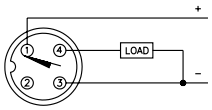
E




30 mm - Embeddable, M12 Eurofast Connector

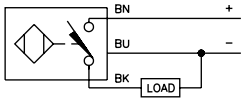
**Wiring Diagrams/Mating Cordsets**

1




Mating Cordset: P-RKGV 4.43T-1699XL-*

2




**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox 3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | FM Approved Class I Div 2

## Threaded Metal Barrels with 3-Wire DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi4-M12-AP6X-H1141/S1751** 4607075 | FM Approved | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | - - | A | 1 | A4 |
| **Bi4-M12-AP6X/S1751** 4607073 | FM Approved | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/ PVC | B | 2 | A4 |
| **Bi8-M18-AP6X-H1141/S1751** 4615078 | FM Approved | 8 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | - - | C | 1 | A4 |
| **Bi15-M30-AP6X-H1141/S97/S1751** 4618574 | FM Approved | 15 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -40 to +70 | IP67 | CPB | PA 12 | N/A | YE | - - | E | 1 | A4 |
| **Bi15-M30-AP6X/S1751** 46185302 | FM Approved | 15 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/ PVC | D | 2 | A4 |

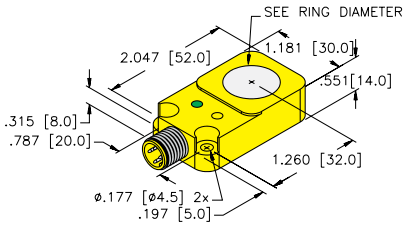
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Ring Sensors

## Plastic Housing Sensors with Cable or Connector and 3-Wire DC Output

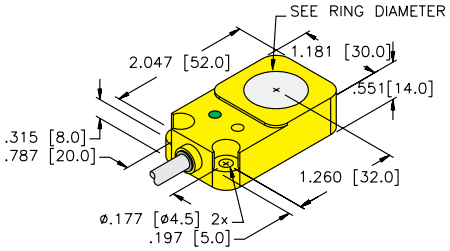
| Housing Style | Dimension Drawings |
|---|---|

A



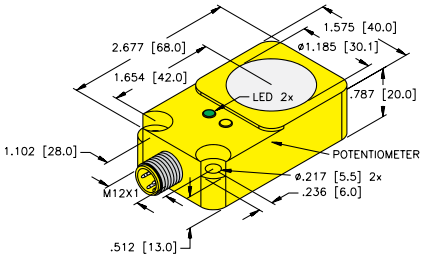

14 mm - Rectangular, Ring Sensor, M12 Eurofast Connector

B



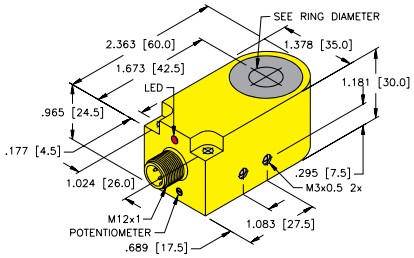

14 mm - Rectangular, Ring Sensor, Potted-In Cable

C




20 mm - Rectangular, Ring Sensor, M12 Eurofast Connector

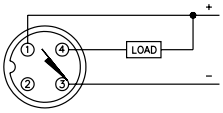
D




30 mm - Rectangular, Ring Sensor, M12 Eurofast Connector

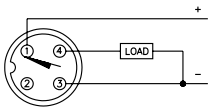
### Wiring Diagrams/Mating Cordsets

1



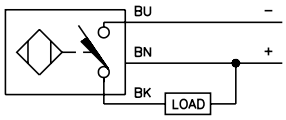

Mating Cordset: RK 4T-*

2

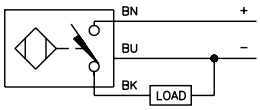



Mating Cordset: RK 4T-*

3




4




### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox 3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Ring Sensors

## Plastic Housing Sensors with Cable or Connector and 3-Wire DC Output

| Part Number/ ID Number | Features | Minimum Target Diameter | Ring Diameter (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi10R-Q14-AN6X2-H1141** 1407120 | Static Output | ≥ 2 mm | 10 | 3-wire DC NPN | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PBT | POM | GN | YE | - - | A | 1 | A4 |
| **Bi15R-Q14-AN6X2-H1141** 1407220 | Static Output | ≥ 3 mm | 15 | 3-wire DC NPN | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PBT | POM | GN | YE | - - | A | 1 | A4 |
| **Bi20R-Q14-AN6X2-H1141** 1407320 | Static Output | ≥ 4 mm | 20 | 3-wire DC NPN | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PBT | POM | GN | YE | - - | A | 1 | A4 |
| **Bi6R-Q14-AP6X2-H1141** 14070 | Static Output | ≥ 2 mm | 6 | 3-wire DC PNP | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PBT | POM | GN | YE | - - | A | 2 | A4 |
| **Bi10R-Q14-AP6X2-H1141** 14071 | Static Output | ≥ 2 mm | 10 | 3-wire DC PNP | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PBT | POM | GN | YE | - - | A | 2 | A4 |
| **Bi15R-Q14-AP6X2-H1141** 14072 | Static Output | ≥ 3 mm | 15 | 3-wire DC PNP | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PBT | POM | GN | YE | - - | A | 2 | A4 |
| **Bi20R-Q14-AP6X2-H1141** 14073 | Static Output | ≥ 4 mm | 20 | 3-wire DC PNP | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PBT | POM | GN | YE | - - | A | 2 | A4 |
| **Bi10R-Q14-AN6X2** 1406120 | Static Output | ≥ 2 mm | 10 | 3-wire DC NPN | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PBT | POM | GN | YE | 2M/PVC | B | 3 | A4 |
| **Bi15R-Q14-AN6X2** 1406220 | Static Output | ≥ 3 mm | 15 | 3-wire DC NPN | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PBT | POM | GN | YE | 2M/PVC | B | 3 | A4 |
| **Bi20R-Q14-AN6X2** 1406320 | Static Output | ≥ 4 mm | 20 | 3-wire DC NPN | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PBT | POM | GN | YE | 2M/PVC | B | 3 | A4 |
| **Bi10R-Q14-AP6X2** 14061 | Static Output | ≥ 2 mm | 10 | 3-wire DC PNP | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PBT | POM | GN | YE | 2M/PVC | B | 4 | A4 |
| **Bi15R-Q14-AP6X2** 14062 | Static Output | ≥ 3 mm | 15 | 3-wire DC PNP | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PBT | POM | GN | YE | 2M/PVC | B | 4 | A4 |
| **Bi20R-Q14-AP6X2** 14063 | Static Output | ≥ 4 mm | 20 | 3-wire DC PNP | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PBT | POM | GN | YE | 2M/PVC | B | 4 | A4 |
| **Bi30R-Q20-AN6X2-H1141** 1407520 | Static Output | ≥ 6 mm | 30 | 3-wire DC NPN | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PBT | POM | GN | YE | - - | C | 1 | A4 |
| **Bi30R-Q20-AP6X2-H1141** 14075 | Static Output | ≥ 6 mm | 30 | 3-wire DC PNP | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PBT | POM | GN | YE | - - | C | 2 | A4 |
| **Bi6R-W30-DAN6X-H1141** 14037 | Dynamic Output | ≥ 0.6 mm | 6 | 3-wire DC NPN | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PA 12 | POM | N/A | YE | - - | D | 1 | A4 |
| **Bi10R-W30-DAN6X-H1141** 14039 | Dynamic Output | ≥ 1 mm | 10 | 3-wire DC NPN | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PA 12 | POM | N/A | YE | - - | D | 1 | A4 |
| **Bi15R-W30-DAN6X-H1141** 14041 | Dynamic Output | ≥ 1.5 mm | 15 | 3-wire DC NPN | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PA 12 | POM | N/A | YE | - - | D | 1 | A4 |
| **Bi20R-W30-DAN6X-H1141** 14043 | Dynamic Output | ≥ 2 mm | 20 | 3-wire DC NPN | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PA 12 | POM | N/A | YE | - - | D | 1 | A4 |
| **Bi30R-W30-DAN6X-H1141** 1404501 | Dynamic Output | ≥ 3 mm | 30 | 3-wire DC NPN | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PA 12 | POM | N/A | YE | - - | D | 1 | A4 |
| **Bi6R-W30-DAP6X-H1141** 14036 | Dynamic Output | ≥ 0.6 mm | 6 | 3-wire DC PNP | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PA 12 | POM | N/A | YE | - - | D | 2 | A4 |
| **Bi10R-W30-DAP6X-H1141** 14038 | Dynamic Output | ≥ 1 mm | 10 | 3-wire DC PNP | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PA 12 | POM | N/A | YE | - - | D | 2 | A4 |
| **Bi15R-W30-DAP6X-H1141** 14040 | Dynamic Output | ≥ 1.5 mm | 15 | 3-wire DC PNP | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PA 12 | POM | N/A | YE | - - | D | 2 | A4 |
| **Bi20R-W30-DAP6X-H1141** 14042 | Dynamic Output | ≥ 2 mm | 20 | 3-wire DC PNP | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PA 12 | POM | N/A | YE | - - | D | 2 | A4 |
| **Bi30R-W30-DAP6X-H1141** 14045 | Dynamic Output | ≥ 3 mm | 30 | 3-wire DC PNP | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PA 12 | POM | N/A | YE | - - | D | 2 | A4 |

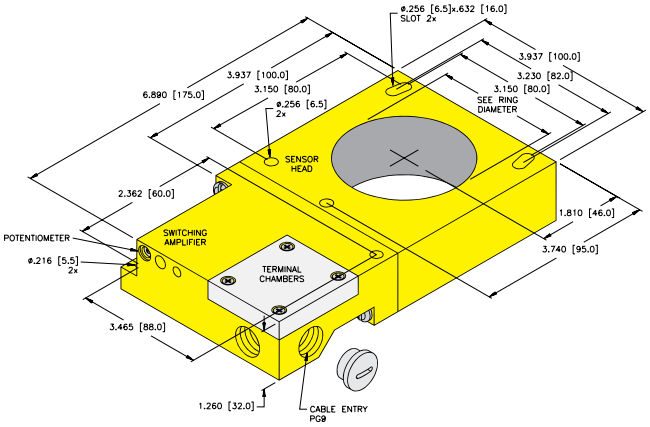
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Ring Sensors

**Plastic Housing Sensors with a Large Diameter Ring and 3 or 4-Wire DC Output**

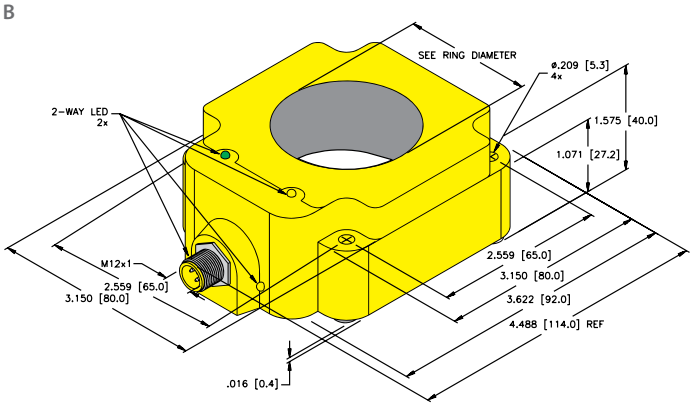
| Housing Style | Dimension Drawings |
|---|---|

A



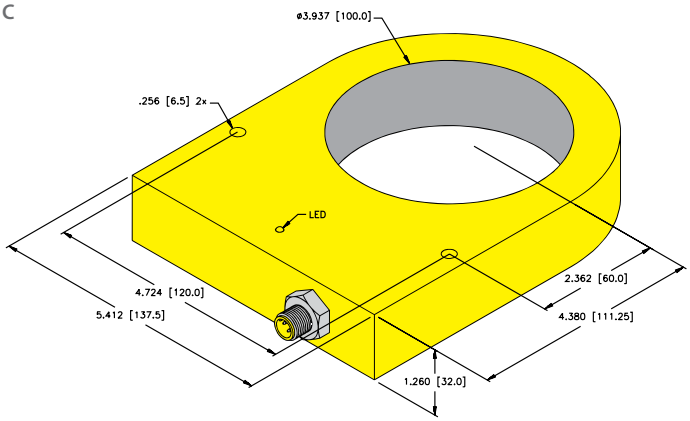

32 mm - Rectangular, Ring Sensor, Terminal Chamber

B




80 mm - Rectangular, Ring Sensor, M12 Eurofast Connector

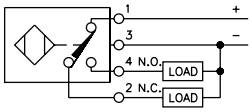
C



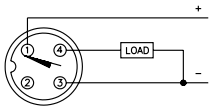

100 mm - Rectangular, Ring Sensor, M12 Eurofast Connector

**Wiring Diagrams/Mating Cordsets**

1

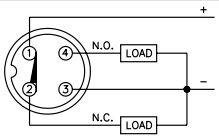



2




Mating Cordset: RK 4T-*

3




Mating Cordset: RK 4.4T-*

**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox 3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Ring Sensors

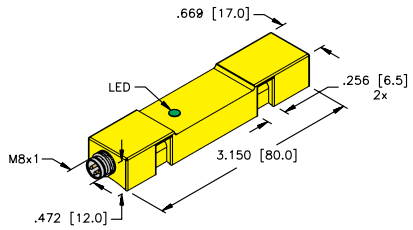
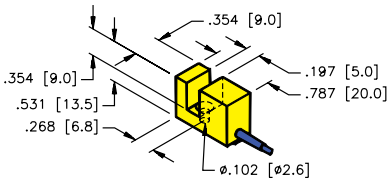
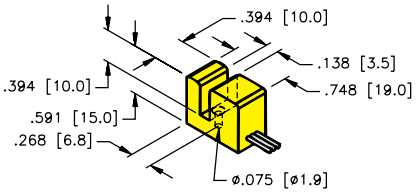
**Plastic Housing Sensors with a Large Diameter Ring and 3 or 4-Wire DC Output**

| Part Number/ ID Number | Features | Minimum Target Diameter | Ring Diameter (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni20R-S32SR-VP44X** 1440001 | Static Output | ≥ 0.4 mm | 20 | 4-wire DC PNP | 10-55 VDC | 8 | ≤200 | -25 to +70 | IP67 | ABS | ABS | N/A | YE | A | 1 | A4 |
| **Ni40R-S32SR-VP44X** 1440005 | Static Output | ≥ 1 mm | 40 | 4-wire DC PNP | 10-55 VDC | 8 | ≤200 | -25 to +70 | IP67 | ABS | ABS | N/A | YE | A | 1 | A4 |
| **Ni65R-S32SR-VP44X** 1440008 | Static Output | ≥ 12 mm | 65 | 4-wire DC PNP | 10-55 VDC | 8 | ≤200 | -25 to +70 | IP67 | ABS | ABS | N/A | YE | A | 1 | A4 |
| **Bi50R-Q80-AP6X2-H1141** 1407530 | Static Output | ≥ 8 mm | 50 | 3-wire DC PNP | 10-30 VDC | 10 | ≤200 | -25 to +70 | IP67 | PBT | PA 66 | GN | YE | B | 2 | A4 |
| **Bi65R-Q80-AP6X2-H1141** 1407531 | Static Output | ≥ 10 mm | 65 | 3-wire DC PNP | 10-30 VDC | 10 | ≤200 | -25 to +70 | IP67 | PBT | PA 66 | GN | YE | B | 2 | A4 |
| **Ni100R-S32XL-VP44X-H1141** 1510301 | Static Output | ≥ 10mm | 100 | 4-wire DC PNP | 10-55 VDC | 8 | ≤200 | -25 to +70 | IP67 | POM | POM | N/A | YE | C | 3 | A4 |

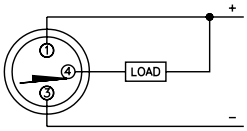
We reserve the right to make technical alterations without prior notice.

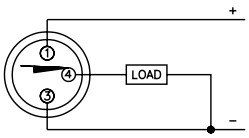
# Specialty Sensors | Tube and Slot Sensors

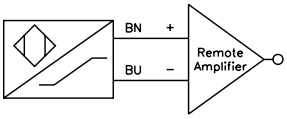
## Plastic Housing Sensors with Cable or Connector

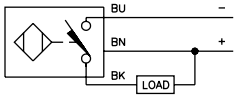
| Housing Style | Dimension Drawings |
|---|---|
| | A   Tube Sensing Nonembeddable, M8 Picofast Connector |
| B   9 mm - Slot Sensor, Potted-In Cable | C   10 mm - Slot Sensor, Potted-In Cable |

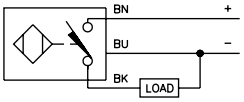
### Wiring Diagrams/Mating Cordsets

1  
Mating Cordset: PKG 3M-*

2  
Mating Cordset: PKG 3M-*

3  

4  

5  

### A1 — 2-wire DC NAMUR - (Y0 and Y1)

| | |
|---|---|
| Differential Travel (Hysteresis): | 1-10% (5% typical) |
| Nominal Voltage: | 8.2 VDC (EN60947-5-6) |
| Load Resistance: | 1000 Ω |
| Non-activated Current Consumption: | ≥2.1 mA |
| Activated Current Consumption: | ≤1.2 mA |
| Recommended Switching Point for Remote Amplifier: | >1.2 to <2.1 mA, typ. 1.55 mA ON/1.75 mA OFF |
| Power-On Effect: | Realized in Amplifier |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Realized in Amplifier |
| Transient Protection: | Realized in Amplifier |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current<br>≥170 mA on 150 mA Load Current<br>≥120 mA on 100 mA Load Current |
| Off-State (Leakage) Current: | ≤0.1 mA |
| No-Load Current: | ≤15 mA (Ferrite, Uprox)<br>≤20 mA (Uprox+, Uprox 3) |
| Time Delay Before Availability: | ≤8 ms |
| Power-On Effect: | Per IEC 947-5-2 |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Transient Protection: | Per EN 60947-5-2 |
| Temperature Drift: | ≤±10% |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Tube and Slot Sensors

## Plastic Housing Sensors with Cable or Connector

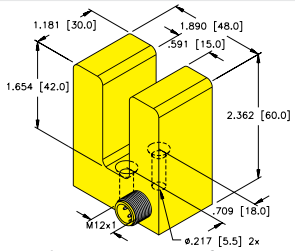
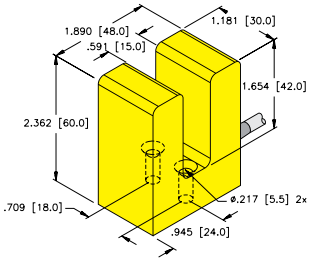
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni20U-TS12-AN6X2-V1131** 1625822 | Uprox+ | 20 | 3-wire DC NPN | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP68 | PBT | PBT | GN | YE | - - | A | 1 | A4 |
| **Ni20U-TS12-AP6X2-V1131** 1646640 | Uprox+ | 20 | 4-wire DC PNP | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP68 | PBT | PBT | GN | YE | - - | A | 2 | A4 |
| **Si5-K09-Y1 0.5M** 10240 | | 5 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | PBT | PBT | N/A | N/A | 0.5M/PVC | B | 3 | A1 |
| **Si3.5-K10-AN7** 17190 | | 3.5 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | PBT | PBT | N/A | N/A | 2M/PVC | C | 4 | A4 |
| **Si3.5-K10-AP6X** 1650001 | | 3.5 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | PBT | PBT | N/A | YE | 2M/PVC | C | 5 | A4 |
| **Si3.5-K10-Y1** 10365 | | 3.5 | 2-wire DC NAMUR | 5-30 VDC | 3000 | Remote | -25 to +70 | IP67 | PBT | PBT | N/A | N/A | 2M/PVC | C | 3 | A1 |



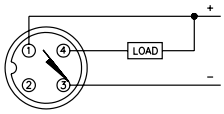
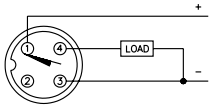
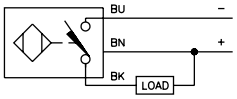
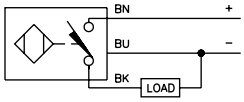
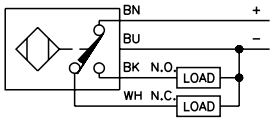
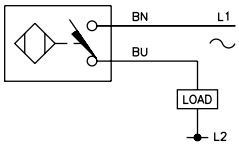
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Slot Sensors

## Plastic Housing Sensors with Cable or Connector

| Housing Style | Dimension Drawings |
|---|---|
| | A   30 mm - Slot Sensor, M12 Eurofast Connector |
| B   30 mm - Slot Sensor, Potted-In Cable | |

### Wiring Diagrams/Mating Cordsets

| 1 | 2 | 3 |
|---|---|---|
|   Mating Cordset: RK 4T-* |   Mating Cordset: RK 4T-* |   |
| **4** | **5** | **6** |
|   |   |   |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox 3) | Repeatability: | ≤2% of Rated Operating Distance |

### A6 — 2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Power-On Effect: | Per IEC 947-5-2 |
| | AC: ≤100 mA; DC: ≤100 mA | Transient Protection: | Per EN 60947-5-2 |
| Off-State (Leakage) Current: | ≤1.7 mA | Shock: | 30 g, 11 ms |
| Minimum Load Current: | ≥3.0 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Slot Sensors

## Plastic Housing Sensors with Cable or Connector

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Si15-K30-AN6X-H1141** 1605107 | | 15 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PBT | PBT | N/A | YE | - - | A | 1 | A4 |
| **Si15-K30-AP6X-H1141** 1605007 | | 15 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PBT | PBT | N/A | YE | - - | A | 2 | A4 |
| **Si15-K30-AN6X** 1605003 | | 15 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PBT | PBT | N/A | YE | 2M/PVC | B | 3 | A4 |
| **Si15-K30-AP6X** 1605001 | | 15 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PBT | PBT | N/A | YE | 2M/PVC | B | 4 | A4 |
| **Si15-K30-VP6** 1605030 | Comp. Outputs | 15 | 4-wire DC PNP | 10-30 VDC | 350 | ≤200 | -25 to +70 | IP67 | PBT | PBT | N/A | N/A | 2M/PVC | B | 5 | A4 |
| **Si15-K30-AZ3** 13069 | | 15 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | N/A | N/A | 2M/PVC | B | 6 | A6 |

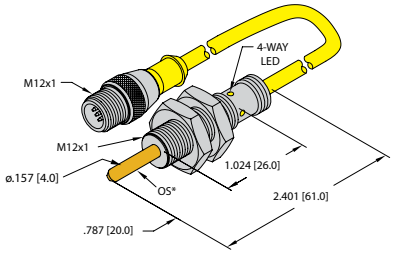
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Weld Nut Sensors

**Threaded Metal Barrel with Smooth Sensing Probe and 3-Wire DC Output**

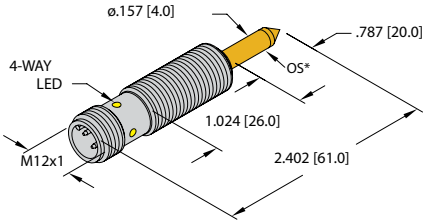
| Housing Style | Dimension Drawings |
|---|---|

A



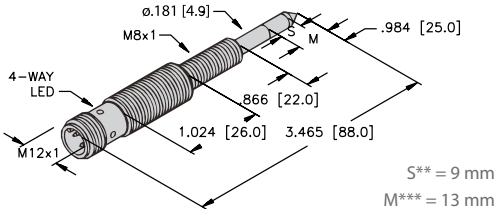

Nut Sensor, 5-12 mm Diameter Nut, Potted-In Cable

B



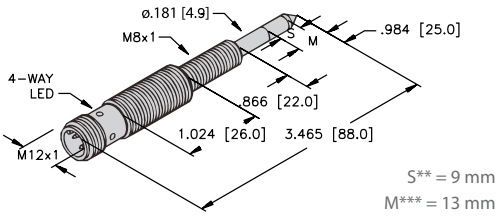

Nut Sensor, 5-12 mm Diameter Nut, M12 Eurofast Connector

C



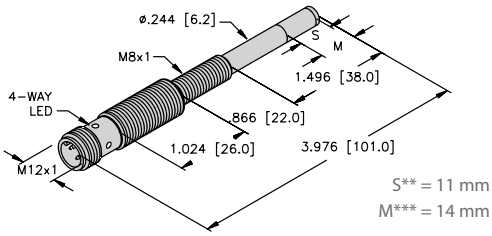

Nut Sensor, 6-12 mm Diameter Nut, M12 Eurofast Connector

D




Nut Sensor, 6-12 mm Diameter Nut, M12 Eurofast Connector

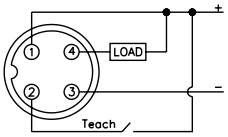
E




Nut Sensor, 10-20 mm Diameter Nut, M12 Eurofast Connector

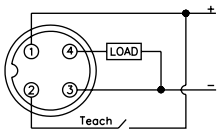
**Wiring Diagrams/Mating Cordsets**

1




Mating Cordset: RK 4.4T-*

2




Mating Cordset: RK 4.4T-*

**A24** — **3-wire DC Nut Detection Sensor (AP, AN)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Off-State (Leakage) Current: | ≤0.1 mA | | |

**Note**:
OS* The optimal sensitive area for the 4.0 mm diameter probes has a width of 0.5 mm and is laser-engraved on the tip of the probe, 11.9 mm above the M12 thread.
S** Sensitive area: Within this area the sensor signal changes when assembly parts are changed.
M*** Maximum area: The maximum signal intensity is reached if the sensitive area is completely covered.

Optional teach adapter available, part number VB2-SP1.

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Weld Nut Sensors

## Threaded Metal Barrel with Smooth Sensing Probe and 3-Wire DC Output

| Part Number/ ID Number | Features | Nut Diameter | Output | Voltage | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **NIMFE-EM12/4.0L61-UP6X-0.3XYE-RS4/S1182** 1600623 | Titanium Nitride | 5-12 mm | 3-wire DC PNP | 10-30 VDC | ≤200 | -25 to +70 | IP67 | SS | GN | YE | 0.3M/ TPE | A | 2 | A24 |
| **NIMFE-EM12/4.0L61-UN6X-0.3XYE-RS4/S1182** 1600624 | Titanium Nitride | 5-12 mm | 3-wire DC NPN | 10-30 VDC | ≤200 | -25 to +70 | IP67 | SS | GN | YE | 0.3M/ TPE | A | 1 | A24 |
| **NIMFE-EM12/4.0L61-UP6X-H1141/S1182** 1600621 | Titanium Nitride | 5-12 mm | 3-wire DC PNP | 10-30 VDC | ≤200 | -25 to +70 | IP67 | SS | GN | YE | - - | B | 2 | A24 |
| **NIMFE-EM12/4.0L61-UN6X-H1141/S1182** 1600622 | Titanium Nitride | 5-12 mm | 3-wire DC NPN | 10-30 VDC | ≤200 | -25 to +70 | IP67 | SS | GN | YE | - - | B | 1 | A24 |
| **NIMFE-M12/4.6L88-UN6X-H1141** 1600610 | | 6-12 mm | 3-wire DC NPN | 10-30 VDC | ≤200 | -25 to +70 | IP67 | CPB | GN | YE | - - | C | 1 | A24 |
| **NIMFE-EMT12/4.6L88-UN6X-H1141** 1600618 | PTFE Coated | 6-12 mm | 3-wire DC NPN | 10-30 VDC | ≤200 | -25 to +70 | IP67 | SS | GN | YE | - - | C | 1 | A24 |
| **NIMFE-EM12/4.6L88-UN6X-H1141/S1182** 1600617 | Titanium Nitride | 6-12 mm | 3-wire DC NPN | 10-30 VDC | ≤200 | -25 to +70 | IP67 | SS | GN | YE | - - | C | 1 | A24 |
| **NIMFE-M12/4.6L88-UP6X-H1141** 1600608 | | 6-12 mm | 3-wire DC PNP | 10-30 VDC | ≤200 | -25 to +70 | IP67 | CPB | GN | YE | - - | C | 2 | A24 |
| **NIMFE-EMT12/4.6L88-UP6X-H1141** 1600619 | PTFE Coated | 6-12 mm | 3-wire DC PNP | 10-30 VDC | ≤200 | -25 to +70 | IP67 | SS | GN | YE | - - | C | 2 | A24 |
| **NIMFE-EM12/4.6L88-UP6X-H1141/S1182** 1600620 | Titanium Nitride | 6-12 mm | 3-wire DC PNP | 10-30 VDC | ≤200 | -25 to +70 | IP67 | SS | GN | YE | - - | C | 2 | A24 |
| **NIMFE-EM12/4.9L88-UP6X-H1141/S1182** 1600616 | Titanium Nitride | 6-12 mm | 3-wire DC PNP | 10-30 VDC | ≤200 | -25 to +70 | IP67 | SS | GN | YE | - - | D | 2 | A24 |
| **NIMFE-M12/6.2L101-UN6X-H1141** 1600611 | | 10-20 mm | 3-wire DC NPN | 10-30 VDC | ≤200 | -25 to +70 | IP67 | CPB | GN | YE | - - | E | 1 | A24 |
| **NIMFE-EMT12/6.2L101-UN6X-H1141** 1600615 | PTFE Coated | 10-20 mm | 3-wire DC NPN | 10-30 VDC | ≤200 | -25 to +70 | IP67 | SS | GN | YE | - - | E | 1 | A24 |
| **NIMFE-M12/6.2L101-UP6X-H1141** 1600609 | | 10-20 mm | 3-wire DC PNP | 10-30 VDC | ≤200 | -25 to +70 | IP67 | CPB | GN | YE | - - | E | 2 | A24 |
| **NIMFE-EMT12/6.2L101-UP6X-H1141** 1600613 | PTFE Coated | 10-20 mm | 3-wire DC PNP | 10-30 VDC | ≤200 | -25 to +70 | IP67 | SS | GN | YE | - - | E | 2 | A24 |
| **NIMFE-EM12/6.2L101-UP6X-H1141/S1182** 1600612 | Titanium Nitride | 10-20 mm | 3-wire DC PNP | 10-30 VDC | ≤200 | -25 to +70 | IP67 | SS | GN | YE | - - | E | 2 | A24 |

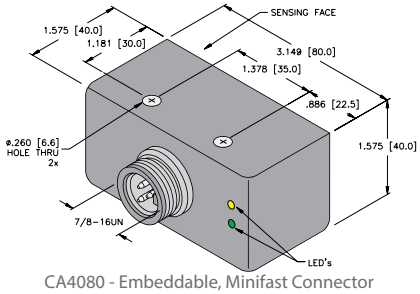
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Edge Detection Sensors

**Rectangular Metal Housing with AC or DC Outputs and Integral Connector**

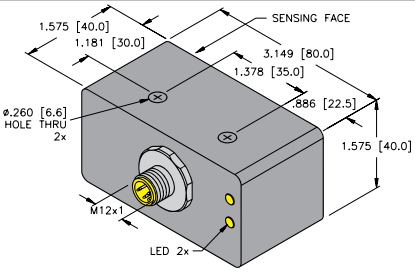
| Housing Style | Dimension Drawings |
|---|---|

A



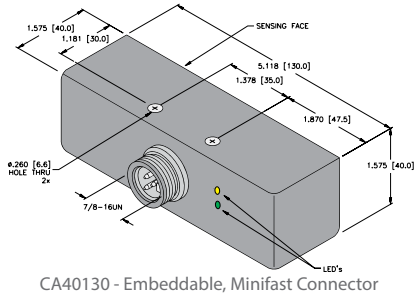

CA4080 - Embeddable, Minifast Connector

B



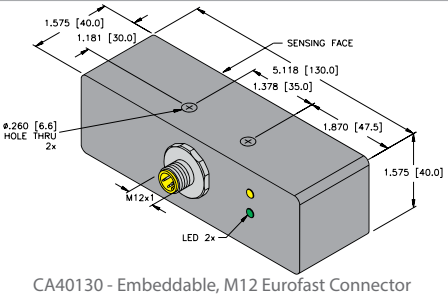

CA4080 - Embeddable, M12 Eurofast Connector

C




CA40130 - Embeddable, Minifast Connector

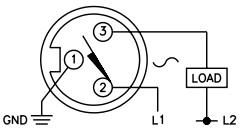
D




CA40130 - Embeddable, M12 Eurofast Connector

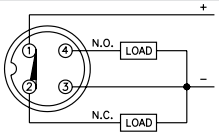
**Wiring Diagrams/Mating Cordsets**

1




Mating Cordset: RKM 30-*M

2




Mating Cordset: RK 4.4T-*

**A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox 3) | Repeatability: | ≤2% of Rated Operating Distance |

**A5 — 2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)**

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Minimum Load Current: | ≥3.0 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Inrush Current: | ≤3 A (≤20 ms, max 5 Hz) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | Power-On Effect: | Per IEC 947-5-2 |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA | Transient Protection: | Per EN 60947-5-2 |
| | AC: ≥120 mA; DC: ≥120 mA | Shock: | 30 g, 11 ms |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | AC: ≤100 mA; DC: ≤100 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Off-State (Leakage) Current: | ≤1.7 mA (AC) | | |
| | ≤1.5 mA (DC) | | |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Edge Detection Sensors

## Rectangular Metal Housing with AC or DC Outputs and Integral Connector

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi20-CA4080-ADZ30X2-B1131** 4283400 | | 20 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 30/100 | ≤400/300 | -25 to +70 | IP67 | TS | SF | GN | YE | A | 1 | A5 |
| **Bi20-CA4080-VP4X2-H1141** 1625591 | | 20 | 4-wire DC PNP | 10-65 VDC | 100 | ≤400 | -25 to +70 | IP67 | TS | SF | GN | YE | B | 2 | A4 |
| **BI20-CA4080-VP4X2-H1141/S1009** 1625590 | 250 ms Off Delay | 20 | 4-wire DC PNP | 10-65 VDC | 100 | ≤400 | -25 to +70 | IP67 | TS | SF | GN | YE | B | 2 | A4 |
| **Bi20-CA40130-ADZ30X2-B1131** 4283503 | | 20 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 30/100 | ≤400/300 | -25 to +70 | IP67 | TS | SF | GN | YE | C | 1 | A5 |
| **BI20-CA40130-ADZ30X2-B1131/S1009** 4283597 | 250 ms Off Delay | 20 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 30/100 | ≤400/300 | -25 to +70 | IP67 | TS | SF | GN | YE | C | 1 | A5 |
| **Bi20-CA40130-VP4X2-H1141** 4283599 | | 20 | 4-wire DC PNP | 10-65 VDC | 100 | ≤400 | -25 to +70 | IP67 | TS | SF | GN | YE | D | 2 | A4 |

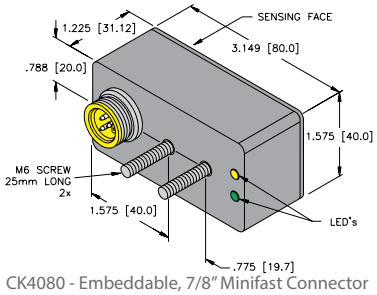
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Edge Detection Sensors

**Rectangular Plastic Housing with AC or DC Outputs and Integral Connector**

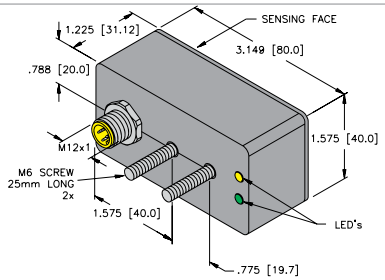
| Housing Style | Dimension Drawings |
|---|---|

A



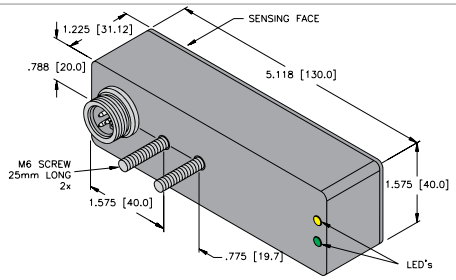

CK4080 - Embeddable, 7/8" Minifast Connector

B



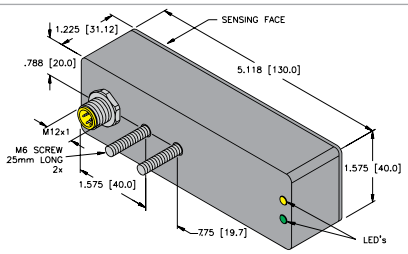

CK4080 - Embeddable, M12 Eurofast Connector

C




CK40130 - Embeddable, 7/8" Minifast Connector

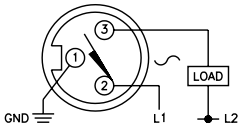
D




CK40130 - Embeddable, M12 Eurofast Connector

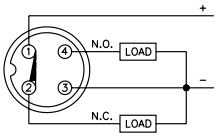
**Wiring Diagrams/Mating Cordsets**

1




Mating Cordset: RKM 30-*M

2




Mating Cordset: RK 4.4T-*

**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox 3) | Repeatability: | ≤2% of Rated Operating Distance |

**A5** — **2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)**

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Minimum Load Current: | ≥3.0 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Inrush Current: | ≤3 A (≤20 ms, max 5 Hz) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | Power-On Effect: | Per IEC 947-5-2 |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA | Transient Protection: | Per EN 60947-5-2 |
| | AC: ≥120 mA; DC: ≥120 mA | Shock: | 30 g, 11 ms |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | AC: ≤100 mA; DC: ≤100 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Off-State (Leakage) Current: | ≤1.7 mA (AC) | | |
| | ≤1.5 mA (DC) | | |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Edge Detection Sensors

## Rectangular Plastic Housing with AC or DC Outputs and Integral Connector

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi20-CK4080-ADZ30X2-B1131** 4283493 | | 20 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 30/100 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | RD | A | 1 | A5 |
| **BI20-CK4080-ADZ30X2-B1131/S1009** 4283495 | 250 ms Off Delay | 20 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 30/100 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | RD | A | 1 | A5 |
| **Bi20-CK4080-VP4X2-H1141** 4283491 | | 20 | 4-wire DC PNP | 10-65 VDC | 100 | ≤400 | -25 to +70 | IP67 | PBT | PBT | GN | YE | B | 2 | A4 |
| **BI20-CK4080-VP4X2-H1141/S1009** 4283496 | 250 ms Off Delay | 20 | 4-wire DC PNP | 10-65 VDC | 100 | ≤400 | -25 to +70 | IP67 | PBT | PBT | GN | YE | B | 2 | A4 |
| **Bi20-CK40130-ADZ30X2-B1131** 4283589 | | 20 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 30/100 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | C | 1 | A5 |
| **BI20-CK40130-ADZ30X2-B1131/S1009** 42835953 | 250 ms Off Delay | 20 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 30/100 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | C | 1 | A5 |
| **Bi20-CK40130-VP4X2-H1141** 42835911 | | 20 | 4-wire DC PNP | 10-65 VDC | 100 | ≤400 | -25 to +70 | IP67 | PBT | PBT | GN | YE | D | 2 | A4 |
| **BI20-CK40130-VP4X2-H1141/S1009** 42835963 | 250 ms Off Delay | 20 | 4-wire DC PNP | 10-65 VDC | 100 | ≤400 | -25 to +70 | IP67 | PBT | PBT | GN | YE | D | 2 | A4 |

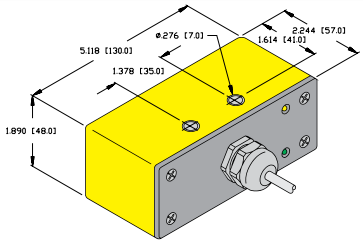
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Can Sensors

**Rectangular Plastic Housing with AC or DC Outputs and Integral Connector**

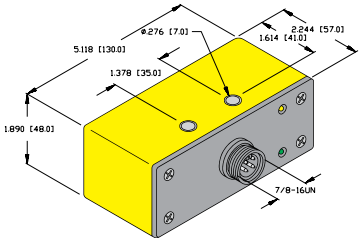
| Housing Style | Dimension Drawings |
|---|---|

A



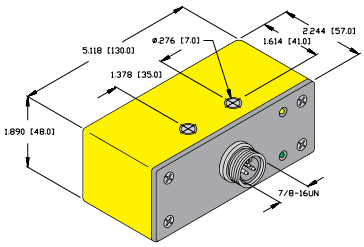

Q130 - Nonembeddable, Potted-In Cable

B




Q130 - Nonembeddable, 7/8" Minifast Connector

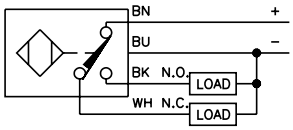
C




Q130 - Nonembeddable, 7/8" Minifast Connector

**Wiring Diagrams/Mating Cordsets**

1

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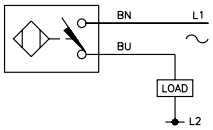


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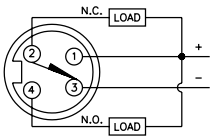
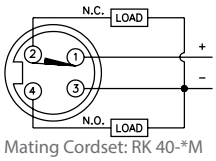


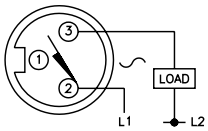

Mating Cordset: RK 40-*M

4




Mating Cordset: RK 40-*M

5




Mating Cordset: RK 30-*M

**A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current |
| | ≥170 mA on 150 mA Load Current |
| | ≥120 mA on 100 mA Load Current |
| Off-State (Leakage) Current: | ≤0.1 mA |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) |
| | ≤20 mA (Uprox+, Uprox 3) |
| Time Delay Before Availability: | ≤8 ms |
| Power-On Effect: | Per IEC 947-5-2 |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Transient Protection: | Per EN 60947-5-2 |
| Temperature Drift: | ≤±10% |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

**A5 — 2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)**

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA |
| | AC: ≥120 mA; DC: ≥120 mA |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA (AC) |
| | ≤1.5 mA (DC) |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤3 A (≤20 ms, max 5 Hz) |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Can Sensors

**Rectangular Plastic Housing with AC or DC Outputs and Integral Connector**

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni30-Q130-VP4X2** 15179 | Comp. Output | 30 | 4-wire DC PNP | 10-65 VDC | 60 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | 2M/ PVC | A | 1 | A4 |
| **Ni30-Q130-ADZ30X2** 42095 | | 30 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 30 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | RD | 2M/ PVC | A | 2 | A5 |
| **Ni30-Q130-VN4X2-B2141** 15180 | Comp. Output | 30 | 4-wire DC NPN | 10-65 VDC | 60 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | - - | B | 3 | A4 |
| **Ni30-Q130-VP4X2-B2141** 1518001 | Comp. Output | 30 | 4-wire DC PNP | 10-65 VDC | 60 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | - - | B | 4 | A4 |
| **Ni30-Q130-ADZ30X2-B1131** 42100 | | 30 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 30 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | - - | C | 5 | A5 |



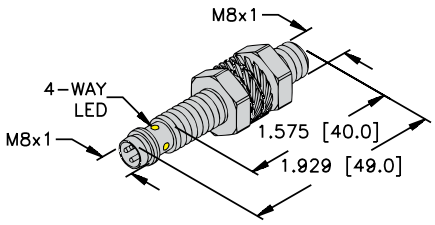
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Inductive Magnetic Sensors

**Threaded Metal Barrels Designed to Sense a Magnetic Field**

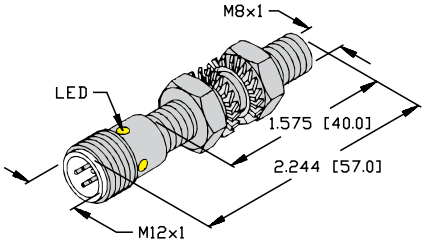
| Housing Style | Dimension Drawings |
|---|---|

A



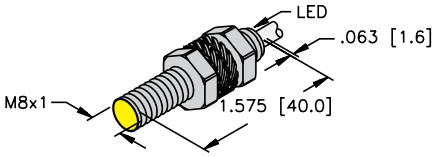

8 mm - Barrel, M8 Picofast Connector

B




8 mm - Barrel, M12 Eurofast Connector

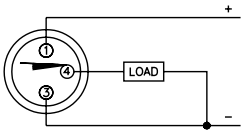
C




8 mm - Barrel, Potted-In Cable

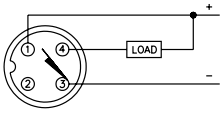
**Wiring Diagrams/Mating Cordsets**

1



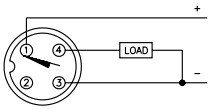

Mating Cordset: PKG 3M-*

2



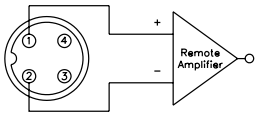

Mating Cordset: RK 4T-*

3



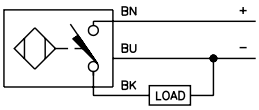

Mating Cordset: RK 4T-*

4




Mating Cordset: RK 4.21T-*

5




**A25** — **3-wire DC Magnetic Barrel (AP, AN)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Temperature Drift: | ≤±15% |
| Differential Travel (Hysteresis): | 1-10% | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Shock: | 30 g, 11 ms |
| | ≥170 mA on 150 mA Load Current | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| No-Load Current: | ≤15 mA | Repeatability: | ≤0.3% of Full Scale |
| Off-State (Leakage) Current: | ≤0.1 mA | | |

**A27** — **2-wire DC Namur Magnetic Barrel (Y1)**

| | | | |
|---|---|---|---|
| Differential Travel (Hysteresis): | 1-10% | Temperature Drift: | ≤±10% |
| Nominal Voltage: | 8.2 VDC (EN60947-5-6) | Reverse Polarity Protection: | Incorporated |
| Load Resistance: | 1000 Ω | Wire-Break Protection: | Realized in Amplifier |
| Non-activated Current Consumption: | ≤1.2 mA | Transient Protection: | Realized in Amplifier |
| Activated Current Consumption: | ≥2.1 mA | Shock: | 30 g, 11 ms |
| Recommended Switching Point for Remote | >1.2 to <2.1 mA, | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Amplifier: | typ. 1.55 mA ON/1.75 mA OFF | Repeatability: | ≤0.3% of Full Scale |

**Note**:
Use with Turck actuation magnet to achieve longest switching distance.
See page I18 for part numbers and details.

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Inductive Magnetic Sensors

**Threaded Metal Barrels Designed to Sense a Magnetic Field**

| Part Number/ ID Number | Features | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BIM-EG08-AP6X-V1131** 4621314 | Up to 78 mm Range | 3-wire DC PNP | 10-30 VDC | 1000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | - - | A | 1 | A25 |
| **BIM-EG08-AN6X-H1341** 4621301 | Up to 78 mm Range | 3-wire DC NPN | 10-30 VDC | 1000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | - - | B | 2 | A25 |
| **BIM-EG08-AP6X-H1341** 4621311 | Up to 78 mm Range | 3-wire DC PNP | 10-30 VDC | 1000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | - - | B | 3 | A25 |
| **BIM-EG08-Y1X-H1341** 1074001 | Up to 78 mm Range | 2-wire DC NAMUR | 5-30 VDC | 1000 | Remote | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | - - | B | 4 | A27 |
| **BIM-EG08-AP6X** 4621310 | Up to 78 mm Range | 3-wire DC PNP | 10-30 VDC | 1000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | C | 5 | A25 |

We reserve the right to make technical alterations without prior notice.

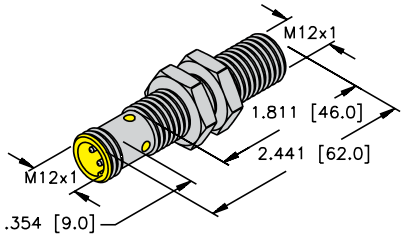
# Specialty Sensors | Inductive Magnetic Sensors

**Threaded Metal Barrels Designed to Sense a Magnetic Field**

**Housing Style**

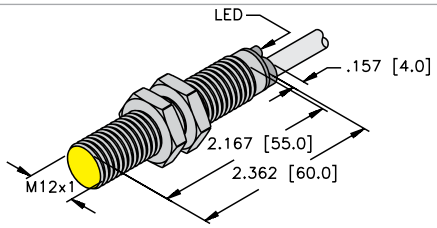
**Dimension Drawings**

A



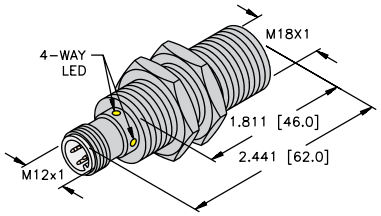

12 mm - M12 Eurofast Connector

B




12 mm - Potted-In Cable

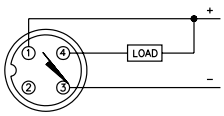
C




18 mm - M12 Eurofast Connector

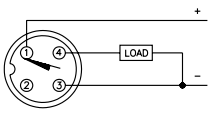
**Wiring Diagrams/Mating Cordsets**

1



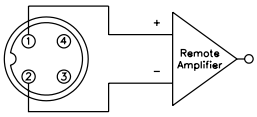

Mating Cordset: RK 4T-*

2



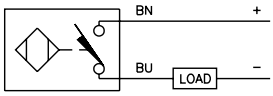

Mating Cordset: RK 4T-*; P-RKGV 4.43T-1699XL-*

3




Mating Cordset: RK 4.21T-*

4

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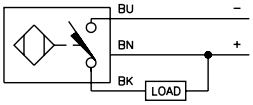
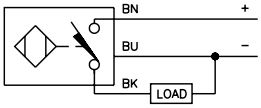
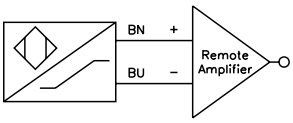



6




7




**A25** — **3-wire DC Magnetic Barrel (AP, AN)**

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | 1-10% |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current<br>≥170 mA on 150 mA Load Current |
| No-Load Current: | ≤15 mA |
| Off-State (Leakage) Current: | ≤0.1 mA |
| Temperature Drift: | ≤±15% |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤0.3% of Full Scale |

**A26** — **2-wire DC Magnetic Barrel (AG)**

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | 1-10% |
| Voltage Drop Across Conducting Sensor: | ≤4.2 V Polarized |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current |
| Minimum Load Current: | ≥3.0 mA |
| Temperature Drift: | ≤±15% |
| Off-State (Leakage) Current: | ≤0.8 mA |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤0.3% of Full Scale |

**A27** — **2-wire DC Namur Magnetic Barrel (Y1)**

| | |
|---|---|
| Differential Travel (Hysteresis): | 1-10% |
| Nominal Voltage: | 8.2 VDC (EN60947-5-6) |
| Load Resistance: | 1000 Ω |
| Non-activated Current Consumption: | ≤1.2 mA |
| Activated Current Consumption: | ≥2.1 mA |
| Recommended Switching Point for Remote Amplifier: | >1.2 to <2.1 mA, typ. 1.55 mA ON/1.75 mA OFF |
| Temperature Drift: | ≤±10% |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Realized in Amplifier |
| Transient Protection: | Realized in Amplifier |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤0.3% of Full Scale |

**Note**:
Use with Turck actuation magnet to achieve longest switching distance.
See page I18 for part numbers and details.

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Inductive Magnetic Sensors

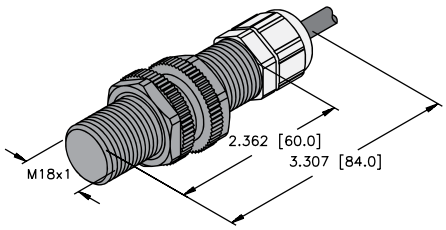
## Threaded Metal Barrels Designed to Sense a Magnetic Field

| Part Number/ ID Number | Features | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BIM-M12E-AN4X-H1141** 1579914 | Up to 90 mm Range | 3-wire DC NPN | 10-65 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A25 |
| **BIM-EM12E-AP4X-H1141** 1579915 | Up to 90 mm Range | 3-wire DC PNP | 10-65 VDC | 1000 | ≤200 | -25 to +70 | IP67 | SS | POM | N/A | YE | A | 2 | A25 |
| **BIM-M12E-AP4X-H1141** 1579913 | Up to 90 mm Range | 3-wire DC PNP | 10-65 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 2 | A25 |
| **BIM-M12E-AP6X-H1141/S1751** 4681289 | FM Approved | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 2 | A25 |
| **BIM-M12E-Y1X-H1141** 1074003 | Up to 90 mm Range | 2-wire DC NAMUR | 5-30 VDC | 1000 | Remote | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 3 | A27 |
| **BIM-M12E-AG4X** 44302 | Up to 90 mm Range | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | B | 4 | A26 |
| **BIM-M12E-AN4X** 1579912 | Up to 90 mm Range | 3-wire DC PNP | 10-65 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | B | 5 | A25 |
| **BIM-EM12E-AP4X** 1579918 | Up to 90 mm Range | 3-wire DC PNP | 10-65 VDC | 1000 | ≤200 | -25 to +70 | IP67 | SS | POM | N/A | YE | B | 6 | A25 |
| **BIM-M12E-AP4X/S90** 1579911 | Up to 90 mm Range | 3-wire DC PNP | 10-65 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | B | 6 | A25 |
| **BIM-EM12E-Y1X** 1070036 | Up to 90 mm Range | 2-wire DC NAMUR | 5-30 VDC | 1000 | Remote | -25 to +70 | IP67 | SS | POM | N/A | YE | B | 7 | A27 |
| **BIM-M12E-Y1X** 1074002 | Up to 90 mm Range | 2-wire DC NAMUR | 5-30 VDC | 1000 | Remote | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | B | 7 | A27 |
| **BIM-EM18M-AP4X-H1141** 1579933 | Up to 90 mm Range | 3-wire DC PNP | 10-65 VDC | 1000 | ≤200 | -25 to +70 | IP67 | SS | POM | N/A | YE | C | 2 | A25 |

We reserve the right to make technical alterations without prior notice.

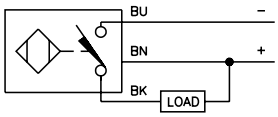
# Specialty Sensors | Submersible Sensors

**Threaded Plastic Barrel Sensors with Cable for Underwater Applications**

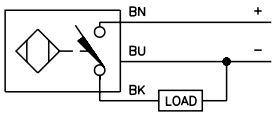
| Housing Style | Dimension Drawings |
|---|---|
| | A   18 mm - Embeddable, Full Threading, Potted-In Cable |

**Wiring Diagrams/Mating Cordsets**

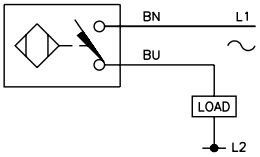
1




2




3




**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

**A6** — **2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)**

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Power-On Effect: | Per IEC 947-5-2 |
| | AC: ≤100 mA; DC: ≤100 mA | Transient Protection: | Per EN 60947-5-2 |
| Off-State (Leakage) Current: | ≤1.7 mA | Shock: | 30 g, 11 ms |
| Minimum Load Current: | ≥3.0 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Submersible Sensors

## Threaded Plastic Barrel Sensors with Cable for Underwater Applications

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi5-P18-AN6/S139-S1261** 1650239 | Submersible | 5 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP68 | POM | PA 12 | N/A | N/A | 2M/TPE | A | 1 | A4 |
| **Bi5-P18-AP6/S139-S1261** 1650234 | Submersible | 5 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP68 | POM | PA 12 | N/A | N/A | 2M/TPE | A | 2 | A4 |
| **Bi8U-P18-AP6/S139-S1261** 1650230 | Submersible, Uprox | 8 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | POM | PA 12 | N/A | N/A | 2M/TPE | A | 2 | A4 |
| **Bi5-P18-AZ3/S139-S1261** 1384307 | Submersible | 5 | 2-wire AC | 20-250 VAC | 20 | ≤400 | -25 to +70 | IP68 | POM | PA 12 | N/A | N/A | 2M/TPE | A | 3 | A6 |

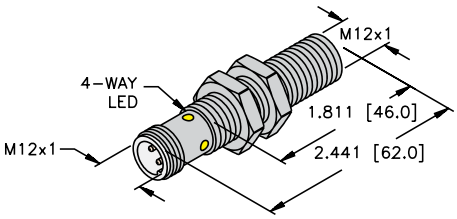
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Selective Metal Sensors

**Threaded Barrel Sensors Designed to Sense Nonferrous Metals Only**

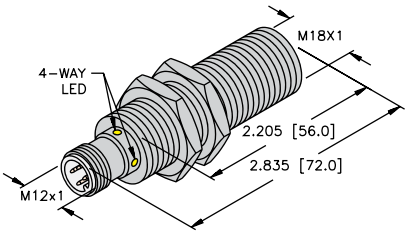
| Housing Style | Dimension Drawings |
|---|---|

A



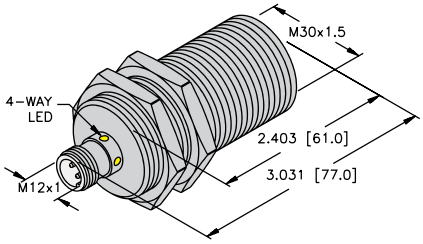

12 mm - Embeddable, M12 Eurofast Quick Disconnect

B



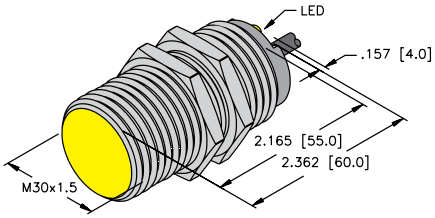

18 mm - Embeddable, M12 Eurofast Quick Disconnect

C



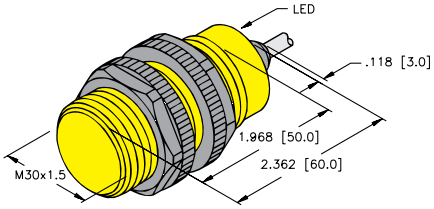

30 mm - Embeddable, M12 Eurofast Quick Disconnect

D




30 mm - Embeddable, Potted-In Cable

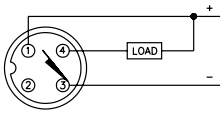
E




30 mm - Embeddable, Potted-In Cable, Partial Threading

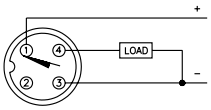
**Wiring Diagrams/Mating Cordsets**

1



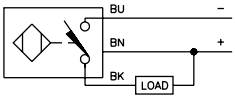

Mating Cordset: RKV 4T-*

2

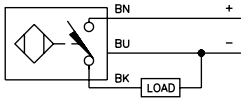



Mating Cordset: RKV 4T-*

3




4




**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox 3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Selective Metal Sensors

## Threaded Barrel Sensors Designed to Sense Nonferrous Metals Only

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi3NF-EM12HE-AP6X2-H1141** 1615001 | Senses nonferrous metals only | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤200 | 0 to +60 | IP67 | SS | SF | GN | YE | - - | A | 2 | A4 |
| **Bi5NF-EM18HE-AN6X2-H1141** 1615004 | Senses nonferrous metals only | 5 | 3-wire DC NPN | 10-30 VDC | 2500 | ≤200 | 0 to +60 | IP67 | SS | SF | GN | YE | - - | B | 1 | A4 |
| **Bi5NF-EM18HE-AP6X2-H1141** 1615000 | Senses nonferrous metals only | 5 | 3-wire DC PNP | 10-30 VDC | 2500 | ≤200 | 0 to +60 | IP67 | SS | SF | GN | YE | - - | B | 2 | A4 |
| **Bi10NF-EM30HE-AN6X2-H1141** 1615005 | Senses nonferrous metals only | 10 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | 0 to +60 | IP67 | SS | SF | GN | YE | - - | C | 1 | A4 |
| **Bi10NF-EM30HE-AP6X2-H1141** 1615002 | Senses nonferrous metals only | 10 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | 0 to +60 | IP67 | SS | SF | GN | YE | - - | C | 2 | A4 |
| **Bi10NF-M30-AN6X** 16161 | Senses nonferrous metals only | 10 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | 0 to +60 | IP67 | CPB | PA 12 | N/A | YE | 2M/ PVC | D | 3 | A4 |
| **Bi10NF-M30-AP6X** 16061 | Senses nonferrous metals only | 10 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | 0 to +60 | IP67 | CPB | PA 12 | N/A | YE | 2M/ PVC | D | 4 | A4 |
| **Bi10NF-S30-AN6X** 16215 | Senses nonferrous metals only | 10 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | 0 to +60 | IP67 | PA 12 | PA 12 | N/A | YE | 2M/ PVC | E | 3 | A4 |
| **Bi10NF-S30-AP6X** 16115 | Senses nonferrous metals only | 10 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | 0 to +60 | IP67 | PA 12 | PA 12 | N/A | YE | 2M/ PVC | E | 4 | A4 |



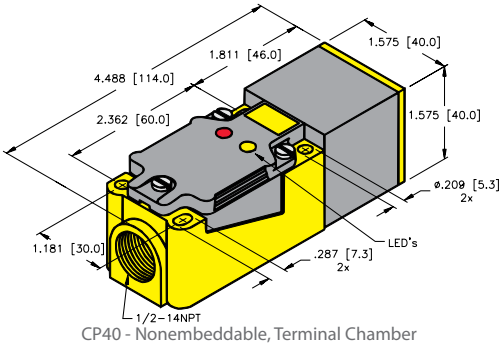
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Selective Metal Sensors

**Rectangular and Barrel Sensors Designed to Sense Nonferrous or Ferrous Metals Only**

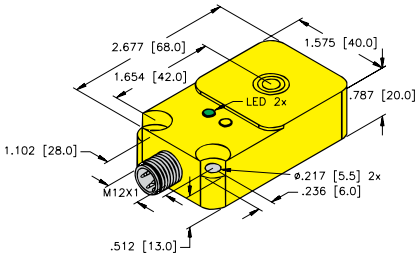
| Housing Style | Dimension Drawings |
|---|---|

A



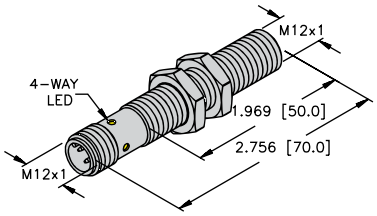

CP40 - Nonembeddable, Terminal Chamber

B



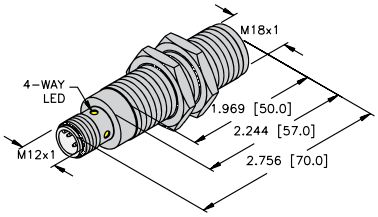

Q20 - Nomembeddable, M12 Eurofast Quick Disconnect

C




12 mm - Embeddable, M12 Eurofast Quick Disconnect

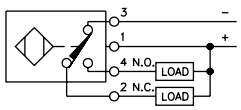
D



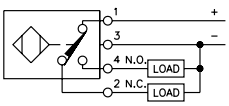

18 mm - Embeddable, M12 Eurofast Quick Disconnect

**Wiring Diagrams/Mating Cordsets**

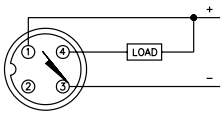
1




2

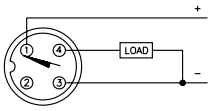



3




Mating Cordset: RK 4T-*

4




Mating Cordset: RK 4T-*

**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox 3) | Repeatability: | ≤2% of Rated Operating Distance |

**A28** — **3-wire DC Ferrous Only Sensing (AP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Temperature Drift: | ≤±10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤2.5 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥120 mA on 100 mA Load Current | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤20 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Off-State (Leakage) Current: | ≤0.1 mA | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Selective Metal Sensors

**Rectangular and Barrel Sensors Designed to Sense Nonferrous or Ferrous Metals Only**

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni20NF-CP40-VN4X2** 15282 | Senses nonferrous metals only | 20 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | 0 to +60 | IP67 | PBT | PBT | GN | YE | A | 1 | A4 |
| **Ni20NF-CP40-VP4X2** 15082 | Senses nonferrous metals only | 20 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | 0 to +60 | IP67 | PBT | PBT | GN | YE | A | 2 | A4 |
| **Ni25NF-Q20-AN6X2-H1141** 1602710 | Senses nonferrous metals only | 25 | 3-wire DC NPN | 10-30 VDC | 25 | ≤200 | 0 to +60 | IP67 | PBT | PBT | GN | YE | B | 3 | A4 |
| **Bi2.5FE-EM12FE-AP6X-H1141** 1615011 | Senses ferrous metals only | 2.5 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤100 | -25 to +70 | IP67 | SS | SS | N/A | YE | C | 4 | A28 |
| **Bi4.5FE-EM18FE-AP6X-H1141** 1615012 | Senses ferrous metals only | 4.5 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤100 | -25 to +70 | IP67 | SS | SS | N/A | YE | D | 4 | A28 |

We reserve the right to make technical alterations without prior notice.

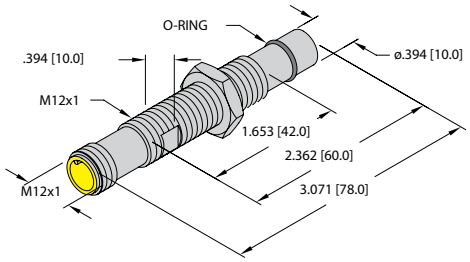
# Specialty Sensors | High Pressure

## Partially Threaded Metal Barrel Pressure Resistant Sensors

### Housing Style

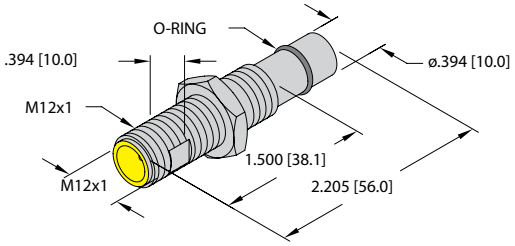
### Dimension Drawings

A



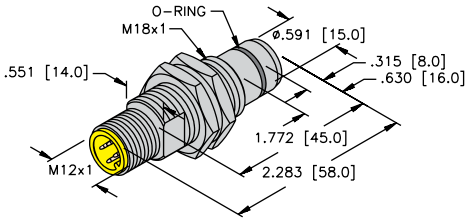

12 mm - Embeddable, M12 Eurofast Connection, Pressure Resistant Barrel Sensor

B



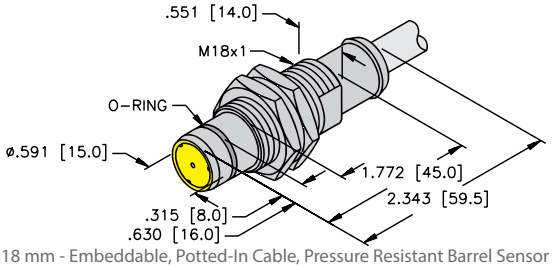

12 mm - Embeddable, M12 Eurofast Connection, Pressure Resistant Barrel Sensor

C




18 mm - Embeddable, M12 Eurofast Connection, Pressure Resistant Barrel Sensor

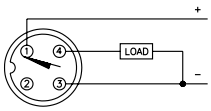
D




18 mm - Embeddable, Potted-In Cable, Pressure Resistant Barrel Sensor

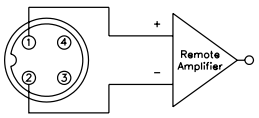
### Wiring Diagrams/Mating Cordsets

1



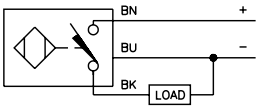

Mating Cordset: RKV 4T-*

2




Mating Cordset: RKV 4.21T-*

3




### A1 — 2-wire DC NAMUR - (Y0 and Y1)

| | |
|---|---|
| Differential Travel (Hysteresis): | 1-10% (5% typical) |
| Nominal Voltage: | 8.2 VDC (EN60947-5-6) |
| Load Resistance: | 1000 Ω |
| Non-Activated Current Consumption: | ≥2.1 mA |
| Activated Current Consumption: | ≤1.2 mA |
| Recommended Switching Point for Remote Amplifier: | >1.2 to <2.1 mA, typ. 1.55 mA ON/1.75 mA OFF |
| Power-On Effect: | Realized in Amplifier |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Realized in Amplifier |
| Transient Protection: | Realized in Amplifier |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

### A29 — 3-wire DC High Pressure (AP)

| | |
|---|---|
| Ripple: | ≤20% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤2 V, ≤1.8 V (Ext. Range) |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current |
| No-Load Current: | ≤10 mA, ≤15 mA (Ext. Range) |
| Off-State (Leakage) Current: | ≤0.1 mA |
| Temperature Drift: | ≤15%, ≤±10% (Ext. Range) |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | High Pressure

## Partially Threaded Metal Barrel Pressure Resistant Sensors

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BID1.5-G120KK-AP6-H1141** 1682001 | 500 bar | 1.5 | 3-wire DC PNP | 10-30 VDC | 600 | ≤200 | -25 to +80 | IP68 | SS | CER | N/A | N/A | - - | A | 1 | A29 |
| **BID1.5-G120-AP6-H1141** 1682000 | 500 bar | 1.5 | 3-wire DC PNP | 10-30 VDC | 600 | ≤200 | -25 to +80 | IP68 | SS | CER | N/A | N/A | - - | B | 1 | A29 |
| **BID2-G180-AP6-H1141/S212** 16885 | 500 bar static/350 bar dynamic | 2 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +85 | IP67 | SS | PA 12 | N/A | N/A | - - | C | 1 | A29 |
| **BID2-G180-Y0-H1141/S212** 1088500 | 500 bar static/350 bar dynamic | 2 | 2-wire Namur | 5-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | N/A | - - | C | 2 | A1 |
| **BID2-G180-AP6/S212** 1688003 | 500 bar static/350 bar dynamic | 2 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +85 | IP67 | SS | PA 12 | N/A | N/A | 2M/TPU | D | 3 | A29 |

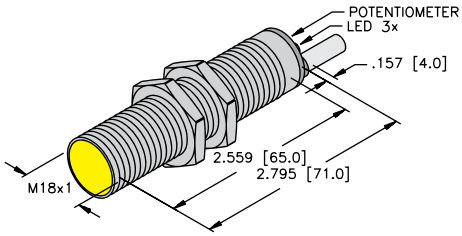
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Rotational Speed Monitor

**Threaded Metal Barrel for Target Detection on a Spinning Shaft**

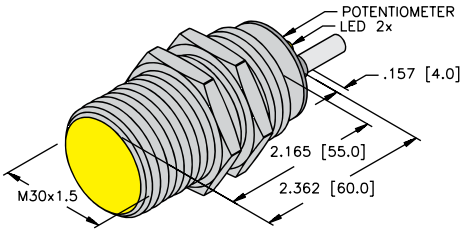
| Housing Style | Dimension Drawings |
|---|---|

A



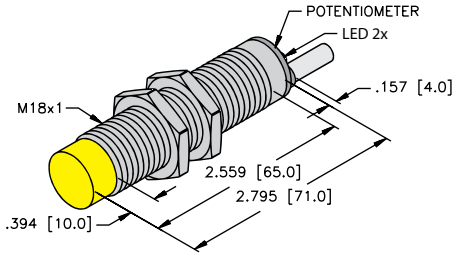

18 mm - Embeddable Rotational Speed Monitor, Potted-In Cable

B



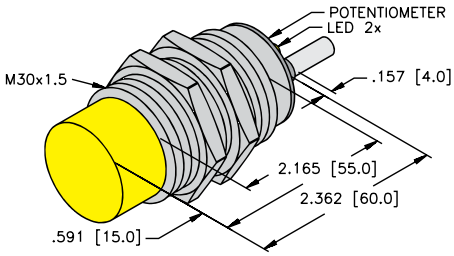

30 mm - Embeddable Rotational Speed Monitor, Potted-In Cable

C




18 mm - Nonembeddable Rotational Speed Monitor, Potted-In Cable

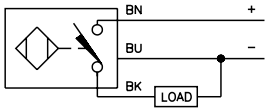
D




30 mm - Nonembeddable Rotational Speed Monitor, Potted-In Cable

**Wiring Diagrams/Mating Cordsets**

1




**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox 3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Rotational Speed Monitor

**Threaded Metal Barrel for Target Detection on a Spinning Shaft**

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | End Cap | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **DBi5U-M18E-AP4X3** 1582236 | Rotational Speed Monitor | 5 | 3-wire DC PNP | 10-65 VDC | 0.05-50 | ≤200 | -30 to +85 | IP67 | CPB | PBT | EPTR | GN | YE/BU | 2M/PVC | A | 1 | A4 |
| **DBi10U-M30-AP4X2** 1582231 | Rotational Speed Monitor | 10 | 3-wire DC PNP | 10-65 VDC | 0.05-50 | ≤200 | -30 to +85 | IP67 | CPB | PBT | EPTR | GN | YE/BU | 2M/PVC | B | 1 | A4 |
| **DNI12U-M18E-AP4X3** 1582235 | Rotational Speed Monitor | 12 | 3-wire DC PNP | 10-65 VDC | 0.05-50 | ≤200 | -30 to +85 | IP67 | CPB | PBT | EPTR | GN | YE/BU | 2M/PVC | C | 1 | A4 |
| **DNI20U-M30-AP4X3** 1582233 | Rotational Speed Monitor | 20 | 3-wire DC PNP | 10-65 VDC | 0.05-50 | ≤200 | -30 to +85 | IP67 | CPB | PBT | EPTR | GN | YE/BU | 2M/PVC | D | 1 | A4 |



We reserve the right to make technical alterations without prior notice.

Notes

Notes

# Analog Sensors Selection Guide

| Embeddable/Nonembeddable Rectangular | | | |
|---|---|---|---|
| | | | |
| **Housing** | **8 mm** | **14 mm** | **20 mm** |
| **Sensing Range** | **7 mm** | **10 mm** | **15 mm** |
| **Pages** | **D5** | **D5** | **D5** |

| Embeddable/Nonembeddable Rectangular | | | |
|---|---|---|---|
| | | | |
| **Housing** | **40 mm** | **40 mm** | **80 mm** |
| **Sensing Range** | **15 - 25 mm** | **15 - 25 mm** | **50 mm** |
| **Pages** | **D7** | **D7** | **D7** |

| Embeddable/Nonembeddable Barrels | | | | |
|---|---|---|---|---|
| | | | | |
| **Housing** | **4 mm** | **5 mm** | **6.5 mm** | **8 mm** |
| **Sensing Range** | **1.5 mm** | **1.5 mm** | **1.5 mm** | **1.5 mm** |
| **Pages** | **D9** | **D9** | **D9** | **D9** |

We reserve the right to make technical alterations without prior notice.

# Analog Sensors Selection Guide

| Embeddable/Nonembeddable Barrels | | | |
|---|---|---|---|
| | | | |
| **Housing** | **12 mm** | **12 mm** | **18 mm** |
| **Sensing Range** | **2 - 5 mm** | **2 - 5 mm** | **5 - 10 mm** |
| **Pages** | **D11** | **D11** | **D11** |

| Embeddable/Nonembeddable Barrels | | | |
|---|---|---|---|
| | | | |
| **Housing** | **18 mm** | **30 mm** | **30 mm** |
| **Sensing Range** | **5 - 10 mm** | **10 - 15 mm** | **10 -15 mm** |
| **Pages** | **D13** | **D13** | **D13** |

| Rings and Probe Style | | | |
|---|---|---|---|
| | | | |
| **Housing** | **14 mm** | **80 mm** | **18 mm** |
| **Sensing Range** | **20 mm** | **50 mm** | **40 - 70 mm** |
| **Pages** | **D15** | **D15** | **D15** |

We reserve the right to make technical alterations without prior notice.

# Analog Sensor Part Number Key

| B | I | 15 | | - | | M | 30 | | - | LIU | | | Wiring Option* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

**Mounting**
B = embeddable
N = nonembeddable
W = position

**Principle of Operation**
I = inductive
IM = inductive magnet operated

**Rated Operating Distance (mm)**

**Sensing Characteristics**
**R** = ring sensor

**Housing Material Modifier**
**E** = stainless steel

**Housing Style**

**Barrel - Metal**
G = full threading, generally chrome plated brass
M = partial threading, chrome plated brass

**Rectangular**
Q = metal or plastic, various rectangular styles

**Limit Switch**
CK = Stubby®, short plastic, various rectangular styles
CP = Combiprox®, plastic housing, terminal chamber base with removable sensor

**Ring**
Q = small rectangular plastic housing, static output

**Housing Diameter or Height (mm)**

**Secondary Barrel Modifier**
E = extended barrel length

**Output**
LF = frequency output
LI(LU) = linear analog output current (LI, 15-30 VDC) or voltage (LU, 15-30 VDC)
LIU = linear analog output (current and voltage, 15-30 VDC)
SIU = analog output (non-linear)

**Modifier**

**Number of LEDs**
(blank) = no LEDs
X = 1 LED

**NOTE:**
Part number keys are to assist in identification only.
Verify new part numbers with factory; some configurations are not possible.

*See below for Wiring Options

We reserve the right to make technical alterations without prior notice.

## Wiring Options*

**A. Connectorized Sensor**

| BI15 - M30 - LIU - | H1 | 1 | 4 | 1 |
|---|---|---|---|---|

**Connector Family**
H1 = Eurofast®, M12x1, metal or plastic, male
V1 = Picofast®, snap and M8x1, metal, male (Q08 snap only)

**Connector/Sensor Transition**
1 = straight

**Number of Pins**

**Factory Code**
**Example:**
1 = standard wiring

**B. Potted Cable**

| Bi 5 - M18 - LIU - | 7M |
|---|---|

**Cable Length**
Blank = 2 Meter cable
7M = 7 Meter cable

# Analog Sensors

## Common Applications for Linear Analog Sensors

### Position Feeding Over an Angled Target

- Actuation over an angled surface
- Provide a 4-20 mA and/or 0-10 V output based upon target position

### Eccentricity Sensing or Absolute Angle Positioning

- Sense pieces of different shapes and sizes (of ferritic or nonferritic materials)
- Provide analog feedback on rotary cam position applications

### Direct Actuation

- The highest accuracy is achieved if the sensor is directly actuated by the target. In order to utilize the full measuring range, it is important to work with an appropriately sized target. This may also be a moving part of the machine.

### Part Deflection

- Tensile stress control applications
- Measure the deflection of a metal target by using a guide mechanism and an analog sensor.

### Probe Style Analog+ Proximity Sensor

- These sensors can be used to detect the depth of a blind hole or be used with a ring attached to a control arm that moves the ring over the probe

### Identification and Sorting of Small Parts

- When screws, rivets, or other small objects fall through a ring style sensor, each part generates a characteristic output signal which can be easily identified

### Position Control

- Position control can be easily accomplished by means of a cone shaped target. Measuring ranges can be adapted to specific sensing needs by using targets with an appropriate conical shape. These sensors enable precise and simple position detection, even if the targets feature a slight offset.

### Thickness Measurement

- Detection and measurement of tools (drill bits, taps, etc.) can be accomplished to ensure proper size

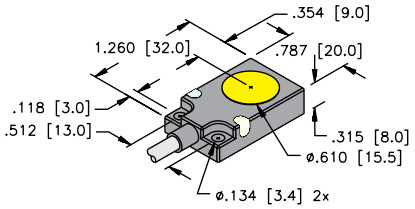
We reserve the right to make technical alterations without prior notice.

# Analog Sensors | Q08, Q14, & Q20

## Top Sensing Qpak Housing

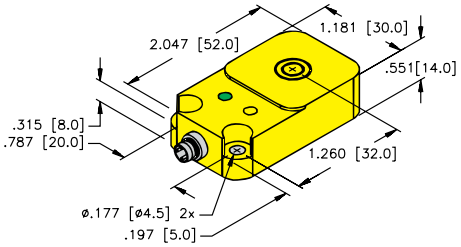
| Housing Style | Dimension Drawings |
|---|---|

A



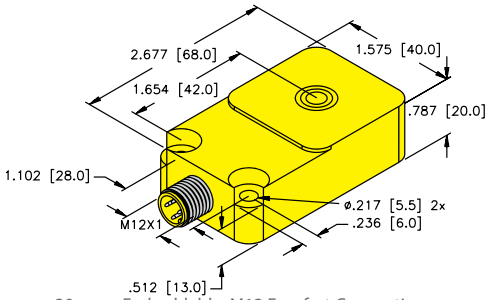

8 mm - Embeddable, Potted-In Cable

B




14 mm - Embeddable, M8 Picofast Connection

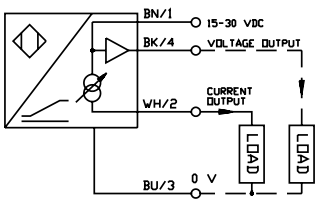
C



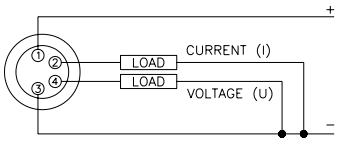

20 mm - Embeddable, M12 Eurofast Connection

### Wiring Diagrams/Mating Cordsets

1

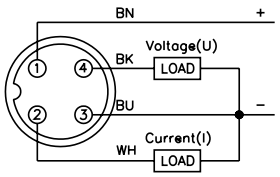



2



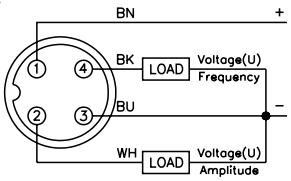

Mating Cordset: PKG 4M-*

3




Mating Cordset: RK 4.4T-*

4




Mating Cordset: RK 4.4T

### A7 — 3 and 4-wire DC Analog - (LIU, SIU)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Transient Protection: | Per EN 60947-5-2 |
| No-Load Current: | ≤8.0 mA | Shock: | 30 g, 11 ms |
| Load Resistance Voltage Output: | 0-10 V/$R_L$ ≥4.7 kΩ | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Load Resistance Current Output: | 0-20 mA/$R_L$ ≤0.4 kΩ | Repeatability: | ≤1% of measuring range \|A-B\| |
| Temperature Drift: | ±0.06% / °C | | (0.5% after 30 min. warm up) |
| LIU5: | 4-20 mA, 0-10 V | Short-Circuit Protection: | Yes |
| LIU2: | 4-20 mA, 2-10 V | Reverse Polarity Protection: | Incorporated |

### A8 — 3 and 4-wire DC Analog - (LU)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Short-Circuit Protection: | Yes |
| No-Load Current: | ≤8.0 mA | Wire-Break Protection: | Yes |
| Load Resistance Voltage Output: | 0-10 V/$R_L$ ≥4.7 kΩ | Shock: | 30 g, 11 ms |
| Temperature Drift: | ±0.06% / °C | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Reverse Polarity Protection: | Incorporated | Repeatability: | ≤1% of measuring range \|A-B\| |
| Transient Protection: | Per EN 60947-5-2 | | (0.5% after 30 min. warm up) |

We reserve the right to make technical alterations without prior notice.

# Analog Sensors | Q08, Q14, & Q20

## Top Sensing Qpak Housing

| Part Number/ ID Number | Features | Measuring Range (mm) | Response Freq. (Hz) | Linearity Deviation (% of full scale) | Output | Voltage | Output Voltage/ Current | Operating Temp. (°C) | Protection | Slew Rate V/ms, mA/ms | Housing | Face | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi7-Q08-LIU** 1534605 | | 1-4 | 200 | 0.05 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 4, 8 | Zinc | PA 12 | 2M/ TPU | A | 1 | A7 |
| **Bi10-Q14-LIU-V1141** 1534603 | | 3-8 | 140 | 0.03 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 2.8, 5.6 | PBT | PBT | - - | B | 2 | A7 |
| **Bi15-Q20-LIU-H1141** 1534601 | | 4-11 | 110 | 0.03 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 2.2, 4.4 | PBT | PBT | - - | C | 3 | A7 |
| **Bi15-Q20-2LU-H1141/S950** 1534611 | All Metal Detection | N/A | 110 | N/A | 4-wire DC Voltage | 15-30 VDC | 0-10 VDC Amplitude, 0-10 VDC Phase | -25 to +70 | IP67 | 2.2 | PBT | PBT | - - | C | 4 | A8 |

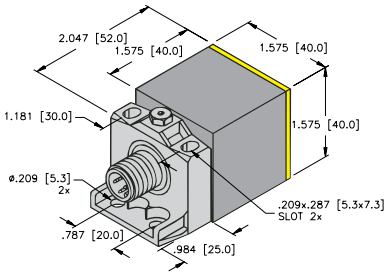
We reserve the right to make technical alterations without prior notice.

# Analog Sensors | CK40, CP40, & Q80

## Rectangular Housings with Long Range

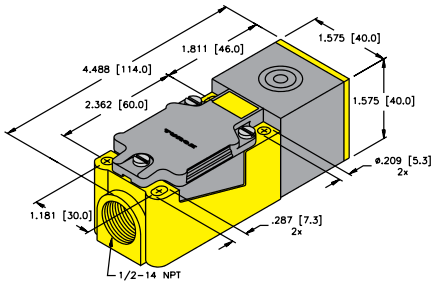
| Housing Style | Dimension Drawings |
|---|---|

A



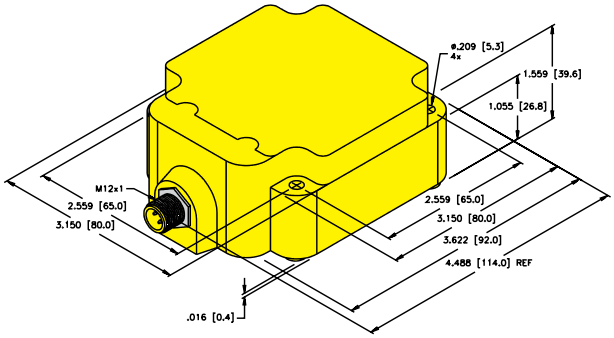

40 mm - Embeddable and Non-embeddable, M12 Eurofast Connection

B




40 mm - Embeddable and Nonembeddable, Terminal Chamber

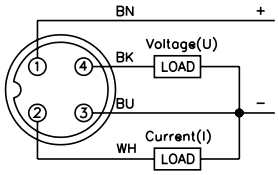
C




80 mm - Nonembeddable, M12 Eurofast Connector

### Wiring Diagrams/Mating Cordsets

1




Mating Cordset: RK 4.4T-*

### A7 — 3 and 4-wire DC Analog - (LIU, SIU)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Transient Protection: | Per EN 60947-5-2 |
| No-Load Current: | ≤8.0 mA | Shock: | 30 g, 11 ms |
| Load Resistance Voltage Output: | 0-10 V/$R_L$≥4.7 kΩ | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Load Resistance Current Output: | 0-20 mA/$R_L$≤0.4 kΩ | Repeatability: | ≤1% of measuring range \|A-B\| |
| Temperature Drift: | ±0.06% / °C | | (0.5% after 30 min. warm up) |
| LIU5: | 4-20 mA, 0-10 V | Short-Circuit Protection: | Yes |
| LIU2: | 4-20 mA, 2-10 V | Reverse Polarity Protection: | Incorporated |

We reserve the right to make technical alterations without prior notice.

# Analog Sensors | CK40, CP40, & Q80

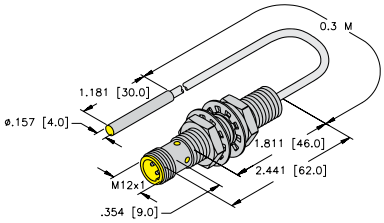
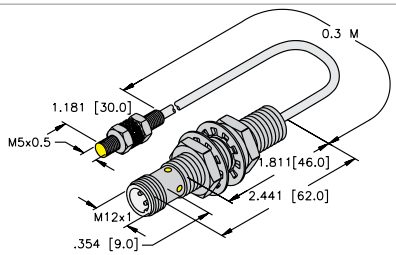
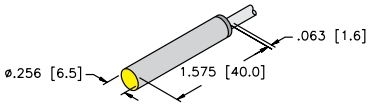
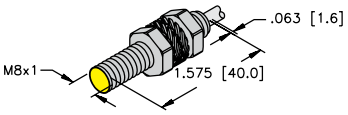
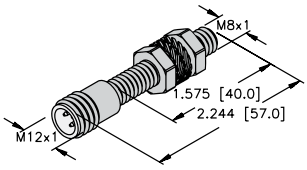
## Rectangular Housings with Long Range

| Part Number/ ID Number | Measuring Range (mm) | Response Freq. (Hz) | Linearity Deviation (% of full scale) | Output | Voltage | Output Voltage/ Current | Operating Temp. (°C) | Protection | Slew Rate V/ms, mA/ms | Housing | Face | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi15-CK40-LIU-H1141** 1537890 | 4-11 | 110 | 0.03 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 2.2, 4.4 | PBT | PBT | A | 1 | A7 |
| **Ni25-CK40-LIU-H1141** 1537891 | 5-25 | 30 | 0.05 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 0.6, 1.2 | PBT | PBT | A | 1 | A7 |
| **Ni25-CK40-LIU2-H1141** 1537892 | 5-25 | 30 | 0.05 | 4-wire DC Current or Voltage | 15-30 VDC | 2-10 V/4-20 mA | -10 to +70 | IP67 | 0.6, 0.96 | PBT | PBT | A | 1 | A7 |
| **Bi15-CP40-LIU** 1535700 | 4-11 | 110 | 0.03 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 2.2, 4.4 | PBT | PBT | B | 1 | A7 |
| **Ni25-CP40-LIU** 1535547 | 5-25 | 30 | 0.05 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 0.6, 1.2 | PBT | PBT | B | 1 | A7 |
| **Ni50-Q80-LIU-H1141** 1535545 | 10-50 | 30 | 0.05 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 0.6, 1.2 | PBT | PBT | C | 1 | A7 |

We reserve the right to make technical alterations without prior notice.

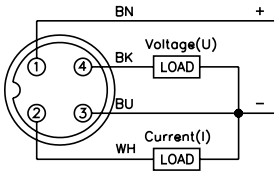
# Analog Sensors | EH04, EG05, EH6.5, & EG08

## Picoprox Barrel Styles

| Housing Style | Dimension Drawings |
|---|---|
| | A   4 mm - Embeddable M12 Eurofast Connection |
| B   5 mm - Embeddable M12 Eurofast Connection | C   6.5 mm - Embeddable, Potted-In Cable |
| D   8 mm - Embeddable, Potted-In Cable | E   8 mm - Embeddable, M12 Eurofast Connection |

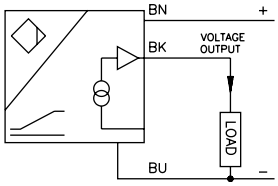
### Wiring Diagrams/Mating Cordsets

1

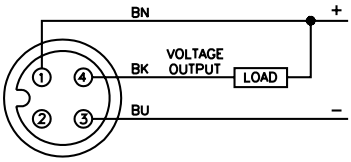



Mating Cordset: RK 4.4T-*

2




3




Mating Cordset: RK 4T-*

### A7 — 3 and 4-wire DC Analog - (LIU, SIU)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Transient Protection: | Per EN 60947-5-2 |
| No-Load Current: | ≤8.0 mA | Shock: | 30 g, 11 ms |
| Load Resistance Voltage Output: | 0-10 V/$R_L$≥4.7 kΩ | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Load Resistance Current Output: | 0-20 mA/$R_L$≤0.4 kΩ | Repeatability: | ≤1% of measuring range \|A-B\| |
| Temperature Drift: | ±0.06% / °C | | (0.5% after 30 min. warm up) |
| LIU5: | 4-20 mA, 0-10 V | Short-Circuit Protection: | Yes |
| LIU2: | 4-20 mA, 2-10 V | Reverse Polarity Protection: | Incorporated |

### A8 — 3 and 4-wire DC Analog - (LU)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Short-Circuit Protection: | Yes |
| No-Load Current: | ≤8.0 mA | Wire-Break Protection: | Yes |
| Load Resistance Voltage Output: | 0-10 V/$R_L$≥4.7 kΩ | Shock: | 30 g, 11 ms |
| Temperature Drift: | ±0.06% / °C | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Reverse Polarity Protection: | Incorporated | Repeatability: | ≤1% of measuring range \|A-B\| |
| Transient Protection: | Per EN 60947-5-2 | | (0.5% after 30 min. warm up) |

We reserve the right to make technical alterations without prior notice.

# Analog Sensors | EH04, EG05, EH6.5, & EG08

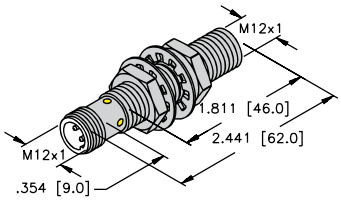
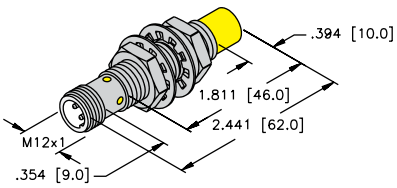
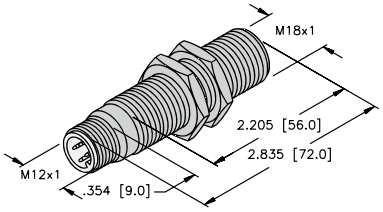
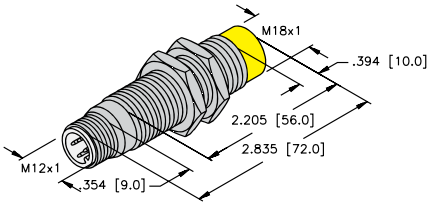
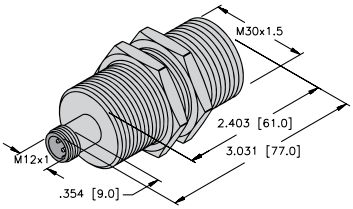
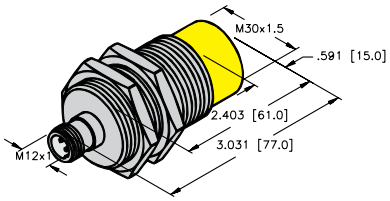
**Picoprox Barrel Styles**

| Part Number/ ID Number | Measuring Range (mm) | Response Freq. (Hz) | Linearity Deviation (% of full scale) | Output | Voltage | Output Voltage/ Current | Operating Temp. (°C) | Protection | Slew Rate V/ms, mA/ms | Housing | Face | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi1.5-EH04-0.3-M12-SIU-H1141** 1533001 | 0.1-1.5 | 200 | N/A | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 4, 8 | SS | PA 12 | A | 1 | A7 |
| **Bi1.5-EG05-0.3-M12-SIU-H1141** 1533005 | 0.1-1.5 | 200 | N/A | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 4, 8 | SS | PA 12 | B | 1 | A7 |
| **Bi1.5-EH6.5-LU** 1533002 | 0.25-1.25 | 200 | 0.03 | 3-wire DC Voltage | 15-30 VDC | 0-10 V | -10 to +70 | IP67 | 4, N/A | SS | PA 12 | C | 2 | A8 |
| **Bi1.5-EG08-LU** 1533003 | 0.25-1.25 | 200 | 0.03 | 3-wire DC Voltage | 15-30 VDC | 0-10 V | -10 to +70 | IP67 | 4, N/A | SS | PA 12 | D | 2 | A8 |
| **Bi1.5-EG08-LU-H1341** 1533004 | 0.25-1.25 | 200 | 0.03 | 3-wire DC Voltage | 15-30 VDC | 0-10 V | -10 to +70 | IP67 | 4, N/A | SS | PA 12 | E | 3 | A8 |

We reserve the right to make technical alterations without prior notice.

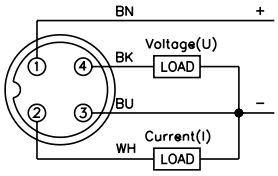
# Analog Sensors | M12, M18, & M30

## Threaded Barrel Styles with Connector

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   12 mm - Embeddable M12 Eurofast Connection | B   12 mm - Nonembeddable M12 Eurofast Connection |
| C   18 mm - Embeddable M12 Eurofast Connection | D   18 mm - Nonembeddable M12 Eurofast Connection | E   30 mm - Embeddable, M12 Eurofast Connection |
| F   30 mm - Nonembeddable, M12 Eurofast Connection | | |

### Wiring Diagrams/Mating Cordsets

1




Mating Cordset: RK 4.4T-*

### A7 — 3 and 4-wire DC Analog - (LIU, SIU)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Transient Protection: | Per EN 60947-5-2 |
| No-Load Current: | ≤8.0 mA | Shock: | 30 g, 11 ms |
| Load Resistance Voltage Output: | 0-10 V/$R_L$ ≥4.7 kΩ | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Load Resistance Current Output: | 0-20 mA/$R_L$ ≤0.4 kΩ | Repeatability: | ≤1% of measuring range \|A-B\| (0.5% after 30 min. warm up) |
| Temperature Drift: | ±0.06% / °C | | |
| LIU5: | 4-20 mA, 0-10 V | Short-Circuit Protection: | Yes |
| LIU2: | 4-20 mA, 2-10 V | Reverse Polarity Protection: | Incorporated |

We reserve the right to make technical alterations without prior notice.

# Analog Sensors | M12, M18, & M30

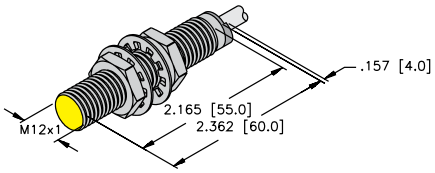
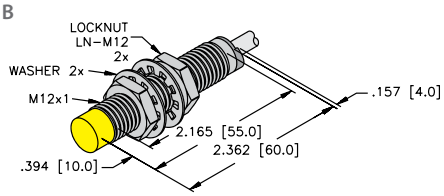
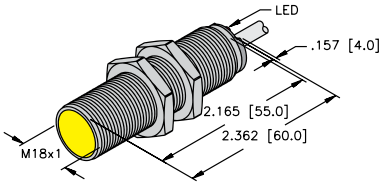
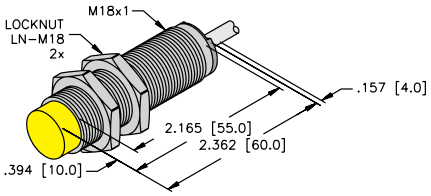
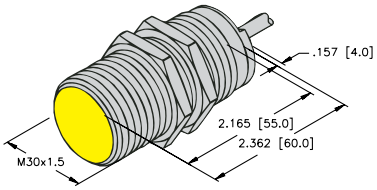
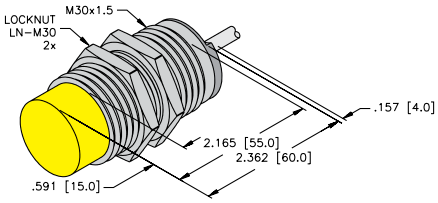
## Threaded Barrel Styles with Connector

| Part Number/ ID Number | Features | Measuring Range (mm) | Response Freq. (Hz) | Linearity Deviation (% of full scale) | Output | Voltage | Output Voltage/ Current | Operating Temp. (°C) | Protection | Slew Rate V/ms, mA/ms | Housing | Face | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi2-M12-LIU-H1141** 1535533 | | 1-2.5 | 200 | 0.03 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 4, 8 | CPB | PA 12 | A | 1 | A7 |
| **Bi4-M12-LIU-H1141** 1535531 | Ext. Range | 0.5-3 | 200 | 0.05 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 4, 8 | CPB | PA 12 | A | 1 | A7 |
| **Ni5-M12-LIU-H1141** 1535535 | | 0.5-4 | 100 | 0.05 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 2, 4 | CPB | PA 12 | B | 1 | A7 |
| **Bi5-M18E-LIU-H1141** 1536205 | | 2-4 | 200 | 0.03 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 4, 8 | CPB | PA 12 | C | 1 | A7 |
| **Bi8-M18E-LIU-H1141** 1535561 | Ext. Range | 1-5 | 200 | 0.05 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 4, 8 | CPB | PA 12 | C | 1 | A7 |
| **Ni8-M18E-LIU-H1141** 1536302 | | 1-5 | 100 | 0.03 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 2, 4 | CPB | PA 12 | D | 1 | A7 |
| **Ni10-M18E-LIU-H1141** 1535562 | Ext. Range | 1-7 | 100 | 0.05 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 2, 4 | CPB | PA 12 | D | 1 | A7 |
| **Bi10-M30E-LIU-H1141** 1537003 | | 3-8 | 140 | 0.03 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 2.8, 5.6 | CPB | PA 12 | E | 1 | A7 |
| **Bi15-M30E-LIU-H1141** 1535563 | Ext. Range | 2-10 | 140 | 0.05 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 2.8, 5.6 | CPB | PA 12 | E | 1 | A7 |
| **Ni15-M30E-LIU-H1141** 1535564 | | 2-12 | 60 | 0.03 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 1.2, 2.4 | CPB | PA 12 | F | 1 | A7 |

We reserve the right to make technical alterations without prior notice.

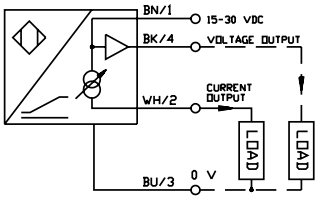
# Analog Sensors | M12, M18, & M30

## Threaded Barrel Styles with Cable

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   12 mm - Embeddable, Potted-In Cable | B   12 mm - Nonembeddable, Potted-In Cable |
| C   18 mm - Embeddable, Potted-In Cable | D   18 mm - Nonembeddable, Potted-In Cable | E   30 mm - Embeddable, Potted-In Cable |
| F   30 mm - Nonembeddable, Potted-In Cable | | |

### Wiring Diagrams/Mating Cordsets

1

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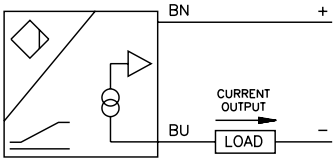



### A7 — 3 and 4-wire DC Analog - (LIU, SIU)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Transient Protection: | Per EN 60947-5-2 |
| No-Load Current: | ≤8.0 mA | Shock: | 30 g, 11 ms |
| Load Resistance Voltage Output: | 0-10 V/$R_L$ ≥4.7 kΩ | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Load Resistance Current Output: | 0-20 mA/$R_L$ ≤0.4 kΩ | Repeatability: | ≤1% of measuring range \|A-B\| (0.5% after 30 min. warm up) |
| Temperature Drift: | ±0.06% / °C | | |
| LIU5: | 4-20 mA, 0-10 V | Short-Circuit Protection: | Yes |
| LIU2: | 4-20 mA, 2-10 V | Reverse Polarity Protection: | Incorporated |

### A9 — 2-wire DC Analog NAMUR - (LI-EXI)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Temperature Drift: | ≤±0.06% °C |
| Current Output: | 4-20 mA | Shock: | 30 g, 11 ms |
| Nominal Voltage: | 8.2 VDC (EN60947-5-6) | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Power-On Effect: | Realized in Amplifier | Repeatability: | ≤1% of measuring range \|A-B\| (0.5% after 30 min. warm up) |
| Reverse Polarity Protection: | Incorporated | | |
| Wire-Break Protection: | No | | |
| Transient Protection: | Realized in Amplifier | | |

We reserve the right to make technical alterations without prior notice.

# Analog Sensors | M12, M18, & M30

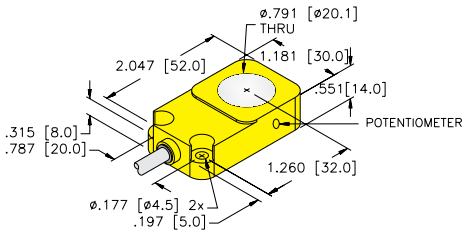
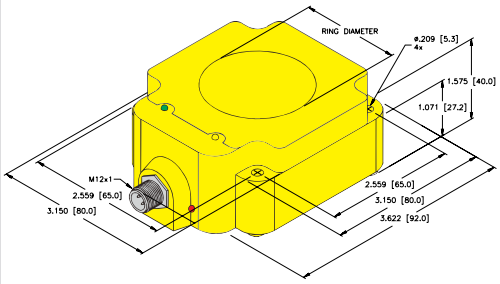
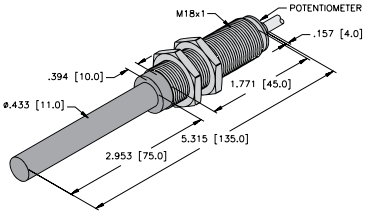
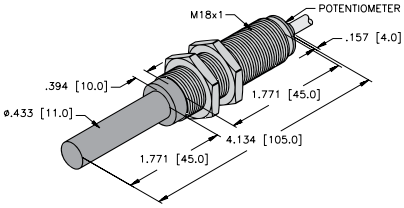
## Threaded Barrel Styles with Cable

| Part Number/ ID Number | Features | Measuring Range (mm) | Response Freq. (Hz) | Linearity Deviation (% of full scale) | Output | Voltage | Output Voltage/ Current | Operating Temp. (°C) | Protection | Slew Rate V/ms, mA/ms | Housing | Face | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi4-M12-LIU** 1535532 | Ext. Range | 0.5-3 | 200 | 0.05 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 4, 8 | CPB | PA 12 | 2M/ PVC | A | 1 | A7 |
| **Ni5-M12-LIU** 1535536 | | 0.5-4 | 100 | 0.05 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 2, 4 | CPB | PA 12 | 2M/ PVC | B | 1 | A7 |
| **Bi5-M18-LIU** 1536000 | | 2-4 | 200 | 0.03 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 4, 8 | CPB | PA 12 | 2M/ PVC | C | 1 | A7 |
| **Bi8-M18-LIU** 1535538 | Ext. Range | 1-5 | 200 | 0.05 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 4, 8 | CPB | PA 12 | 2M/ PVC | C | 1 | A7 |
| **Bi8-M18-LI-EXI** 1535528 | Ext. Range, Use Barriers IM33-11EX-HI or IM43-13-SR | 1-5 | 200 | 0.05 | 2-wire DC Current | 14-30 VDC | 4-20 mA | -10 to +70 | IP67 | N/A, 8 | CPB | PA 12 | 2M/ PVC | C | 2 | A9 |
| **Ni8-M18-LIU** 1536100 | Ext. Range | 1-5 | 100 | 0.03 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 2, 4 | CPB | PA 12 | 2M/ PVC | D | 1 | A7 |
| **Ni10-M18-LIU** 1535540 | Ext. Range | 1-7 | 100 | 0.05 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 2, 4 | CPB | PA 12 | 2M/ PVC | D | 1 | A7 |
| **Bi10-M30-LIU** 1535500 | | 3-8 | 140 | 0.03 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 2.8, 5.6 | CPB | PA 12 | 2M/ PVC | E | 1 | A7 |
| **Bi15-M30-LIU** 1535543 | Ext. Range | 2-10 | 140 | 0.05 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 2.8, 5.6 | CPB | PA 12 | 2M/ PVC | E | 1 | A7 |
| **Bi15-M30-LI-EXI** 1535554 | Ext. Range, Use Barriers IM33-11EX-HI or IM43-13-SR | 2-10 | 140 | 0.05 | 2-wire DC Current | 14-30 VDC | 4-20 mA | -10 to +70 | IP67 | N/A, 4.48 | CPB | PA 12 | 2M/ PVC | E | 2 | A9 |
| **Ni15-M30-LIU** 1535300 | Ext. Range | 2-12 | 60 | 0.03 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 1.2, 2.4 | CPB | PA 12 | 2M/ PVC | F | 1 | A7 |

We reserve the right to make technical alterations without prior notice.

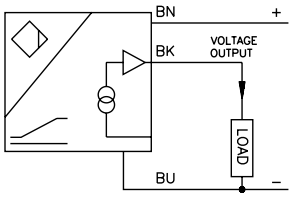
# Analog Sensors | Q14, Q80, & M18

## Probe and Ring Style Housings

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   14 mm - Embeddable, Ring Sensor, Potted-In Cable | B   80 mm - Embeddable, M12 Eurofast Connection |
| C   18 mm - Embeddable, Probe Style, Potted-In Cable | D   18 mm - Embeddable, Probe Style, Potted-In Cable | |

### Wiring Diagrams/Mating Cordsets

1

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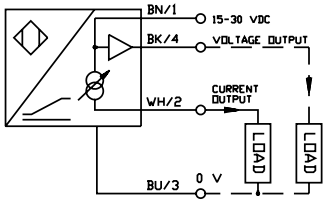
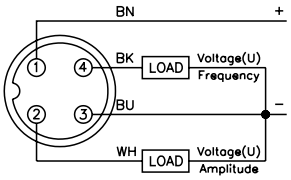



3




Mating Cordset: RK 4.4T

### A7 — 3 and 4-wire DC Analog - (LIU, SIU)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Transient Protection: | Per EN 60947-5-2 |
| No-Load Current: | ≤8.0 mA | Shock: | 30 g, 11 ms |
| Load Resistance Voltage Output: | 0-10 V/$R_L$ ≥4.7 kΩ | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Load Resistance Current Output: | 0-20 mA/$R_L$ ≤0.4 kΩ | Repeatability: | ≤1% of measuring range \|A-B\| |
| Temperature Drift: | ±0.06% / °C | | (0.5% after 30 min. warm up) |
| LIU5: | 4-20 mA, 0-10 V | Short-Circuit Protection: | Yes |
| LIU2: | 4-20 mA, 2-10 V | Reverse Polarity Protection: | Incorporated |

### A8 — 3 and 4-wire DC Analog - (LU)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Short-Circuit Protection: | Yes |
| No-Load Current: | ≤8.0 mA | Wire-Break Protection: | Yes |
| Load Resistance Voltage Output: | 0-10 V/$R_L$ ≥4.7 kΩ | Shock: | 30 g, 11 ms |
| Temperature Drift: | ±0.06% / °C | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Reverse Polarity Protection: | Incorporated | Repeatability: | ≤1% of measuring range \|A-B\| |
| Transient Protection: | Per EN 60947-5-2 | | (0.5% after 30 min. warm up) |

We reserve the right to make technical alterations without prior notice.

# Analog Sensors | Q14, Q80, & M18

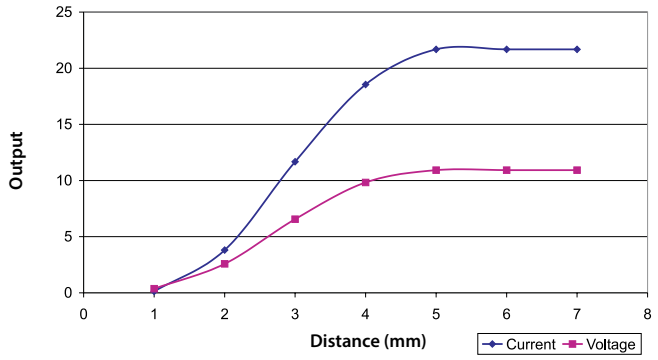
## Probe and Ring Style Housings

| Part Number/ ID Number | Features | Measuring Range (mm) | Response Freq. (Hz) | Linearity Deviation (% of full scale) | Output | Voltage | Output Voltage/ Current | Operating Temp. (°C) | Protection | Slew Rate V/ms, mA/ms | Housing | Face | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi20R-Q14-LU** 1535546 | | 1-19 | 80 | N/A | 3-wire DC Voltage | 15-30 VDC | 0-10 V | -25 to +70 | IP67 | 2.8, N/A | PBT | PBT | 2M/ PVC | A | 1 | A8 |
| **Bi50R-Q80-2LU-H1141/S950** 1534609 | All Metal Detection | N/A | 80 | N/A | 4-wire DC Voltage | 15-30 VDC | 0-10 VDC Ampli-tude, 1-10 VDC Phase | -25 to +70 | IP67 | 1.6 | PBT | PBT | - - | B | 3 | A8 |
| **Wi70-M18-LIU5** 1536600 | | 0-70 | 200 | 0.03 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/4-20 mA | -10 to +70 | IP67 | 4, 6.4 | CPB | PA 12 | 2M/ PVC | C | 2 | A7 |
| **Wi40-M18-LIU5** 1536603 | | 0-40 | 40 | 0.02 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/4-20 mA | -10 to +70 | IP67 | 0.8, 1.2 | CPB | PA 12 | 2M/ PVC | D | 2 | A7 |

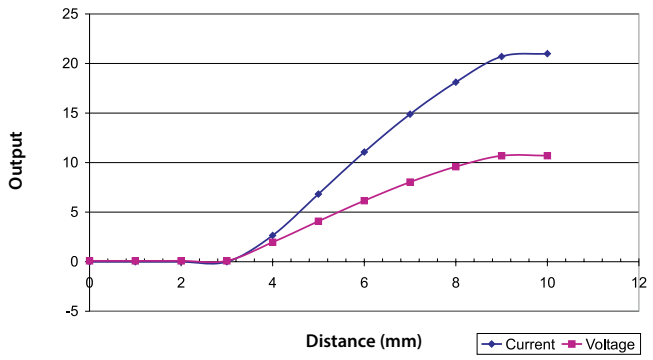
We reserve the right to make technical alterations without prior notice.

# Analog Sensors

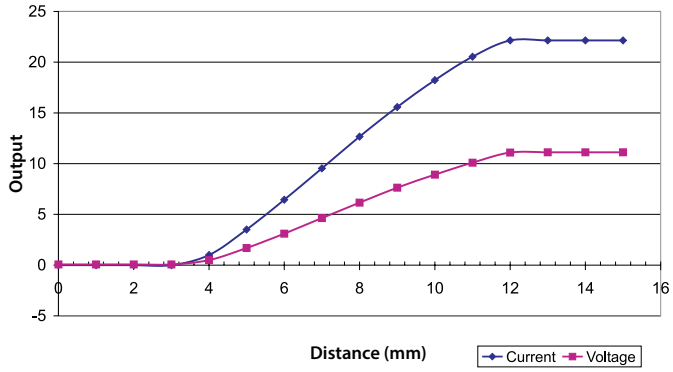
**Bi7-Q08-LIU**



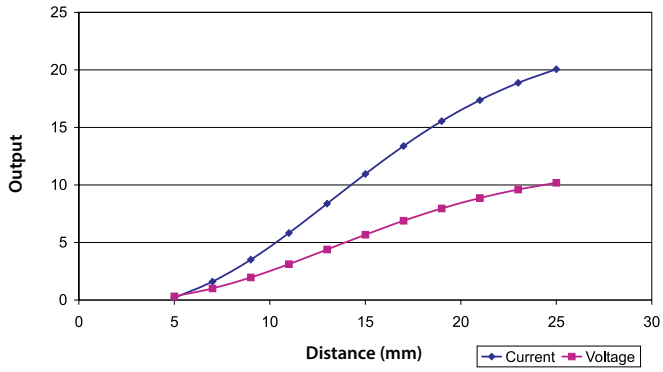

**Bi10-Q14-LIU-H1141**



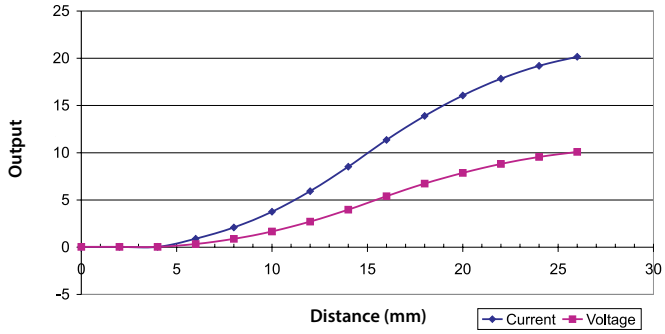

**Bi15-Q20-LIU-H1141**



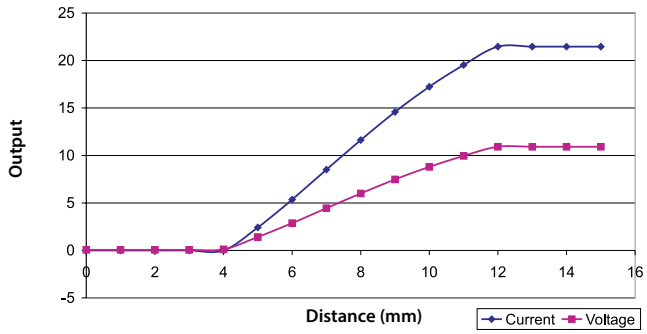

**Ni25-CP40-LIU**



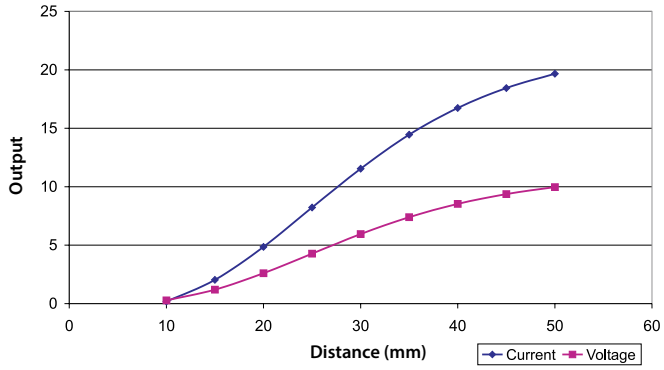

**Ni25-CK40-LIU-H1141**



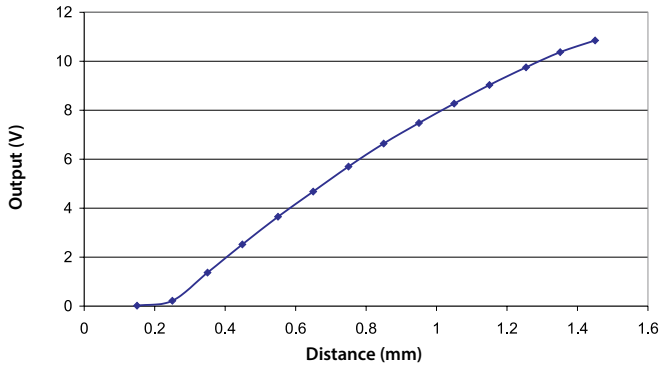

**Bi15-CP40-LIU**




**Ni50-Q80-LIU-H1141**



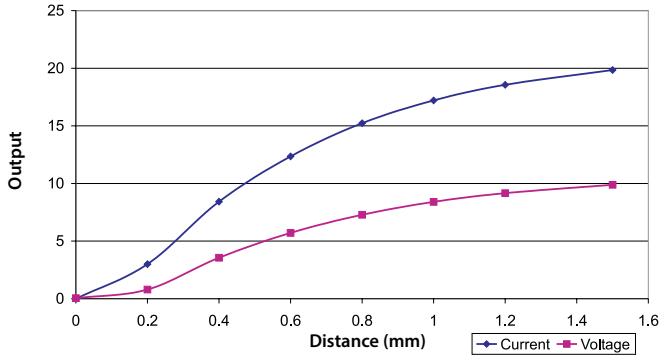

**Bi1.5-EG08(EH6.5)-LU**



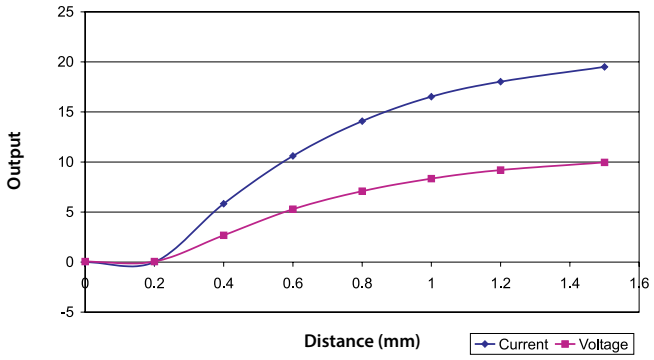

We reserve the right to make technical alterations without prior notice.

# Analog Sensors

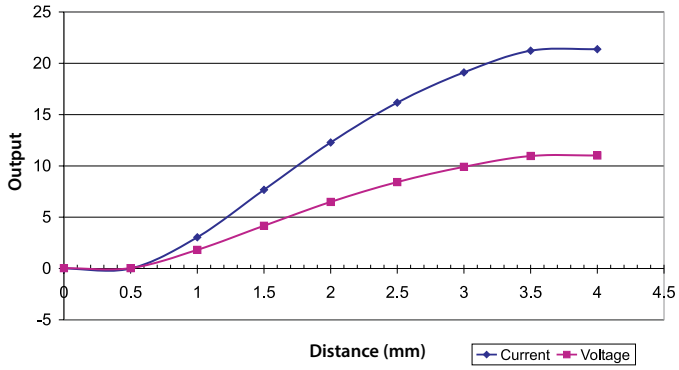
**Bi1.5-EH04-0.3-M12-SIU-H1141**



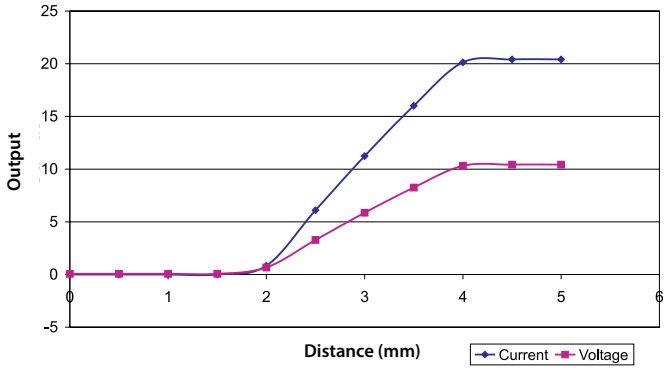

**Bi1.5-EG05-0.3-M12-SIU-H1141**



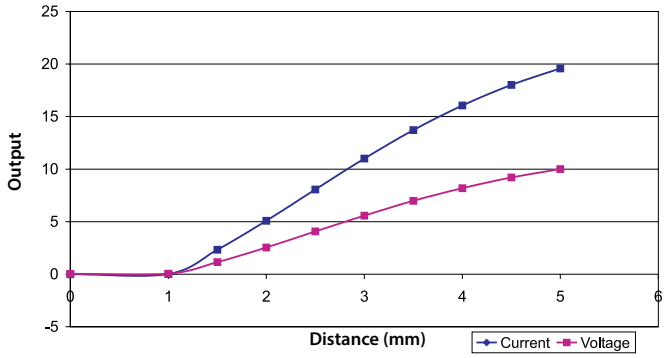

**Bi4-M12-LIU...**



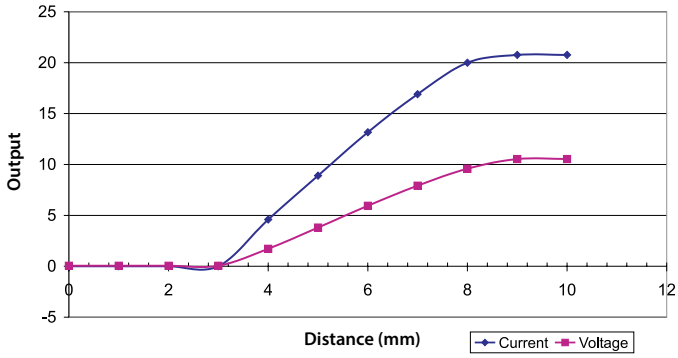

**Bi5-M18-LIU...**



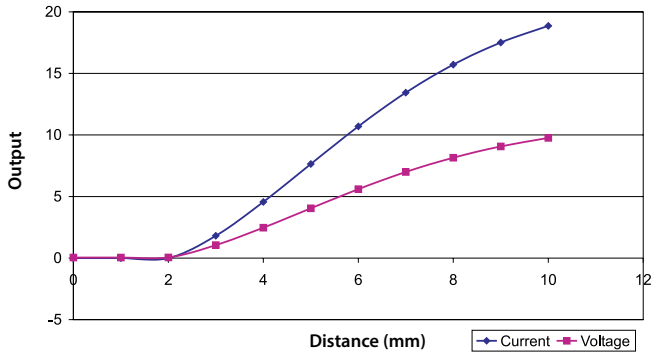

**Bi8-M18E-LIU...**



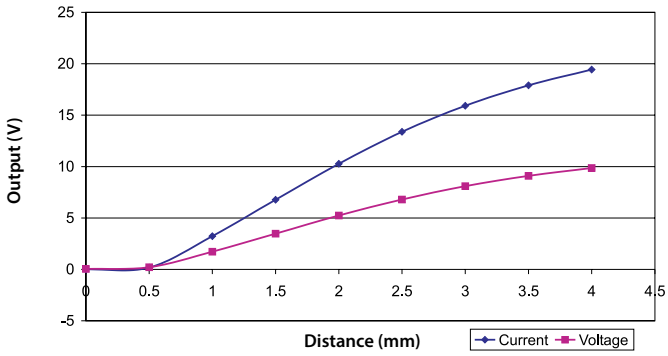

**Bi10-M30E-LIU...**




**Bi15-M30E-LIU...**

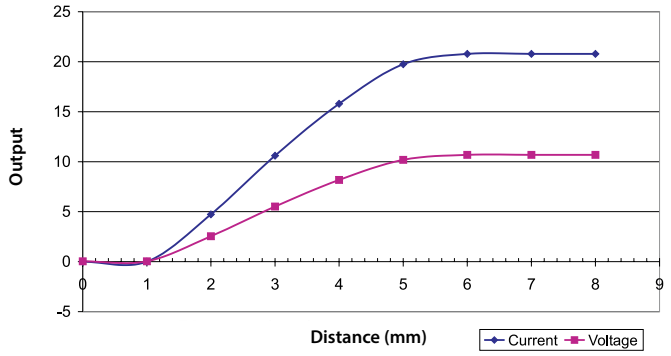



**Ni5-M12-LIU...**

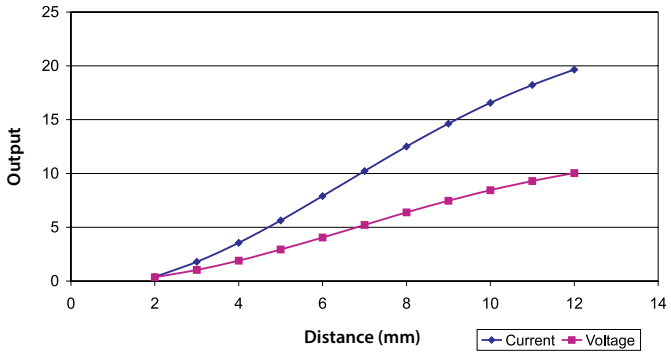



We reserve the right to make technical alterations without prior notice.

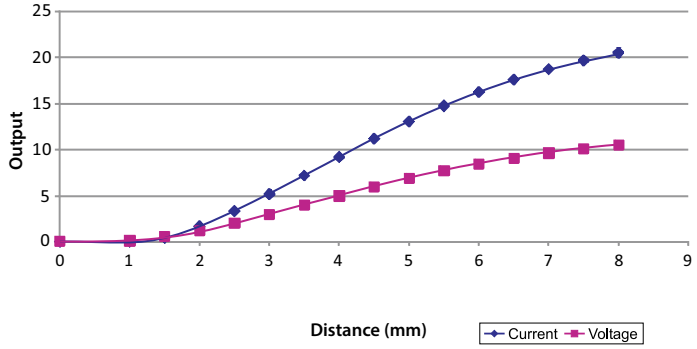
**Ni8-M18-LIU...**



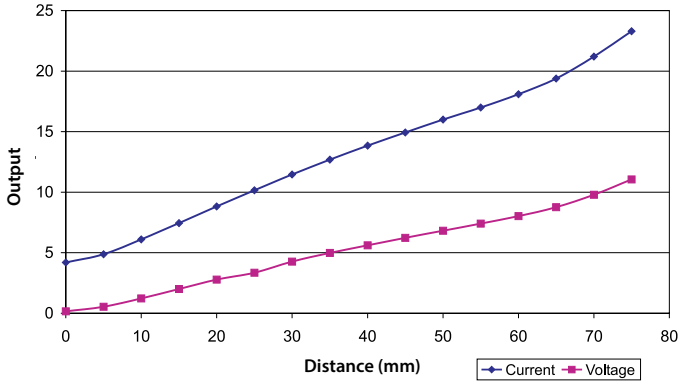

**Ni15-M30-LIU...**



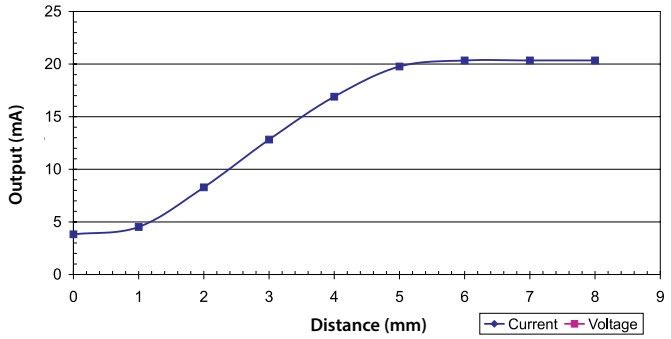

**Ni10-M18-LIU...**



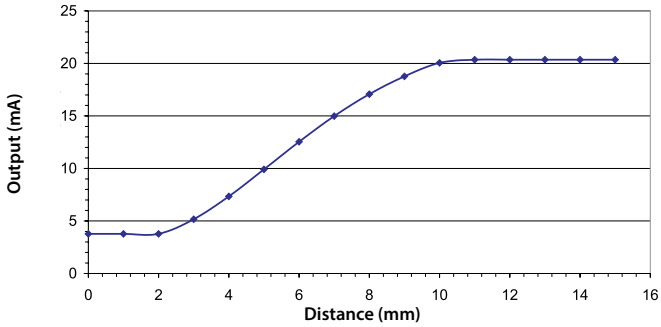

**Wi70-M18-LIU5**



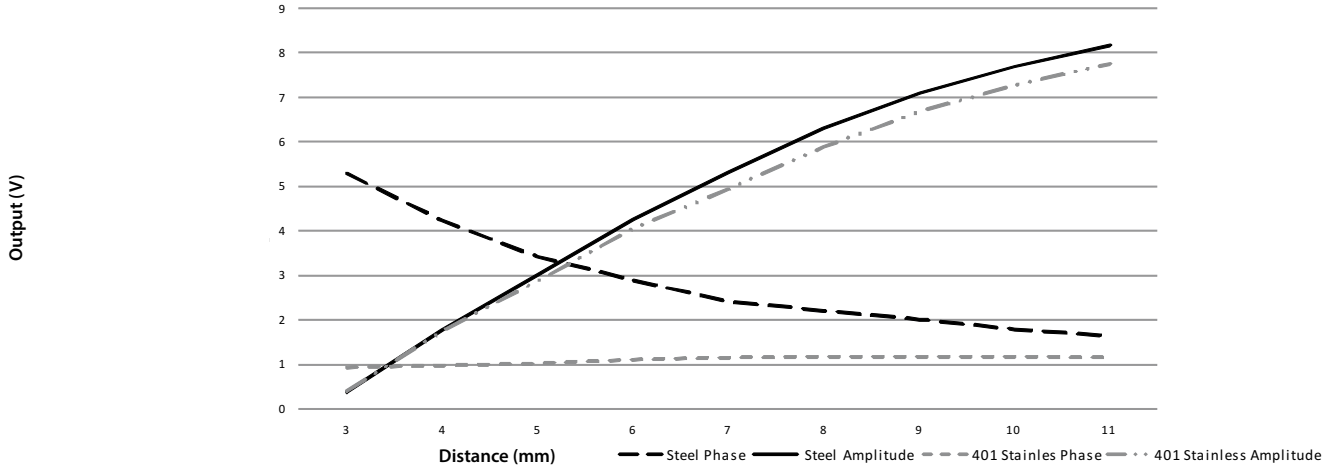

**Bi 8-M18-Li Exi**




**Bi15-M30-LI-Exi**




**Bi15-Q20-2LU-H1141/S950**




We reserve the right to make technical alterations without prior notice.

Notes

# Capacitive Sensor Selection Guide

| Embeddable/Nonembeddable Rectangular | | | | | |
|---|---|---|---|---|---|
| | | | | | |
| **Housing** | 5.5 mm | 8 mm | 10 mm | 14 mm | 20 mm |
| **Sensing Range** | 5 - 10 mm | 5 mm | 8 mm | 10 - 15 mm | 10 - 20 mm |
| **Pages** | E3 | E5 | E5 | E7 | E9 |

| Embeddable/Nonembeddable Rectangular and Barrels | | | | | |
|---|---|---|---|---|---|
| | | | | | |
| **Housing** | 40 mm | 80 mm | 12 mm | 12 mm | 18 mm |
| **Sensing Range** | 20 - 30 mm | 50 mm | 3 mm | 3 - 4.5 mm | 5 mm |
| **Pages** | E11 | E11 | E13 | E13 | E15 |

| Embeddable/Nonembeddable Barrels | | | | | |
|---|---|---|---|---|---|
| | | | | | |
| **Housing** | 18 mm | 18 mm BCT | 30 mm BCT | 30 mm | 30 mm |
| **Sensing Range** | 5 - 7.5 mm | 5 - 7.5 mm | 10 - 15 mm | 10 mm | 10 - 15 mm |
| **Pages** | E17 | E19 | E19 | E21 - 24 | E25 - 28 |

| Embeddable/Nonembeddable Plastic Barrels | | | |
|---|---|---|---|
| | | | IS |
| **Housing** | 34 mm | 40 mm | Variable |
| **Sensing Range** | 15 - 23 mm | 20 - 30 mm | 5 - 10 mm |
| **Pages** | E29 - 34 | E29 - 32 | E35 |

We reserve the right to make technical alterations without prior notice.

# Capacitive Sensor Part Number Key

| B | C | 10 | - | K | 40 | SR | - | F | Z | 3 | X2 | T | Wiring Options* | Special Option Codes** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

**Mounting**
B = embeddable
N = nonembeddable

**Principle of Operation**
C = capacitive
CC = capacitive (low dielectric targets)
CF = capacitive (noise immune)
CT = capacitive teach

**Rated Operating Distance (mm)**

**Housing Style**
**Barrel - Metal**
M = partial threading, chrome plated brass
**Barrel - Plastic**
K = smooth
KT = PVDF, smooth
P = full threading
PT = PVDF, full threading
S = partial threading
**Rectangular**
Q = metal or plastic, various rectangular styles
QF = plastic, Polypropylene rectangular style

**Housing Diameter or Height (mm)**

**Teach Button**

**Number of LEDs**
(blank) = no LEDs
X = 1 LED
X2 = 2 LEDs

**Voltage Range**
**AC/DC: (No SCP**)**
3 = 20-250 VAC
**DC:**
4 = 10-65 VAC, polarity protected, pulsed SCP**
6 = 10-30 VAC, polarity protected, pulsed SCP
**DC:**
4 = 10-65 VDC, polarity protected, pulsed SCP**
6 = 10-30 VDC, polarity protected, pulsed SCP
**SCP = short-circuit and overload protection

**Output**
N = NPN transistor (current sinking)
P = PNP transistor (current sourcing)
Z = 2-wire AC or 2-wire AC/DC

**Output Function**
A = normally open (N.O.)
F = connection programmable (N.O. or N.C.)
R = normally closed (N.C.)
V = complementary outputs: one N.O., one N.C.
Y0 = NAMUR output, requires switching amplifier
Y1 = NAMUR output, requires switching amplifier/ATEX approved

**Secondary Housing Modifier**
SR = straight terminal chamber

**NOTE:**
Part Number Keys are to assist in identification only.
Verify new part numbers with factory;
Some configurations are not possible.

We reserve the right to make technical alterations without prior notice.



## Wiring Options*

**A. Connectorized Sensor**

BC10 - M30 - AP4X - H1 1 4 1

**Connector Family**
B1 = Minifast®, Metal, Male
B2 = Minifast, Plastic, Male
B3 = Microfast®, Metal, Male
H1 = Eurofast®, Metal or Plastic, Male
V1 = Picofast®, Metal, Male

**Connector/Sensor Transition**
1 = straight

**Number of Pins**

**Wiring Configuration**
**Example:**
1 = Standard
3 = N.C. DC Output on Pin 4 (for US)

**B. Potted Cable**

BC5 - S18 - AP4X - 7M

**Cable Length**
Blank = 2 Meter cable
7M = 7 Meter cable

## Special Option Codes**

BC10 - Q14 - AN4X - /S250

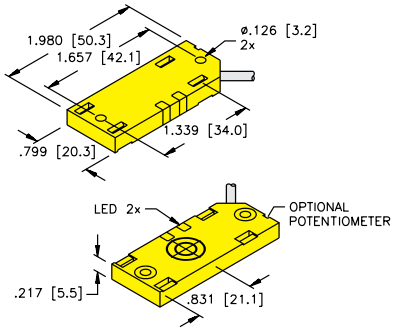
**Option Code**
**Example:**
/S250 = No Potentiometer
/S400 = Rear LEDs (for Q14 and Q20 only)

# Capacitive Sensors | QF5.5

## Top Sensing Thin Qpak Housing with DC Outputs

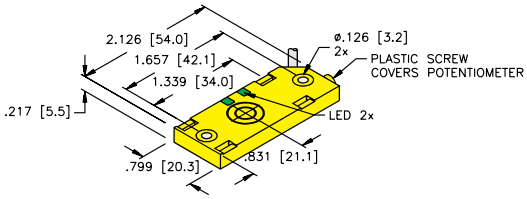
| Housing Style | Dimension Drawings |
|---|---|

A




5.5 mm - Potted-In Cable

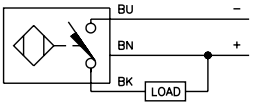
B



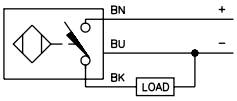

5.5 mm - Potted-In Cable, w/Potentiometer Cover

### Wiring Diagrams/Mating Cordsets

1




2

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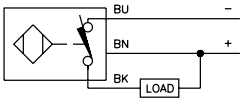


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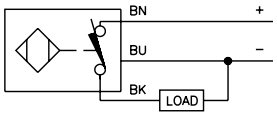



### A11 — 3 and 4-wire DC Capacitive - (AP, RP, AN, RN, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Reverse Polarity Protection: | Incorporated |
| Differential Travel (Hysteresis): | 2-20% (5% typical) | Wire-Break Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Transient Protection: | Per EN 60947-5-2 |
| Trigger Current for Short Circuit Protection: | ≥220 mA | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| No-Load Current: | ≤15 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Power-On Effect: | Per IEC 947-5-2 | Temperature Drift: | <±20% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | QF5.5

## Top Sensing Thin Qpak Housing with DC Outputs

| Part Number/ ID Number | Features | Embeddable Range (mm) | Nonembeddable Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing Material | Front Cap/Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BC5-QF5.5-AN6X2/S250** 2620120 | | 5 | 5 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PP | PP | GN | YE | 2M/TPU | A | 1 | A11 |
| **BC10-QF5.5-AN6X2** 2620121 | | 10 | 10 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PP | PP | GN | YE | 2M/TPU | A | 1 | A11 |
| **BC10-QF5.5-AN6X2/S250** 2620119 | | 10 | 10 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PP | PP | GN | YE | 2M/TPU | A | 1 | A11 |
| **BC10-QF5.5-RN6X2** 2620128 | Normally Closed | 10 | 10 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PP | PP | GN | YE | 2M/TPU | A | 3 | A11 |
| **BC5-QF5.5-AP6X2/S250** 2620116 | | 5 | 5 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PP | PP | GN | YE | 2M/TPU | A | 2 | A11 |
| **BC5-QF5.5-RP6X2/S250** 2620127 | Normally Closed | 5 | 5 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PP | PP | GN | YE | 2M/TPU | A | 4 | A11 |
| **BC10-QF5.5-AP6X2** 2620117 | | 10 | 10 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PP | PP | GN | YE | 2M/TPU | A | 2 | A11 |
| **BC10-QF5.5-AP6X2/S250** 2620115 | | 10 | 10 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PP | PP | GN | YE | 2M/TPU | A | 2 | A11 |
| **BC10-QF5.5-RP6X2** 2620126 | Normally Closed | 10 | 10 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PP | PP | GN | YE | 2M/TPU | A | 4 | A11 |
| **BC10-QF5.5-RP6X2/S250** 2620124 | Normally Closed | 10 | 10 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PP | PP | GN | YE | 2M/TPU | A | 4 | A11 |
| **BC10-QF5.5-AN6X2/S932** 2620137 | | 10 | 10 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PP | PP | GN | YE | 2M/TPU | B | 1 | A11 |
| **BC10-QF5.5-RN6X2/S932** 2620140 | Normally Closed | 10 | 10 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PP | PP | GN | YE | 2M/TPU | B | 3 | A11 |
| **BC10-QF5.5-AP6X2/S932** 2620109 | | 10 | 10 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PP | PP | GN | YE | 2M/TPU | B | 2 | A11 |
| **BC10-QF5.5-RP6X2/S932** 2620141 | Normally Closed | 10 | 10 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PP | PP | GN | YE | 2M/TPU | B | 4 | A11 |

**Notes:**

/S250: Without switch point adjustment potentiometer

/S932: Adjustment potentiometer with protective cover, and non-metallic mounting bushing

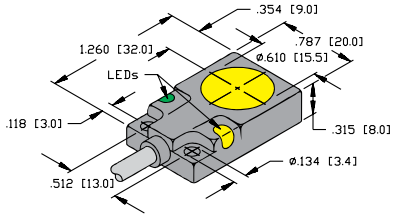
We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | Q08 & Q10

## Top Sensing Qpak Housing with DC Outputs

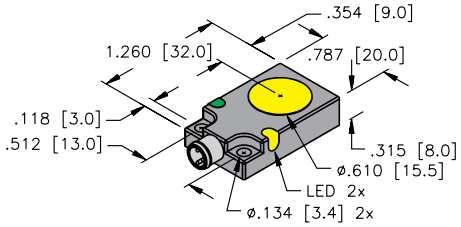
| Housing Style | Dimension Drawings |
|---|---|

A



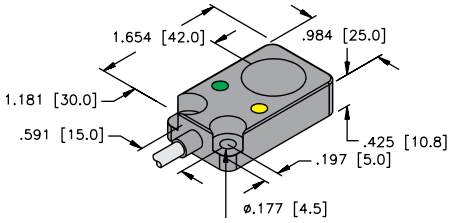

8 mm - Potted-In Cable

B



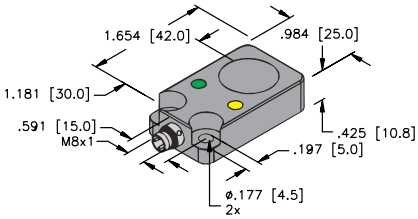

8 mm - Picofast Connector

C




10 mm - Potted-In Cable

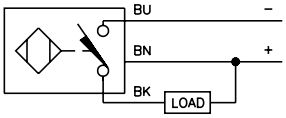
D




10 mm - Picofast Connector

### Wiring Diagrams/Mating Cordsets

1

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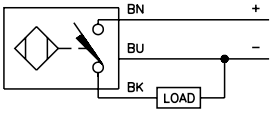


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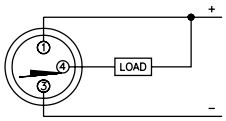
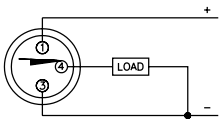



Mating Cordset: PKG 3Z-*

4




Mating Cordset: PKG 3Z-*; PKG 3M-*

### A11 — 3 and 4-wire DC Capacitive - (AP, RP, AN, RN, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Reverse Polarity Protection: | Incorporated |
| Differential Travel (Hysteresis): | 2-20% (5% typical) | Wire-Break Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Transient Protection: | Per EN 60947-5-2 |
| Trigger Current for Short Circuit Protection: | ≥220 mA | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| No-Load Current: | ≤15 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Power-On Effect: | Per IEC 947-5-2 | Temperature Drift: | <±20% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | Q08 & Q10

## Top Sensing Qpak Housing with DC Outputs

| Part Number/ ID Number | Embeddable Range (mm) | Nonembeddable Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing Material | Front Cap/Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BC5-Q08-AN6X2/S250** 26201 | 5 | 5 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | Zinc | PA 12 | GN | YE | 2M/TPU | A | 1 | A11 |
| **BC5-Q08-AP6X2/S250** 26200 | 5 | 5 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | Zinc | PA 12 | GN | YE | 2M/TPU | A | 2 | A11 |
| **BC5-Q08-AN6X2-V1131/S250** 26211 | 5 | 5 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | Zinc | PA 12 | GN | YE | -- | B | 3 | A11 |
| **BC5-Q08-AP6X2-V1131/S250** 26210 | 5 | 5 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | Zinc | PA 12 | GN | YE | -- | B | 4 | A11 |
| **BC8-Q10-AN6X2/S250** 2621203 | 8 | 8 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | -- | GN | YE | 2M/PVC | C | 1 | A11 |
| **BC8-Q10-AP6X2/S250** 2621200 | 8 | 8 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | -- | GN | YE | 2M/PVC | C | 2 | A11 |
| **BC8-Q10-AP6X2-V1131/S250** 2621201 | 8 | 8 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | -- | GN | YE | -- | D | 4 | A11 |

**Notes:**

/S250: Without switch point adjustment potentiometer

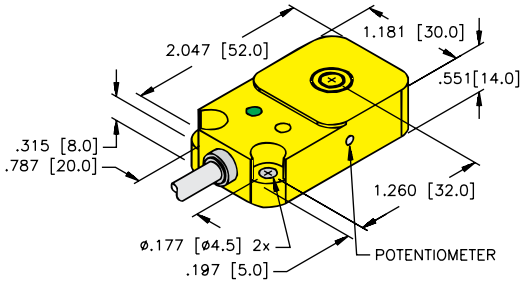
We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | Q14

## Top Sensing Qpak Housing with DC Outputs

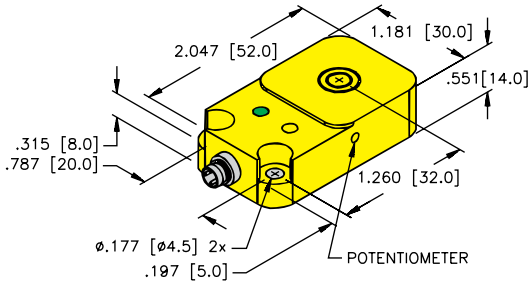
| Housing Style | Dimension Drawings |
|---|---|

A




14 mm - Potted-In Cable

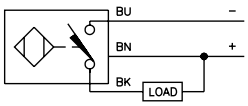
B




14 mm - Picofast Connector

### Wiring Diagrams/Mating Cordsets

1

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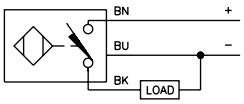
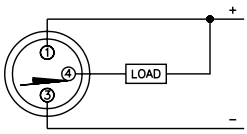
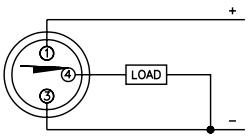



3



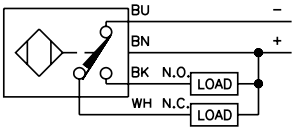

Mating Cordset: PKG 3M-*

4

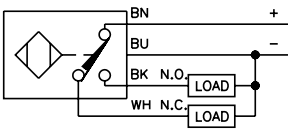



Mating Cordset: PKG 3M-*

5




6




### A11 — 3 and 4-wire DC Capacitive - (AP, RP, AN, RN, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Reverse Polarity Protection: | Incorporated |
| Differential Travel (Hysteresis): | 2-20% (5% typical) | Wire-Break Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Transient Protection: | Per EN 60947-5-2 |
| Trigger Current for Short Circuit Protection: | ≥220 mA | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| No-Load Current: | ≤15 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Power-On Effect: | Per IEC 947-5-2 | Temperature Drift: | <±20% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | Q14

## Top Sensing Qpak Housing with DC Outputs

| Part Number/ ID Number | Features | Embeddable Range (mm) | Nonembeddable Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing Material | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BC10-Q14-AN4X2** 2530010 | | 10 | 15 | 3-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | 2M/ PVC | A | 1 | A11 |
| **BC10-Q14-AP4X2** 2530001 | | 10 | 15 | 3-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | 2M/ PVC | A | 2 | A11 |
| **BC10-Q14-VN4X2** 2530030 | Comp. Outputs | 10 | 15 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | 2M/ PVC | A | 5 | A11 |
| **BC10-Q14-VP4X2** 2530020 | Comp. Outputs | 10 | 15 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | 2M/ PVC | A | 6 | A11 |
| **BC10-Q14-AN4X2-V1131** 2530011 | | 10 | 15 | 3-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | -- | B | 3 | A11 |
| **BC10-Q14-AN4X2-V1131/S400** 2530006 | Rear LED | 10 | 15 | 3-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | -- | B | 3 | A11 |
| **BC10-Q14-AP4X2-V1131** 2530002 | | 10 | 15 | 3-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | -- | B | 4 | A11 |
| **BC10-Q14-AP4X2-V1131/S400** 2530004 | Rear LED | 10 | 15 | 3-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | -- | B | 4 | A11 |

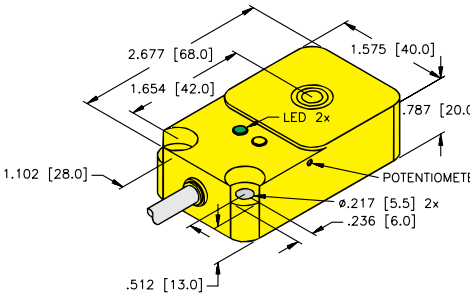
We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | Q20

## Top Sensing Qpak Housing with DC or AC Outputs

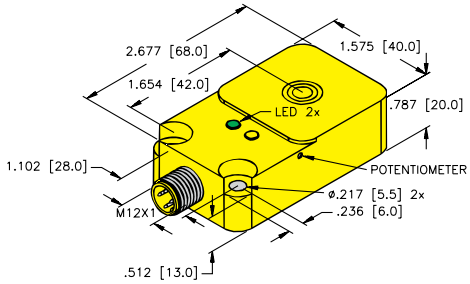
| Housing Style | Dimension Drawings |
|---|---|

A



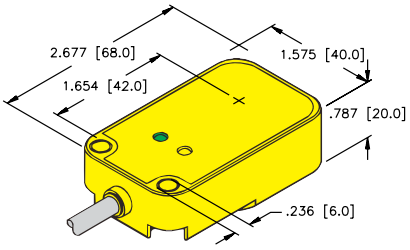

20 mm - Potted-In Cable

B




20 mm - Eurofast Connector

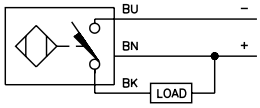
C




20 mm - Potted-In Cable

### Wiring Diagrams/Mating Cordsets

1

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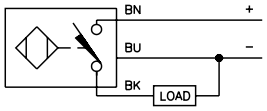


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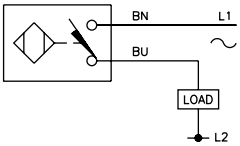


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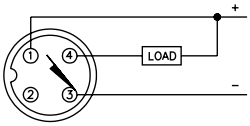
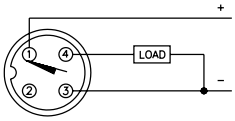


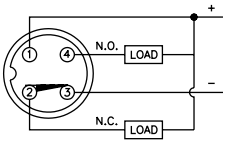

Mating Cordset: RK 4T-*

5



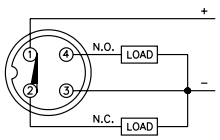

Mating Cordset: RK 4T-*

6




Mating Cordset: RK 4.4T-*

7




Mating Cordset: RK 4.4T-*

### A11 — 3 and 4-wire DC Capacitive - (AP, RP, AN, RN, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Reverse Polarity Protection: | Incorporated |
| Differential Travel (Hysteresis): | 2-20% (5% typical) | Wire-Break Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Transient Protection: | Per EN 60947-5-2 |
| Trigger Current for Short Circuit Protection: | ≥220 mA | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| No-Load Current: | ≤15 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Power-On Effect: | Per IEC 947-5-2 | Temperature Drift: | <±20% of Rated Operating Distance |

### A12 — 2-wire AC Capacitive - (AZ, RZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | 2-20% (5% typical) | Transient Protection: | Per EN 60947-5-2 |
| Continuous Load Current: | ≤500 mA | Shock: | 30 g, 11 ms |
| Voltage Drop Across Conducting Sensor: | ≤7.0 V | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Off-State (Leakage) Current: | ≤1.7 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Minimum Load Current: | ≥5.0 mA | Temperature Drift: | <±20% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | Q20

## Top Sensing Qpak Housing with DC or AC Outputs

| Part Number/ ID Number | Features | Embeddable Range (mm) | Nonembeddable Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing Material | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BC20-Q20-AN4X2** 2530110 | | 20 | 30 | 3-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | 2M/ PVC | A | 1 | A11 |
| **BC20-Q20-AN4X2/S400** 2530104 | Rear LED | 20 | 30 | 3-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | 2M/ PVC | C | 1 | A11 |
| **BC20-Q20-AP4X2** 2530100 | | 20 | 30 | 3-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | 2M/ PVC | A | 2 | A11 |
| **BC20-Q20-AZ3X2** 4352000 | | 20 | 30 | 2-wire AC | 20-250 VAC | 20 | ≤500 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | 2M/ PVC | A | 3 | A12 |
| **BC20-Q20-AZ3X2/S400** 2310005 | Rear LED | 20 | 30 | 2-wire AC | 20-250 VAC | 20 | ≤500 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | 2M/ PVC | C | 3 | A12 |
| **BC20-Q20-AN4X2-H1141** 2530111 | | 20 | 30 | 3-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | -- | B | 4 | A11 |
| **BC20-Q20-AP4X2-H1141** 2530101 | | 20 | 30 | 3-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | -- | B | 5 | A11 |
| **BC20-Q20-AP4X2-H1141/S400** 2530103 | Rear LED | 20 | 30 | 3-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | -- | B | 5 | A11 |
| **BC20-Q20-VN4X2-H1141** 2530131 | Comp. Outputs | 20 | 30 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | -- | B | 6 | A11 |
| **BC20-Q20-VN4X2-H1141/S400** 2530124 | Rear LED, Comp. Outputs | 20 | 30 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | -- | B | 6 | A11 |
| **BC20-Q20-VP4X2-H1141** 2530121 | Comp. Outputs | 20 | 30 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | -- | B | 7 | A11 |

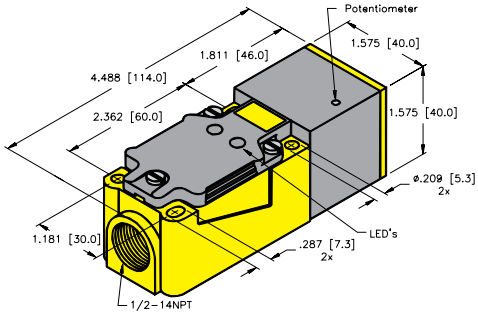
We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | CP40 & CP80

**Large Rectangular Housing with DC or AC Outputs**

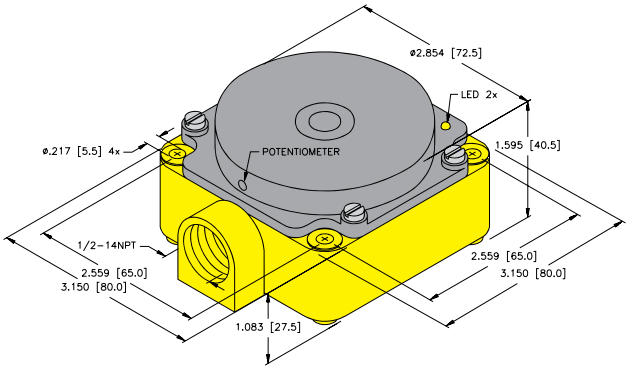
| Housing Style | Dimension Drawings |
|---|---|

A




40 mm - Terminal Chamber

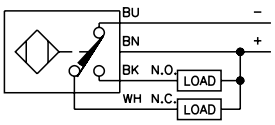
B



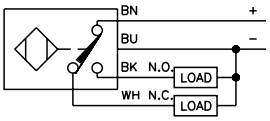

80 mm - Terminal Chamber

## Wiring Diagrams/Mating Cordsets

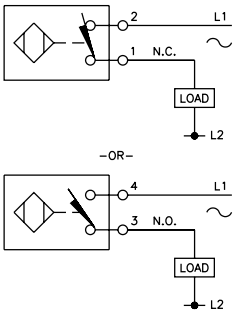
1




2




3




## A11 — 3 and 4-wire DC Capacitive - (AP, RP, AN, RN, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Reverse Polarity Protection: | Incorporated |
| Differential Travel (Hysteresis): | 2-20% (5% typical) | Wire-Break Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Transient Protection: | Per EN 60947-5-2 |
| Trigger Current for Short Circuit Protection: | ≥220 mA | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| No-Load Current: | ≤15 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Power-On Effect: | Per IEC 947-5-2 | Temperature Drift: | <±20% of Rated Operating Distance |

## A12 — 2-wire AC Capacitive - (AZ, FZ, RZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | 2-20% (5% typical) | Transient Protection: | Per EN 60947-5-2 |
| Continuous Load Current: | ≤500 mA | Shock: | 30 g, 11 ms |
| Voltage Drop Across Conducting Sensor: | ≤7.0 V | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Off-State (Leakage) Current: | ≤1.7 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Minimum Load Current: | ≥5.0 mA | Temperature Drift: | <±20% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | CP40 & CP80

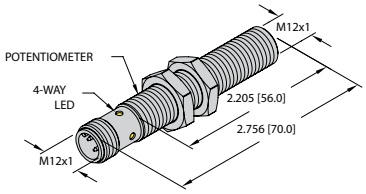
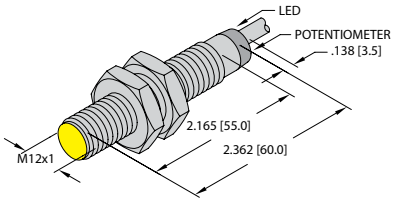
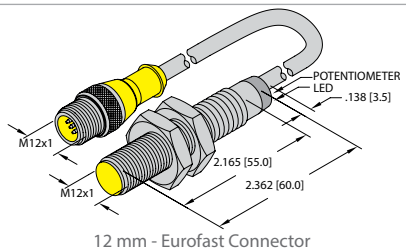
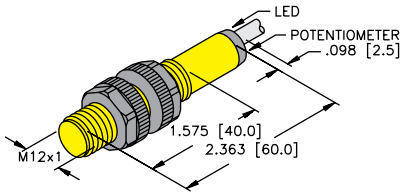
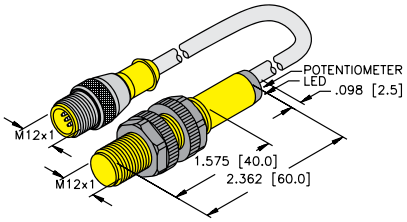
## Large Rectangular Housing with DC or AC Outputs

| Part Number/ ID Number | Features | Embeddable Range (mm) | Nonembeddable Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing Material | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BC20-CP40-VN4X2/S10** 25157 | Comp. Outputs | 20 | 30 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | A | 1 | A11 |
| **BC20-CP40-VP4X2/S10** 25156 | Comp. Outputs | 20 | 30 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | A | 2 | A11 |
| **BC20-CP40-FZ3X2/S10** 23115 | Prog. Outputs | 20 | 30 | 2-wire AC | 20-250 VAC | 20 | ≤500 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | A | 3 | A12 |
| **NC50-CP80-VN4X2/S10** 2580112 | Comp. Outputs | NA | 50 | 4-wire DC NPN | 10-65 VDC | 200 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | B | 1 | A11 |
| **NC50-CP80-VP4X2/S10** 2580212 | Comp. Outputs | NA | 50 | 4-wire DC PNP | 10-65 VDC | 200 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | B | 2 | A11 |
| **NC50-CP80-FZ3X2/S10** 2310610 | Prog. Outputs | NA | 50 | 2-wire AC | 20-250 VAC | 20 | ≤500 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | B | 3 | A12 |

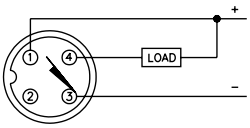
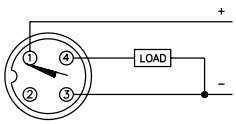
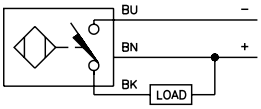
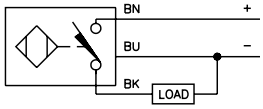
We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | 12 mm

**Threaded Barrel with DC Outputs**

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   12 mm - Eurofast Connector | B   12 mm - Potted-In Cable |
| C   12 mm - Eurofast Connector | D   12 mm - Potted-In Cable | E   12 mm - Eurofast Connector |

**Wiring Diagrams/Mating Cordsets**

| 1 | 2 | 3 | 4 |
|---|---|---|---|
|   Mating Cordset: RK 4T-* |   Mating Cordset: RK 4T-* |   |   |

**A11** — **3 and 4-wire DC Capacitive - (AP, RP, AN, RN, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Reverse Polarity Protection: | Incorporated |
| Differential Travel (Hysteresis): | 2-20% (5% typical) | Wire-Break Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Transient Protection: | Per EN 60947-5-2 |
| Trigger Current for Short Circuit Protection: | ≥220 mA | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| No-Load Current: | ≤15 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Power-On Effect: | Per IEC 947-5-2 | Temperature Drift: | <±20% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | 12 mm

## Threaded Barrel with DC Outputs

| Part Number/ ID Number | Features | Embeddable Range (mm) | Nonembeddable Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing Material | Front Cap/Face | End Cap Material | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BC3-M12-AP6X-H1141** 2601011 | | 3 | 3 | 3-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | CPB | ABS | -- | N/A | YE | -- | A | 2 | A11 |
| **BC3-M12-AN6X** 2601100 | | 3 | 3 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | CPB | ABS | PA | N/A | YE | 2M/ PVC | B | 3 | A11 |
| **BC3-M12-AP6X** 2601000 | | 3 | 3 | 3-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | CPB | ABS | PA | N/A | YE | 2M/ PVC | B | 4 | A11 |
| **BC3-M12-AN6X-0.2-RS4T** 2601190 | | 3 | 3 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | CPB | ABS | PA | N/A | YE | 0.2M/ PVC | C | 1 | A11 |
| **BC3-M12-AP6X-0.2-RS4T** 2601091 | | 3 | 3 | 3-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | CPB | ABS | PA | N/A | YE | 0.2M/ PVC | C | 2 | A11 |
| **BC3-S12-AN6X** 2601300 | | 3 | 4.5 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA 12-GF30 | PA 12-GF30 | PA | N/A | YE | 2M/ PVC | D | 3 | A11 |
| **BC3-S12-AP6X** 2601200 | | 3 | 4.5 | 3-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA 12-GF30 | PA 12-GF30 | PA | N/A | YE | 2M/ PVC | D | 4 | A11 |
| **BC3-S12-AP6X/S100** 2601201 | High Temp. 100 °C | 3 | 4.5 | 3-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +100 | IP67 | PA 12-GF30 | PA 12-GF30 | PA | N/A | YE | 2M/ PVC | D | 4 | A11 |
| **BC3-S12-AN6X-0.2-RS4T** 2601390 | | 3 | 4.5 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA 12-GF30 | PA 12-GF30 | PA | N/A | YE | 0.2M/ PVC | E | 1 | A11 |
| **BC3-S12-AP6X-0.2-RS4T** 2601291 | | 3 | 4.5 | 3-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA 12-GF30 | PA 12-GF30 | PA | N/A | YE | 0.2M/ PVC | E | 2 | A11 |

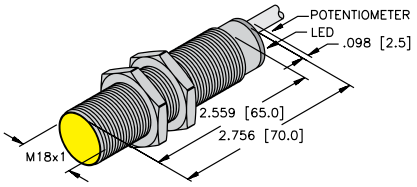
We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | 18 mm

**Metal Threaded Barrel with DC or AC Outputs**

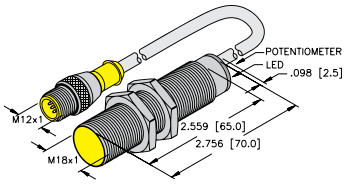
| Housing Style | Dimension Drawings |
|---|---|

A



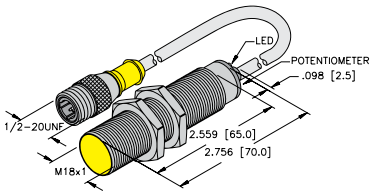

18 mm - Potted-In Cable

B




18 mm - Eurofast Connector

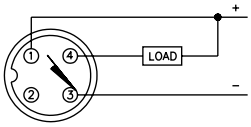
C




18 mm - Microfast Connector

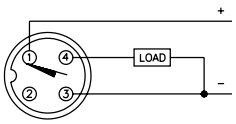
## Wiring Diagrams/Mating Cordsets

1



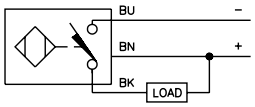

Mating Cordset: RK 4T-*

2

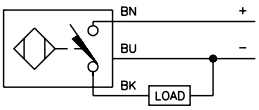



Mating Cordset: RK 4T-*

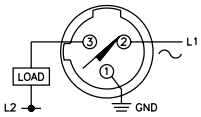
3




4

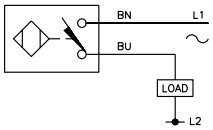



5




Mating Cordset: KB 3T-*

6




### A11 — 3 and 4-wire DC Capacitive - (AP, RP, AN, RN, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Reverse Polarity Protection: | Incorporated |
| Differential Travel (Hysteresis): | 2-20% (5% typical) | Wire-Break Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Transient Protection: | Per EN 60947-5-2 |
| Trigger Current for Short Circuit Protection: | ≥220 mA | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| No-Load Current: | ≤15 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Power-On Effect: | Per IEC 947-5-2 | Temperature Drift: | <±20% of Rated Operating Distance |

### A12 — 2-wire AC Capacitive - (AZ, FZ, RZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | 2-20% (5% typical) | Transient Protection: | Per EN 60947-5-2 |
| Continuous Load Current: | ≤500 mA | Shock: | 30 g, 11 ms |
| Voltage Drop Across Conducting Sensor: | ≤7.0 V | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Off-State (Leakage) Current: | ≤1.7 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Minimum Load Current: | ≥5.0 mA | Temperature Drift: | <±20% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | 18 mm

**Metal Threaded Barrel with DC or AC Outputs**

| Part Number/ ID Number | Embeddable Range (mm) | Nonembeddable Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing Material | Front Cap/Face | End Cap Material | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BC5-M18-AN4X** 2504002 | 5 | 5 | 3-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | CPB | PBT-G30-V0 | PUR | N/A | YE | 2M/PVC | A | 3 | A11 |
| **BC5-M18-AP4X** 2504001 | 5 | 5 | 3-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | CPB | PBT-G30-V0 | PUR | N/A | YE | 2M/PVC | A | 4 | A11 |
| **BC5-M18-AZ3X** 2305000 | 5 | 5 | 2-wire AC | 20-250 VAC | 20 | ≤500 | -25 to +70 | IP67 | CPB | PBT-G30-V0 | PUR | N/A | YE | 2M/PVC | A | 6 | A12 |
| **BC5-M18-AN4X-0.2-RS4T** 2504091 | 5 | 5 | 3-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | CPB | PBT-G30-V0 | PUR | N/A | YE | 0.2M/ PVC | B | 1 | A11 |
| **BC5-M18-AP4X-0.2-RS4T** 2504090 | 5 | 5 | 3-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | CPB | PBT-G30-V0 | PUR | N/A | YE | 0.2M/ PVC | B | 2 | A11 |
| **BC5-M18-AZ3X-0.2-SB3T** 2305090 | 5 | 5 | 2-wire AC | 20-250 AC | 20 | ≤500 | -25 to +70 | IP67 | CPB | PBT-G30-V0 | PUR | N/A | YE | 0.2M/ PVC | C | 5 | A12 |

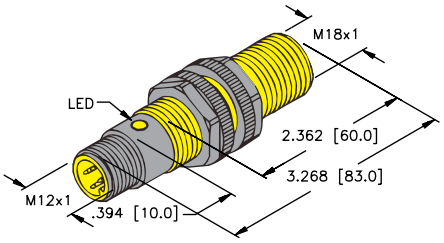
We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | 18 mm

## Metal Threaded Barrel with DC or AC Outputs

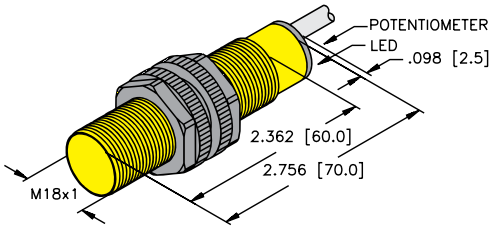
| Housing Style | Dimension Drawings |
|---|---|

A



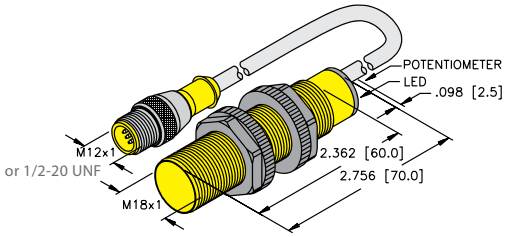

18 mm - Eurofast Connector

B




18 mm - Potted-In Cable

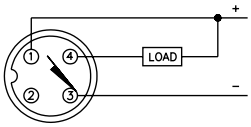
C




18 mm - Molded Connector

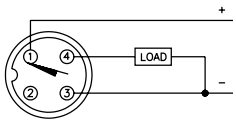
### Wiring Diagrams/Mating Cordsets

1



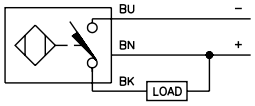

Mating Cordset: RK 4T-*

2

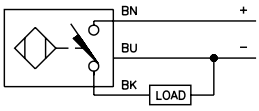



Mating Cordset: RK 4T-*

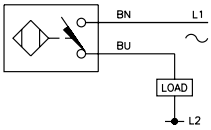
3



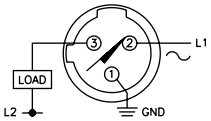

4




5




6




Mating Cordset: KB 3T-*

### A11 — 3 and 4-wire DC Capacitive - (AP, RP, AN, RN, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Reverse Polarity Protection: | Incorporated |
| Differential Travel (Hysteresis): | 2-20% (5% typical) | Wire-Break Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Transient Protection: | Per EN 60947-5-2 |
| Trigger Current for Short Circuit Protection: | ≥220 mA | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| No-Load Current: | ≤15 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Power-On Effect: | Per IEC 947-5-2 | Temperature Drift: | <±20% of Rated Operating Distance |

### A12 — 2-wire AC Capacitive - (AZ, FZ, RZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | 2-20% (5% typical) | Transient Protection: | Per EN 60947-5-2 |
| Continuous Load Current: | ≤500 mA | Shock: | 30 g, 11 ms |
| Voltage Drop Across Conducting Sensor: | ≤7.0 V | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Off-State (Leakage) Current: | ≤1.7 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Minimum Load Current: | ≥5.0 mA | Temperature Drift: | <±20% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | 18 mm

## Metal Threaded Barrel with DC or AC Outputs

| Part Number/ ID Number | Features | Embeddable Range (mm) | Nonembeddable Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing Material | End Cap Material | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BC5-S18-AN4X-H1141/S250** 2503108 | | 5 | 7.5 | 3-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA 12-GF30 | PUR | N/A | YE | -- | A | 1 | A11 |
| **BC5-S18-AP4X-H1141/S250** 2503602 | | 5 | 7.5 | 3-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA 12-GF30 | PUR | N/A | YE | -- | A | 2 | A11 |
| **BC5-S18-AN4X** 25031 | | 5 | 7.5 | 3-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA 12-GF30 | PUR | N/A | YE | 2M/PVC | B | 3 | A11 |
| **BCF5-S18-AN4X** 2503012 | Noise Immune | 5 | 7.5 | 3-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA 12-GF30 | PUR | N/A | YE | 2M/PVC | B | 3 | A11 |
| **BC5-S18-AP4X** 25030 | | 5 | 7.5 | 3-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA 12-GF30 | PUR | N/A | YE | 2M/PVC | B | 4 | A11 |
| **BCF5-S18-AP4X** 2503011 | Noise Immune | 5 | 7.5 | 3-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA 12-GF30 | PUR | N/A | YE | 2M/PVC | B | 4 | A11 |
| **BCF5-S18-AP4X/S90** 2503014 | Noise Immune | 5 | 7.5 | 3-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA 12-GF30 | PUR | N/A | YE | 2M/PUR | B | 4 | A11 |
| **BC5-S18-AN4X-0.2-RS4T** 2503192 | | 5 | 7.5 | 3-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA 12-GF30 | PUR | N/A | YE | 0.2M/PVC | C | 1 | A11 |
| **BCF5-S18-AN4X-0.2-RS4T** 2503089 | Noise Immune | 5 | 7.5 | 3-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA 12-GF30 | PUR | N/A | YE | 0.2M/PVC | C | 1 | A11 |
| **BC5-S18-AP4X-0.2-RS4T** 2503492 | | 5 | 7.5 | 3-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA 12-GF30 | PUR | N/A | YE | 0.2M/PVC | C | 2 | A11 |
| **BCF5-S18-AP4X-0.2-RS4T** 2503099 | Noise Immune | 5 | 7.5 | 3-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA 12-GF30 | PUR | N/A | YE | 0.2M/PVC | C | 2 | A11 |
| **BC5-S18-AZ3X** 2305500 | | 5 | 7.5 | 2-wire AC | 20-250 VAC | 20 | ≤200 | -25 to +70 | IP67 | PA 12-GF30 | PUR | N/A | YE | 2M/PVC | B | 5 | A12 |
| **BC5-S18-AZ3X-0.2-SB3T** 2305590 | | 5 | 7.5 | 2-wire AC | 20-250 VAC | 20 | ≤500 | -25 to +70 | IP67 | PA12-GF30 | PUR | N/A | YE | 0.2M/PVC | C | 6 | A12 |

**Notes:**

/S250: Without switch point adjustment potentiometer

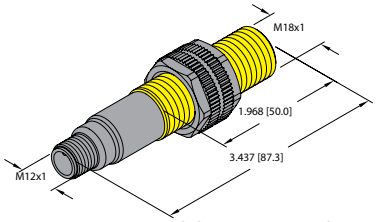
We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | 18 & 30 mm

**Plastic Threaded Barrels Configurable via IO-Link/Teach**

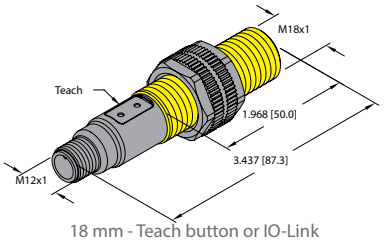
| Housing Style | Dimension Drawings |
|---|---|

A



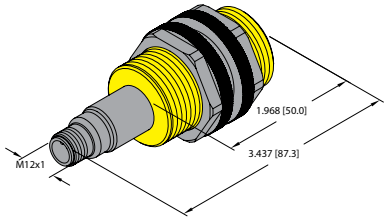

18 mm - Teach-by-wire or IO-Link

B



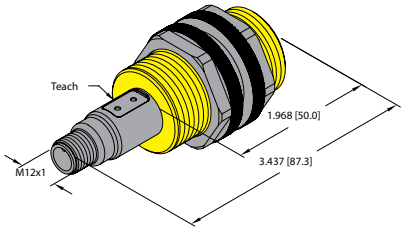

18 mm - Teach button or IO-Link

C




30 mm - Teach-by-wire or IO-Link

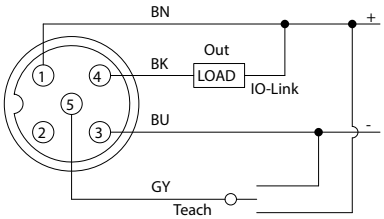
D




30 mm - Teach button or IO-Link

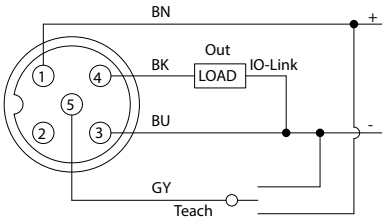
## Wiring Diagrams/Mating Cordsets

1




Mating Cordset: RK 4.5T-*

2




Mating Cordset: RK 4.5T-*

## A18 — 5-wire DC Teach Capacitive - (UP, UN)

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | 2-20% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤2.4 V |
| Off-State (Leakage) Current: | ≤0.1 mA |
| No-Load Current: | ≤15 mA |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |
| Temperature Drift: | <±20% of Rated Operating Distance |
| IO-Link: | V1.1 |

We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | 18 & 30 mm

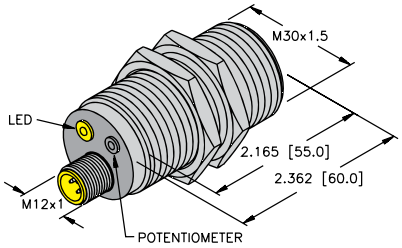
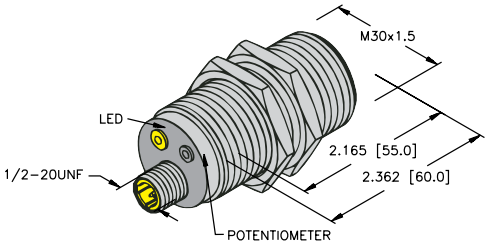
**Plastic Threaded Barrels Configurable via IO-Link/Teach**

| Part Number/ ID Number | Features | Embeddable Range (mm) | Nonembeddable Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing Material | End Cap Material | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BCT5-S18-UP6X2-H1151** 2101300 | Teach-by-wire or IO-Link | 5 | 7.5 | 4-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA12-GF30, PEI | PA | GN | YE | A | 1 | A18 |
| **BCT5-S18-UN6X2-H1151** 2101400 | Teach-by-wire or IO-Link | 5 | 7.5 | 4-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA12-GF30, PEI | PA | GN | YE | A | 2 | A18 |
| **BCT5-S18-UP6X2T-H1151** 2101100 | Teach buttons or IO-Link | 5 | 7.5 | 4-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA12-GF30, PEI | PA | GN | YE | B | 1 | A18 |
| **BCT5-S18-UN6X2T-H1151** 2101200 | Teach buttons or IO-Link | 5 | 7.5 | 4-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA12-GF30, PEI | PA | GN | YE | B | 2 | A18 |
| **BCT10-S30-UP6X2-H1151** 2101700 | Teach-by-wire or IO-Link | 10 | 15 | 4-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA12-GF30, PEI | PA | GN | YE | C | 1 | A18 |
| **BCT10-S30-UN6X2-H1151** 2101800 | Teach-by-wire or IO-Link | 10 | 15 | 4-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA12-GF30, PEI | PA | GN | YE | C | 2 | A18 |
| **BCT10-S30-UP6X2T-H1151** 2101500 | Teach buttons or IO-Link | 10 | 15 | 4-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA12-GF30, PEI | PA | GN | YE | D | 1 | A18 |
| **BCT10-S30-UN6X2T-H1151** 2101600 | Teach buttons or IO-Link | 10 | 15 | 4-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA12-GF30, PEI | PA | GN | YE | D | 2 | A18 |

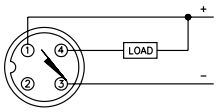
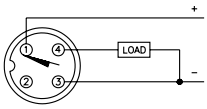
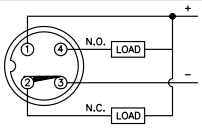
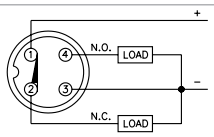
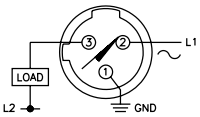
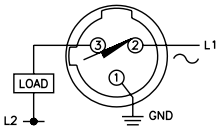
We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | 30 mm

## Metal Threaded Barrel with DC or AC Outputs

| Housing Style | Dimension Drawings |
|---|---|
| | A   30 mm - Eurofast Connector |
| B   30 mm - Microfast Connector | |

### Wiring Diagrams/Mating Cordsets

| | | |
|---|---|---|
| 1   Mating Cordset: RK 4T-* | 2   Mating Cordset: RK 4T-* | 3   Mating Cordset: RK 4.4T-* |
| 4   Mating Cordset: RK 4.4T-* | 5   Mating Cordset: KB 3T-* | 6   Mating Cordset: KB 3T-* |

### A11 — 3 and 4-wire DC Capacitive - (AP, RP, AN, RN, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Reverse Polarity Protection: | Incorporated |
| Differential Travel (Hysteresis): | 2-20% (5% typical) | Wire-Break Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Transient Protection: | Per EN 60947-5-2 |
| Trigger Current for Short Circuit Protection: | ≥220 mA | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| No-Load Current: | ≤15 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Power-On Effect: | Per IEC 947-5-2 | Temperature Drift: | <±20% of Rated Operating Distance |

### A12 — 2-wire AC Capacitive - (AZ, RZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | 2-20% (5% typical) | Transient Protection: | Per EN 60947-5-2 |
| Continuous Load Current: | ≤500 mA | Shock: | 30 g, 11 ms |
| Voltage Drop Across Conducting Sensor: | ≤7.0 V | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Off-State (Leakage) Current: | ≤1.7 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Minimum Load Current: | ≥5.0 mA | Temperature Drift: | <±20% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | 30 mm

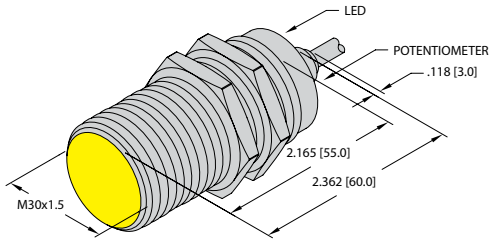
## Metal Threaded Barrel with DC or AC Outputs

| Part Number/ ID Number | Features | Embeddable Range (mm) | Nonembeddable Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing Material | Front Cap/Face | End Cap Material | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BC10-M30K-AN4X-H1141** 2503030 | | 10 | 10 | 3-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | CPB | PA 12-GF30 | PA 66-GF25-V0 | N/A | YE | A | 1 | A11 |
| **BC10-M30K-AP4X-H1141** 2503026 | | 10 | 10 | 3-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | CPB | PA 12-GF30 | PA 66-GF25-V0 | N/A | YE | A | 2 | A11 |
| **BC10-M30K-VN4X-H1141** 2503033 | Comp. Outputs | 10 | 10 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | CPB | PA 12-GF30 | PA 66-GF25-V0 | N/A | YE | A | 3 | A11 |
| **BC10-M30K-VP4X-H1141** 2503035 | Comp. Outputs | 10 | 10 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | CPB | PA 12-GF30 | PA 66-GF25-V0 | N/A | YE | A | 4 | A11 |
| **BC10-M30K-AZ3X-B3131** 2503034 | | 10 | 10 | 2-wire AC N.O. | 20-250 AC | 20 | ≤500 | -25 to +70 | IP67 | CPB | PA 12-GF30 | PA 66-GF25-V0 | N/A | YE | B | 5 | A12 |
| **BC10-M30K-RZ3X-B3131** 2503023 | | 10 | 10 | 2-wire AC N.C. | 20-250 AC | 20 | ≤500 | -25 to +70 | IP67 | CPB | PA 12-GF30 | PA 66-GF25-V0 | N/A | YE | B | 6 | A12 |

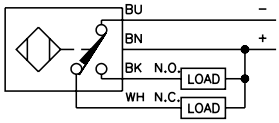
We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | 30 mm

## Metal Threaded Barrel with DC or AC Outputs

| Housing Style | Dimension Drawings |
|---|---|
| | A   30 mm - Potted-In Cable |

### Wiring Diagrams/Mating Cordsets

1
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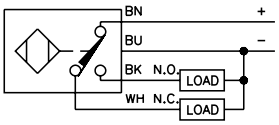


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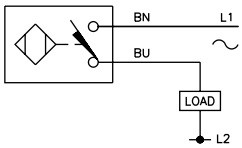


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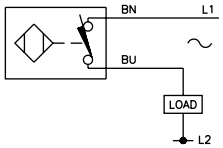



### A11 — 3 and 4-wire DC Capacitive - (AP, RP, AN, RN, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Reverse Polarity Protection: | Incorporated |
| Differential Travel (Hysteresis): | 2-20% (5% typical) | Wire-Break Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Transient Protection: | Per EN 60947-5-2 |
| Trigger Current for Short Circuit Protection: | ≥220 mA | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| No-Load Current: | ≤15 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Power-On Effect: | Per IEC 947-5-2 | Temperature Drift: | <±20% of Rated Operating Distance |

### A12 — 2-wire AC Capacitive - (AZ, RZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | 2-20% (5% typical) | Transient Protection: | Per EN 60947-5-2 |
| Continuous Load Current: | ≤500 mA | Shock: | 30 g, 11 ms |
| Voltage Drop Across Conducting Sensor: | ≤7.0 V | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Off-State (Leakage) Current: | ≤1.7 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Minimum Load Current: | ≥5.0 mA | Temperature Drift: | <±20% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | 30 mm

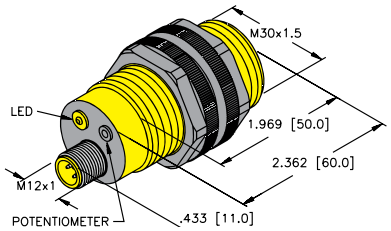
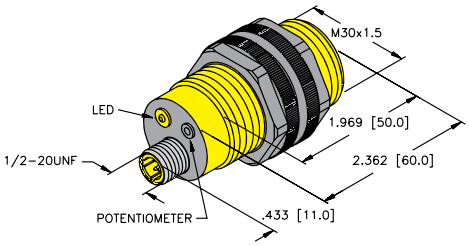
## Metal Threaded Barrel with DC or AC Outputs

| Part Number/ ID Number | Features | Embeddable Range (mm) | Nonembeddable Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing Material | Front Cap/Face | End Cap Material | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BC10-M30K-VN4X** 2503024 | Comp. Outputs | 10 | 10 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | CPB | PA 12-GF30 | PA 66-GF25-V0 | N/A | YE | 2M/PVC | A | 1 | A11 |
| **BC10-M30K-VP4X** 2503022 | Comp. Outputs | 10 | 10 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | CPB | PA 12-GF30 | PA 66-GF25-V0 | N/A | YE | 2M/PVC | A | 2 | A11 |
| **BC10-M30K-AZ3X** 2503031 | | 10 | 10 | 2-wire AC N.O. | 20-250 VAC | 20 | ≤500 | -25 to +70 | IP67 | CPB | PA 12-GF30 | PA 66-GF25-V0 | N/A | YE | 2M/PVC | A | 3 | A12 |
| **BC10-M30K-RZ3X** 2503025 | | 10 | 10 | 2-wire AC N.C. | 20-250 VAC | 20 | ≤500 | -25 to +70 | IP67 | CPB | PA 12-GF30 | PA 66-GF25-V0 | N/A | YE | 2M/PVC | A | 4 | A12 |

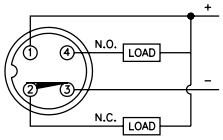
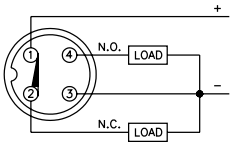
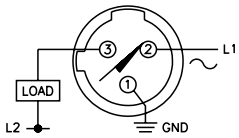
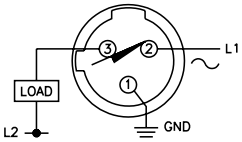
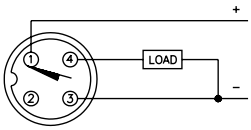
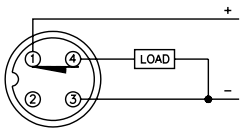
We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | 30 mm

## Plastic Threaded Barrels with Connectors and AC/DC Outputs

| Housing Style | Dimension Drawings |
|---|---|
| | A   30 mm - Eurofast Connector |
| B   30 mm - Microfast Connector | |

### Wiring Diagrams/Mating Cordsets

| | | |
|---|---|---|
| 1   Mating Cordset: RK 4.4T-* | 2   Mating Cordset: RK 4.4T-* | 3   Mating Cordset: KB 3T-* |
| 4   Mating Cordset: KB 3T-* | 5   Mating Cordset: RK 4T-* | 6   Mating Cordset: RK 4T-* |

### A11 — 3 and 4-wire DC Capacitive - (AP, RP, AN, RN, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Reverse Polarity Protection: | Incorporated |
| Differential Travel (Hysteresis): | 2-20% (5% typical) | Wire-Break Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Transient Protection: | Per EN 60947-5-2 |
| Trigger Current for Short Circuit Protection: | ≥220 mA | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| No-Load Current: | ≤15 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Power-On Effect: | Per IEC 947-5-2 | Temperature Drift: | <±20% of Rated Operating Distance |

### A12 — 2-wire AC Capacitive - (AZ, RZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | 2-20% (5% typical) | Transient Protection: | Per EN 60947-5-2 |
| Continuous Load Current: | ≤500 mA | Shock: | 30 g, 11 ms |
| Voltage Drop Across Conducting Sensor: | ≤7.0 V | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Off-State (Leakage) Current: | ≤1.7 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Minimum Load Current: | ≥5.0 mA | Temperature Drift: | <±20% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | 30 mm

## Plastic Threaded Barrels with Connectors and AC/DC Outputs

| Part Number/ ID Number | Features | Embeddable Range (mm) | Nonembeddable Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing Material | End Cap Material | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BCC10-S30-AP4X-H1141** 2503038 | Low Dielec-tric Targets | 10 | 10 | 3-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA12-GF30 | PA 66-GF25-V0 | N/A | YE | A | 5 | A11 |
| **BCC10-S30-RP4X-H1143** 1542562 | Low Dielec-tric Targets | 10 | 10 | 3-wire DC PNP N.C. | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA12-GF30 | PA 66-GF25-V0 | N/A | YE | A | 6 | A11 |
| **BC10-S30-VN4X-H1141** 2506010 | Comp. Outputs | 10 | 15 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA12-GF30 | PA 66-GF25-V0 | N/A | YE | A | 1 | A11 |
| **BCF10-S30-VN4X-H1141** 2506016 | Noise Immune | 10 | 15 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA12-GF30 | PA 66-GF25-V0 | N/A | YE | A | 1 | A11 |
| **BC10-S30-VP4X-H1141** 2506100 | Comp. Outputs | 10 | 15 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA12-GF30 | PA 66-GF25-V0 | N/A | YE | A | 2 | A11 |
| **BCC10-S30-VP4X-H1141** 2503043 | Low Dielec-tric Targets | 10 | 10 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA12-GF30 | PA 66-GF25-V0 | N/A | YE | A | 2 | A11 |
| **BCF10-S30-VP4X-H1141** 2506117 | Noise Immune | 10 | 15 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA12-GF30 | PA 66-GF25-V0 | N/A | YE | A | 2 | A11 |
| **BC10-S30-AZ3X-B3131** 2310710 | | 10 | 15 | 2-wire AC N.O. | 20-250 VAC | 20 | ≤500 | -25 to +70 | IP67 | PA12-GF30 | PA 66-GF25-V0 | N/A | YE | B | 3 | A12 |
| **BCF10-S30-AZ3X-B3131** 2506012 | Noise Immune | 10 | 15 | 2-wire AC N.O. | 20-250 VAC | 20 | ≤500 | -25 to +70 | IP67 | PA12-GF30 | PA 66-GF25-V0 | N/A | YE | B | 3 | A12 |
| **BC10-S30-RZ3X-B3131** 2310810 | | 10 | 15 | 2-wire AC N.C. | 20-250 VAC | 20 | ≤500 | -25 to +70 | IP67 | PA12-GF30 | PA 66-GF25-V0 | N/A | YE | B | 4 | A12 |
| **BCF10-S30-RZ3X-B3131** 2506014 | Noise Immune | 10 | 15 | 2-wire AC N.C. | 20-250 VAC | 20 | ≤500 | -25 to +70 | IP67 | PA12-GF30 | PA 66-GF25-V0 | N/A | YE | B | 4 | A12 |

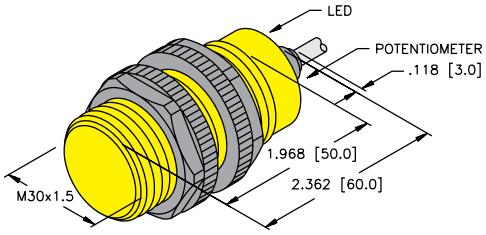
We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | 30 mm

**Plastic Threaded Barrel with DC or AC Outputs**

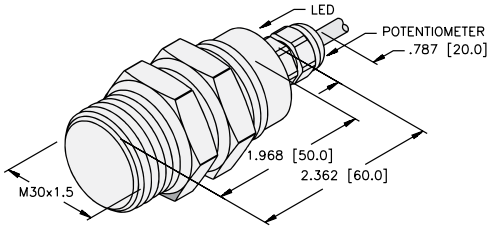
| Housing Style | Dimension Drawings |
|---|---|

A




30 mm - Potted-In Cable

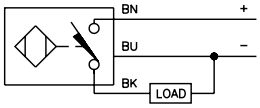
B




30 mm - Potted-In Cable

**Wiring Diagrams/Mating Cordsets**

1

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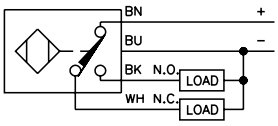


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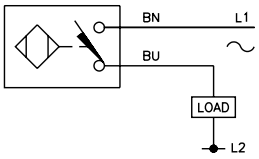


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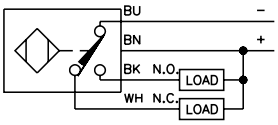



**A11** — **3 and 4-wire DC Capacitive - (AP, RP, AN, RN, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Reverse Polarity Protection: | Incorporated |
| Differential Travel (Hysteresis): | 2-20% (5% typical) | Wire-Break Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Transient Protection: | Per EN 60947-5-2 |
| Trigger Current for Short Circuit Protection: | ≥220 mA | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| No-Load Current: | ≤15 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Power-On Effect: | Per IEC 947-5-2 | Temperature Drift: | <±20% of Rated Operating Distance |

**A12** — **2-wire AC Capacitive - (AZ, RZ)**

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | 2-20% (5% typical) | Transient Protection: | Per EN 60947-5-2 |
| Continuous Load Current: | ≤500 mA | Shock: | 30 g, 11 ms |
| Voltage Drop Across Conducting Sensor: | ≤7.0 V | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Off-State (Leakage) Current: | ≤1.7 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Minimum Load Current: | ≥5.0 mA | Temperature Drift: | <±20% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | 30 mm

## Plastic Threaded Barrel with DC or AC Outputs

| Part Number/ ID Number | Features | Embeddable Range (mm) | Nonembeddable Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing Material | End Cap Material | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BCC10-S30-AP4X** 2503038 | Low Dielec-tric Targets | 10 | 10 | 3-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA 12-GF30 | PA 66-GF25-V0 | N/A | YE | A | 1 | A11 |
| **BC10-S30-VN4X** 2506000 | Comp. Outputs | 10 | 15 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA 12-GF30 | PA 66-GF25-V0 | N/A | YE | A | 2 | A11 |
| **BCF10-S30-VN4X** 2506011 | Noise Immune | 10 | 15 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA 12-GF30 | PA 66-GF25-V0 | N/A | YE | A | 3 | A11 |
| **BC10-S30-VP4X** 2506110 | Comp. Outputs | 10 | 15 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA 12-GF30 | PA 66-GF25-V0 | N/A | YE | A | 2 | A11 |
| **BCF10-S30-VP4X** 2506111 | Noise Immune | 10 | 15 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA 12-GF30 | PA 66-GF25-V0 | N/A | YE | A | 2 | A11 |
| **BC10-S30-AZ3X** 2310700 | | 10 | 15 | 2-wire AC | 20-250 VAC | 20 | ≤500 | -25 to +70 | IP67 | PA 12-GF30 | PA 66-GF25-V0 | N/A | YE | A | 4 | A12 |
| **BCF10-S30-AZ3X** 2506015 | Noise Immune | 10 | 15 | 2-wire AC | 20-250 VAC | 20 | ≤500 | -25 to +70 | IP67 | PA 12-GF30 | PA 66-GF25-V0 | N/A | YE | A | 4 | A12 |
| **BC10-PT30-VN4X2** 2507020 | Chemical Resistant | 10 | 15 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PVDF | PVDF | GN | YE | B | 2 | A11 |
| **BC10-PT30-VP4X2** 2507010 | Chemical Resistant | 10 | 15 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PVDF | PVDF | GN | YE | B | 3 | A11 |
| **BC10-PT30-AZ3X** 2350001 | Chemical Resistant | 10 | 15 | 2-wire AC | 20-250 VAC | 20 | ≤500 | -25 to +70 | IP67 | PVDF | PVDF | N/A | YE | B | 4 | A12 |

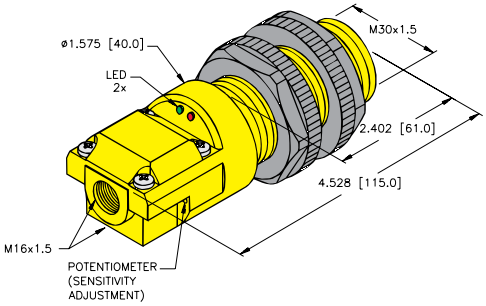
We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | 30, 34, & 40 mm

**Large Diameter Plastic Barrels with Terminal Chamber and 4-Wire DC Outputs**

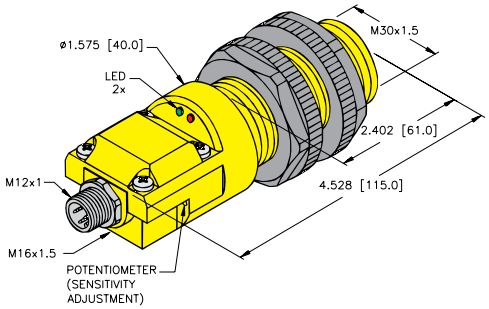
| Housing Style | Dimension Drawings |
|---|---|

A



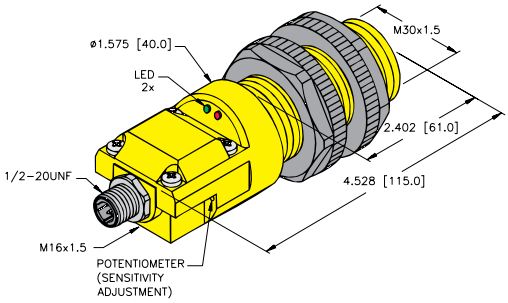

30 mm - Terminal Chamber

B



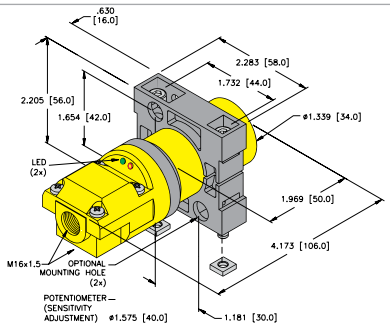

30 mm - Eurofast Connector

C



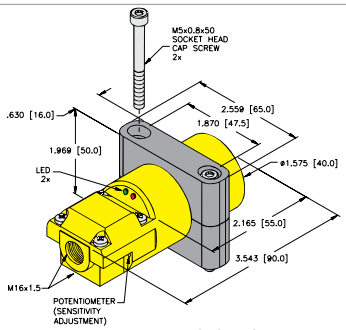

30 mm - Minifast Connector

D




34 mm - Terminal Chamber

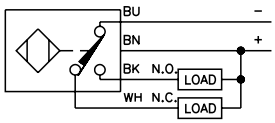
E




40 mm - Terminal Chamber

## Wiring Diagrams/Mating Cordsets

1

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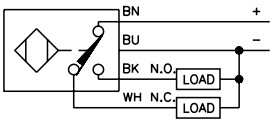


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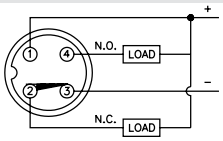
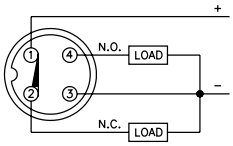


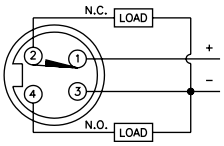

Mating Cordset: RK 4.4T-*

4




Mating Cordset: RK 4.4T-*

5




Mating Cordset: RKM 40-*M

## A11 — 3 and 4-wire DC Capacitive - (AP, RP, AN, RN, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Reverse Polarity Protection: | Incorporated |
| Differential Travel (Hysteresis): | 2-20% (5% typical) | Wire-Break Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Transient Protection: | Per EN 60947-5-2 |
| Trigger Current for Short Circuit Protection: | ≥220 mA | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| No-Load Current: | ≤15 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Power-On Effect: | Per IEC 947-5-2 | Temperature Drift: | <±20% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | 30, 34, & 40 mm

**Large Diameter Plastic Barrels with Terminal Chamber and 4-Wire DC Outputs**

| Part Number/ ID Number | Features | Embeddable Range (mm) | Nonembeddable Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing Material | End Cap Material | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BC10-P30SR-VN4X2** 25051 | Comp. Outputs | 10 | 15 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | ABS | ABS | GN | YE | A | 1 | A11 |
| **BC10-P30SR-VN4X2-H1141** 2505192 | Comp. Outputs | 10 | 15 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | ABS | ABS | GN | YE | B | 3 | A11 |
| **BC10-P30SR-VP4X2** 25050 | Comp. Outputs | 10 | 15 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | ABS | ABS | GN | YE | A | 2 | A11 |
| **BC10-P30SR-VP4X2-H1141** 2505094 | Comp. Outputs | 10 | 15 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | ABS | ABS | GN | YE | B | 4 | A11 |
| **BC10-P30SR-VP4X2-B1141** 2505092 | Comp. Outputs | 10 | 15 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | ABS | ABS | GN | YE | C | 5 | A11 |
| **BC15-K34SR-VN4X2** 2502128 | Comp. Outputs | 15 | 23 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | ABS | GN | YE | D | 1 | A11 |
| **BC20-K40SR-VN4X2** 25101 | Comp. Outputs | 20 | 30 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | ABS | ABS | GN | YE | E | 1 | A11 |
| **BC20-K40SR-VP4X2** 25100 | Comp. Outputs | 20 | 30 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | ABS | ABS | GN | YE | E | 2 | A11 |

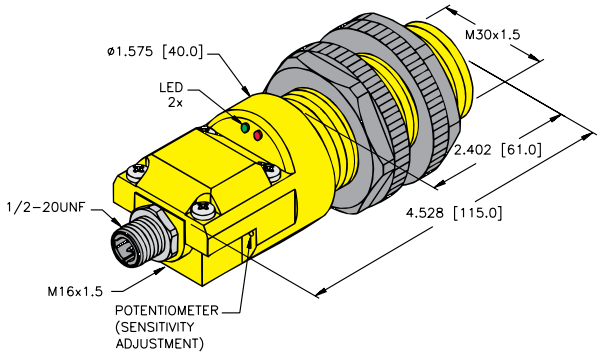
We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | 30 & 40 mm

**Large Diameter Plastic Barrels with Terminal Chamber and AC Outputs**

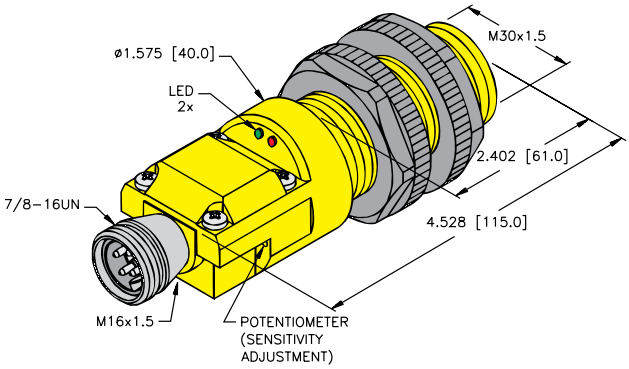
| Housing Style | Dimension Drawings |
|---|---|

A



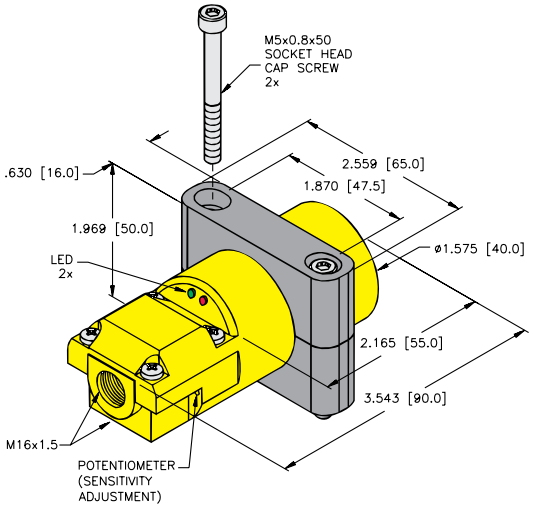

30 mm - Microfast Connector

B




30 mm - Minifast Connector

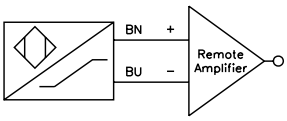
C




40 mm - Terminal Chamber

**Wiring Diagrams/Mating Cordsets**

1

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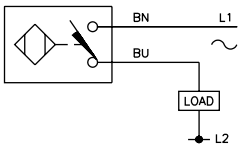
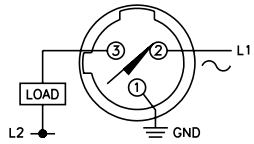



Mating Cordset: KB 3T-*

3




Mating Cordset: RK 30-*M; RKM 30-*M

**A12** — **2-wire AC Capacitive - (AZ, RZ)**

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | 2-20% (5% typical) | Transient Protection: | Per EN 60947-5-2 |
| Continuous Load Current: | ≤500 mA | Shock: | 30 g, 11 ms |
| Voltage Drop Across Conducting Sensor: | ≤7.0 V | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Off-State (Leakage) Current: | ≤1.7 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Minimum Load Current: | ≥5.0 mA | Temperature Drift: | <±20% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | 30 & 40 mm

**Large Diameter Plastic Barrels with Terminal Chamber and AC Outputs**

| Part Number/ ID Number | Features | Embeddable Range (mm) | Nonembeddable Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing Material | End Cap Material | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BC10-P30SR-FZ3X2-B3131** 2310491 | Comp. Outputs | 10 | 15 | 2-wire AC | 20-250 AC | 200 | ≤500 | -25 to +70 | IP67 | ABS | ABS | GN | YE | A | 2 | A12 |
| **BC10-P30SR-FZ3X2-B1131** 2310490 | Comp. Outputs | 10 | 15 | 2-wire AC | 20-250 AC | 20 | ≤500 | -25 to +70 | IP67 | ABS | ABS | GN | YE | B | 3 | A12 |
| **BC10-P30SR-FZ3X2-B2131** 2310493 | Comp. Outputs | 10 | 15 | 2-wire AC | 20-250 AC | 20 | ≤500 | -25 to +70 | IP67 | ABS | ABS | GN | YE | B | 3 | A12 |
| **BC20-K40SR-FZ3X2** 23103 | Prog. Outputs | 20 | 30 | 2-wire AC | 20-250 VAC | 20 | ≤500 | -25 to +70 | IP67 | ABS | ABS | GN | YE | C | 1 | A12 |

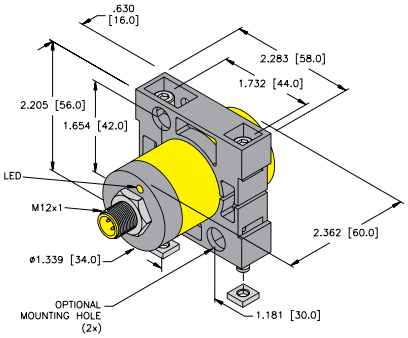
We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | K34

**Smooth Plastic Barrel with DC or AC Outputs**

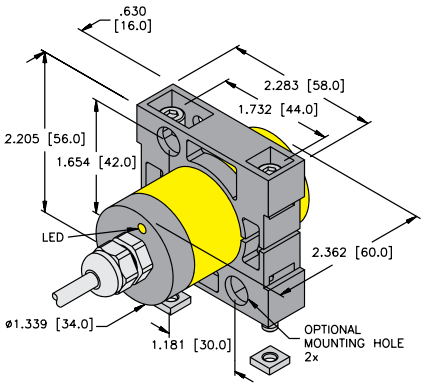
| Housing Style | Dimension Drawings |
|---|---|

A



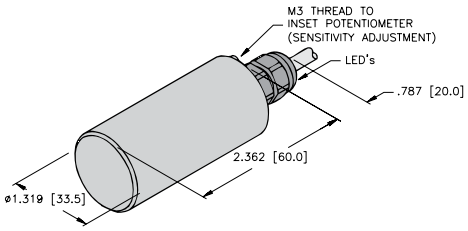

34 mm - Eurofast Connector

B




34 mm - Potted-In Cable

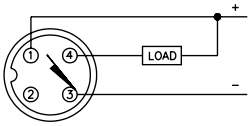
C




34 mm - Potted-In Cable

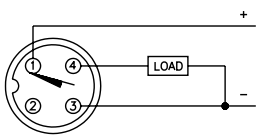
## Wiring Diagrams/Mating Cordsets

1



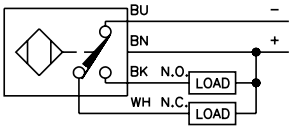

Mating Cordset: RK 4T-*

2




Mating Cordset: RK 4T-*

3

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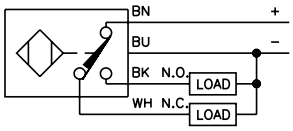
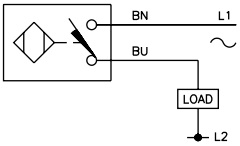



5




## A11 — 3 and 4-wire DC Capacitive - (AP, RP, AN, RN, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Reverse Polarity Protection: | Incorporated |
| Differential Travel (Hysteresis): | 2-20% (5% typical) | Wire-Break Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Transient Protection: | Per EN 60947-5-2 |
| Trigger Current for Short Circuit Protection: | ≥220 mA | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| No-Load Current: | ≤15 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Power-On Effect: | Per IEC 947-5-2 | Temperature Drift: | <±20% of Rated Operating Distance |

## A12 — 2-wire AC Capacitive - (AZ, RZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | 2-20% (5% typical) | Transient Protection: | Per EN 60947-5-2 |
| Continuous Load Current: | ≤500 mA | Shock: | 30 g, 11 ms |
| Voltage Drop Across Conducting Sensor: | ≤7.0 V | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Off-State (Leakage) Current: | ≤1.7 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Minimum Load Current: | ≥5.0 mA | Temperature Drift: | <±20% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | K34

## Smooth Plastic Barrel with DC or AC Outputs

| Part Number/ ID Number | Features | Embeddable Range (mm) | Nonembeddable Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing Material | End Cap Material | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BC15-K34-AN4X-H1141** 2502125 | | 15 | 23 | 3-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | ABS | N/A | YE | -- | A | 1 | A11 |
| **BC15-K34-AP4X-H1141** 2502126 | | 15 | 23 | 3-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | ABS | N/A | YE | -- | A | 2 | A11 |
| **BC15-K34-VN4X** 2502127 | Comp. Outputs | 15 | 23 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | ABS | N/A | YE | 2M/PVC | B | 3 | A11 |
| **BC15-K34-VP4X** 2502124 | Comp. Outputs | 15 | 23 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | ABS | N/A | YE | 2M/PVC | B | 4 | A11 |
| **BC15-K34-AZ3X** 2310008 | | 15 | 23 | 2-wire AC | 20-250 VAC | 20 | ≤500 | -25 to +70 | IP67 | PBT-GF30-V0 | ABS | N/A | YE | 2M/PVC | B | 5 | A12 |
| **BCF15-K34-AZ3X** 2502136 | Noise Immune | 15 | 23 | 2-wire AC | 20-250 VAC | 20 | ≤500 | -25 to +70 | IP67 | PBT-GF30-V0 | ABS | N/A | YE | 2M/PVC | B | 5 | A12 |
| **NC20-KT34-VP4X2** 2550300 | Chemical Resistant Comp. Output | N/A | 20 | 4-wire DC PNP | 10-65 VDC | 200 | ≤200 | -25 to +70 | IP67 | PVDF | PVDF | GN | YE | 2M/ PVDF | C | 4 | A11 |

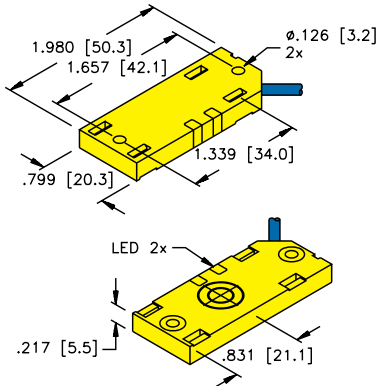
We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | Namur

**Intrinsically Safe**

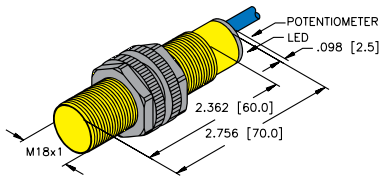
| Housing Style | Dimension Drawings |
|---|---|

A



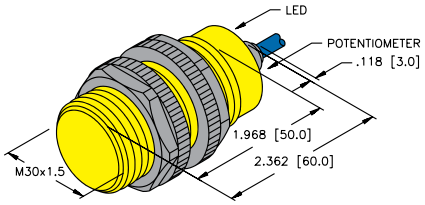

5.5 mm - Potted-In Cable

B



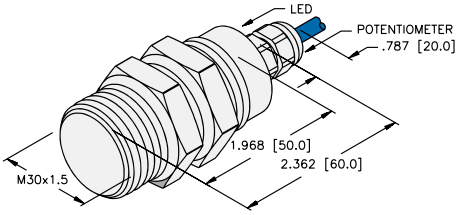

18 mm - Potted-In Cable

C




30 mm - Potted-In Cable

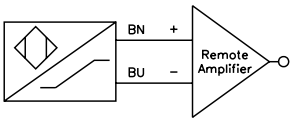
D




30 mm - Potted-In Cable

**Wiring Diagrams/Mating Cordsets**

1




**A19** — **2-wire DC NAMUR Capacitive- (Y0 and Y1)**

| | | | |
|---|---|---|---|
| Differential Travel (Hysteresis): | 1-20% | Power-On Effect: | Realized in Amplifier |
| Nominal Voltage: | 8.2 VDC (EN60947-5-6) | Reverse Polarity Protection: | Incorporated |
| Non-activated Current Consumption: | ≤1.2 mA | Wire-Break Protection: | Realized in Amplifier |
| Activated Current Consumption: | ≥2.1 mA | Transient Protection: | Realized in Amplifier |
| Recommended Switching Point for Remote Amplifier: | >1.2 to <2.1 mA, typ. 1.55 mA ON/1.75 mA OFF | Shock: | 30 g, 11 ms |
| | | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | | Repeatability: | ≤2% of Rated Operating Distance |

**Amplifier Note:**
Inductive sensors with Namur outputs are typically used in hazardous locations and the approval agencies require the use of an amplifier to regulate the signals in the hazardous area. Due to the wide variety of approvals, output options, and amplifier designs, it is not possible to incorporate all of the choices in this catalog. For the most up to date information, please either search for these products under our interface technology product category (www.turck.us) or contact us by phone.

We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | Namur

**Intrinsically Safe**

| Part Number/ ID Number | Features | Embeddable Range (mm) | Nonembeddable Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing Material | End Cap Material | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BC5-QF5.5-Y1X/S250** 2030000 | | 5 | 5 | 2-wire DC NAMUR | 5-30 VDC | 100 | Remote | -25 to +70 | IP67 | PP | -- | N/A | YE | 2M/TPU | A | 1 | A19 |
| **BC5-S18-Y1X** 20060 | | 5 | 7.5 | 2-wire DC NAMUR | 5-30 VDC | 100 | Remote | -25 to +70 | IP67 | PA 12-GF30 | PUR | N/A | YE | 2M/PVC | B | 1 | A19 |
| **BC10-S30-Y1X** 20100 | | 10 | 15 | 2-wire DC NAMUR | 5-30 VDC | 100 | Remote | -25 to +70 | IP67 | PA 12-GF30 | PA 66-GF25-V0 | N/A | YE | 2M/PVC | C | 1 | A19 |
| **BC10-PT30-Y0X** 2020000 | Chemical Resistant | 10 | 15 | 2-wire DC NAMUR | 5-30 VDC | 100 | Remote | -25 to +70 | IP67 | PVDF | PVDF | N/A | YE | 2M/ PVDF | D | 1 | A19 |

**Notes:**

/S250: Without switch point adjustment potentiometer

We reserve the right to make technical alterations without prior notice.

Notes

Notes

# Ultrasonics Sensor Selection Guide

| Threaded Metal Barrel | | | |
|---|---|---|---|
| | | | |
| **Housing** | **18 mm** | **18 mm** | **30 mm** |
| **Rated Operating Distance** | **40 -130 cm** | **40 - 130 cm** | **40 - 600 cm** |
| **Pages** | **F3 - 6** | **F7 - 10** | **F11** |

| | Hazardous ATEx and IECEx Approval | Rectangular | |
|---|---|---|---|
| | | | |
| **Housing** | **18 and 30 mm** | **40 mm** | **40 mm** |
| **Rated Operating Distance** | **40 - 600 cm** | **200 cm** | **200 cm** |
| **Pages** | **F13** | **F15** | **F15** |

We reserve the right to make technical alterations without prior notice.

# Ultrasonic Sensors

The M18 and M30 ultrasonic sensors feature smooth transducer faces, short blind zones, adjustable sensing fields, and robust chrome plated brass barrels, along with multiple options for outputs and configurations that enable users to select the best design for their application.

Output configurations range from a single output with an adjustable set point to versions with configurable outputs either as dual set point, analog, window, retroreflective, or IO-Link. Sensors can be taught via wire, integral buttons, or IO-Link.

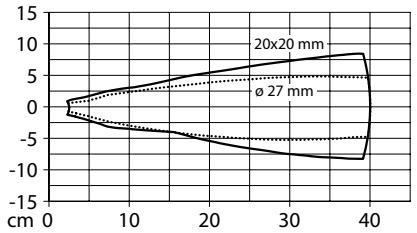
Certain M18 and M30 versions are available with ATEX and IECEx approvals for environments that have dust or gases which could be ignited and cause a fire or explosion.

The CK40 and CP40 rectangular ultrasonic sensor family uses separate transducers for the transmitter and receiver, giving these sensors a 60° sonic cone angle for detecting targets, which is much larger than what is possible with the M18 or M30 barrels.

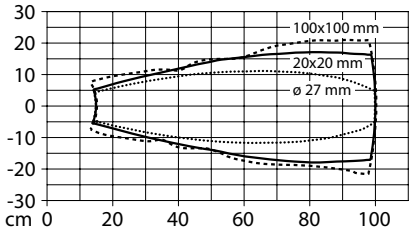
## Performance Curves

The diagrams show the detection ranges of the individual ultrasonic sensors, covering ranges of 40 to 600 cm. Different targets are used in sizes 20 x 20 mm, and 100 x 100 mm according to the EN standard 60947-5-2, as well as a round rod with a diameter of 27 mm in order to compare the detection ranges of different ultrasonic sensors. When using other targets than the standard ones, the detection ranges may vary due to different reflection properties and geometries.

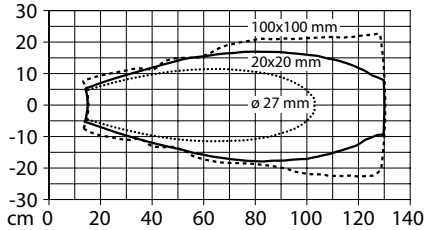
**RU40**



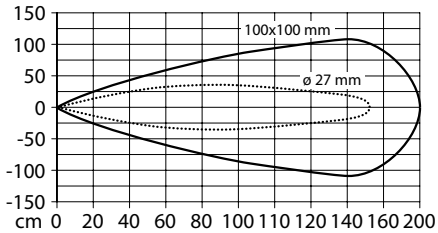

**RU100**



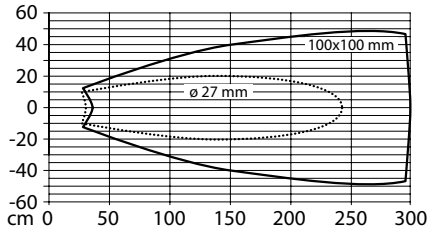

**RU130**



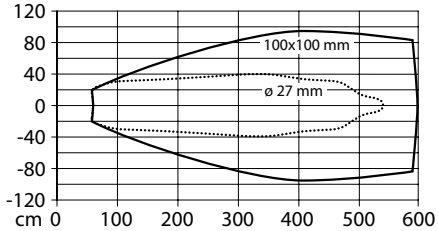

**RU200**




**RU300**




**RU600**




We reserve the right to make technical alterations without prior notice.

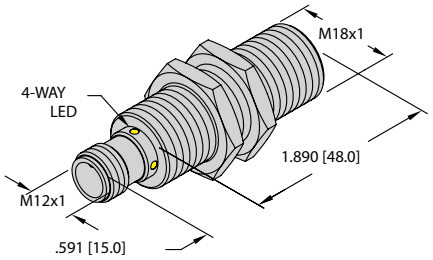
# Ultrasonics Sensors | 18 mm

## Front Sensing Transducer

### Housing Style

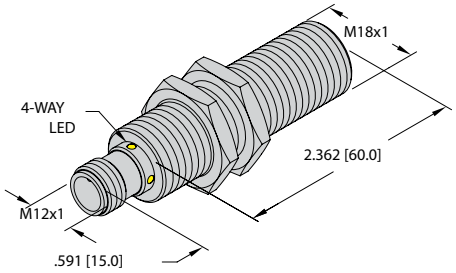
### Dimension Drawings

A



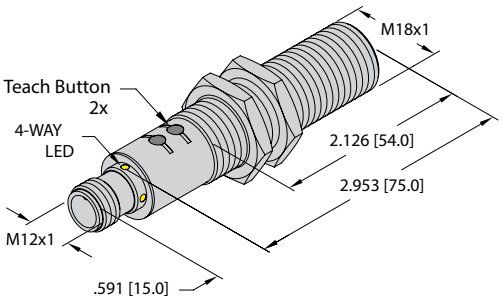

18 mm - Metal Barrel with M12 Eurofast Connection, **Teach-by-Wire**

B




18 mm - Metal Barrel with M12 Eurofast Connection, **Teach-by-Wire**

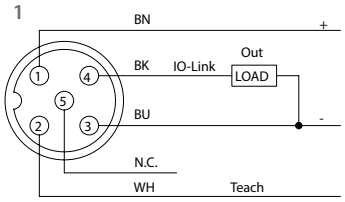
C




18 mm - Metal Barrel with M12 Eurofast Connection, **Teach-by-Wire or Button**

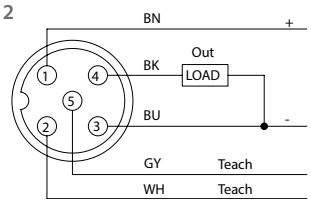
### Wiring Diagrams/Mating Cordsets

1



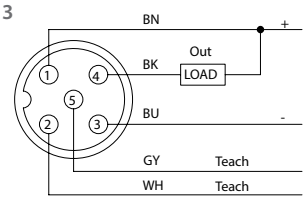

Mating Cordset: RK 4.4T-*

2



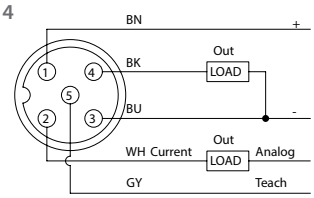

Mating Cordset: RK 4.5T-*

3



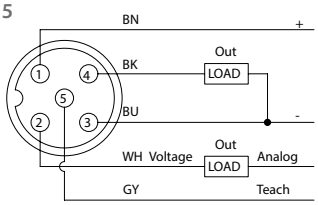

Mating Cordset: RK 4.5T-*

4



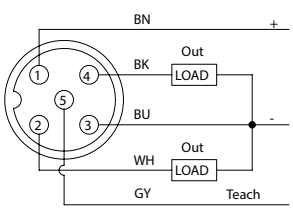

Mating Cordset: RK 4.5T-*

5



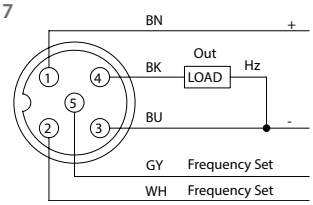

Mating Cordset: RK 4.5T-*

6



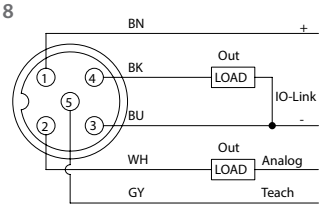

Mating Cordset: RK 4.5T-*

7




Mating Cordset: RK 4.5T-*

8




Mating Cordset: RK 4.5T-*

### A30 — Ultrasonic Barrels

| | | | |
|---|---|---|---|
| Operating Voltage: | 15-30 VDC | Frequency Output (where applicable): | 240-1600 Hz or 0-400 Hz Selectable |
| Voltage Drop Across Conducting Sensor: | ≤2.5 V | Short-Circuit Protection: | Yes |
| Continuous Switching Current: | ≤150 mA | Reverse Polarity Protection: | Yes |
| No-Load Current: | ≤50 mA | Operating Temp: | -25 to +70 °C |
| Residual Current: | ≤0.1 mA | Temperature Drift: | 1.5% of full scale |
| Load Resistance: | ≤1000 Ω | Internal Protection Rating: | IP67 |
| Readiness Delay: | ≤300 ms | Housing Material: | CPB |
| Repeatability: | 0.15% of full scale | Transducer Material: | PET/PU/Epoxy |
| Switching Output: | Programmable NO or NC | LED: | Yellow/Green |

We reserve the right to make technical alterations without prior notice.

# Ultrasonics Sensors | 18 mm

## Front Sensing Transducer

| Part Number/ ID Number | Rated Operating Distance (cm) | 1 X PNP Output | 1 X NPN Output | 2 X PNP Output | 2X PNP/NPN or Programmable 4-20 mA/0-10 v Analog & 1 X PNP/NPN output | Analog 0-10v | Analog 4-20mA | Frequency Output | Retroreflective Programmable | Retroreflective Only | Window Mode Programmable | IO-Link V1.1 | Blind Zone (cm) | Sonic Cone Angle | Resolution (mm) | Switching Hyst. (mm) | Max Approach Speed | Max Pass Speed | Switching Freq. (Hz) | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **RU40U-M18M-AP8X2-H1151** 1610094 | 40 | ● | | | | | | | | | | ● | 2.5 | 9° | 0.5 | 5 | ≤ 4 m/s | ≤ 1.5 m/s | 7 | A | 1 | A30 |
| **RU40U-M18M-UP8X2-H1151** 1610008 | 40 | ● | | | | | | | | | | | 2.5 | 9° | 0.5 | 5 | ≤ 4 m/s | ≤ 1.5 m/s | 7 | A | 2 | A30 |
| **RU40U-M18M-UN8X2-H1151** 1610080 | 40 | | ● | | | | | | | | | | 2.5 | 9° | 0.5 | 5 | ≤ 4 m/s | ≤ 1.5 m/s | 7 | A | 3 | A30 |
| **RU40U-M18E-LI8X2-H1151** 1610069 | 40 | ●[1] | | | | | ● | | | | | | 2.5 | 9° | 0.5 | 5 | ≤ 4 m/s | ≤ 1.5 m/s | 7 | B | 4 | A30 |
| **RU40U-M18E-LU8X2-H1151** 1610109 | 40 | ●[1] | | | | ● | | | | | | | 2.5 | 9° | 0.5 | 5 | ≤ 4 m/s | ≤ 1.5 m/s | 7 | B | 5 | A30 |
| **RU40U-M18E-2UP8X2-H1151** 1610012 | 40 | | | ● | | | | | ● | | ● | | 2.5 | 9° | 0.5 | 5 | ≤ 4 m/s | ≤ 1.5 m/s | 7 | B | 6 | A30 |
| **RU40U-M18E-2UP8X2T-H1151** 1610016 | 40 | | | ● | | | | | ● | | ● | | 2.5 | 9° | 0.5 | 5 | ≤ 4 m/s | ≤ 1.5 m/s | 7 | C | 6 | A30 |
| **RU40U-M18M-LFX-H1151** 1610021 | 40 | | | | | | | ● | | | | | 2.5 | 9° | 0.5 | 5 | ≤ 4 m/s | ≤ 1.5 m/s | 7 | A | 7 | A30 |
| **RU40L-M18M-UP8X2-H1151** 1610076 | 40 | ● | | | | | | | | ● | | | 2.5 | 9° | 0.5 | 5 | ≤ 4 m/s | ≤ 1.5 m/s | 7 | A | 2 | A30 |
| **RU40L-M18M-UN8X2-H1151** 1610084 | 40 | | ● | | | | | | | ● | | | 2.5 | 9° | 0.5 | 5 | ≤ 4 m/s | ≤ 1.5 m/s | 7 | A | 3 | A30 |
| **RU40U-M18E-LIU2PN8X2T-H1151** 1610024 | 40 | | | | ● | | | | ● | | ● | ●[2] | 2.5 | 9° | 0.5 | 5 | ≤ 4 m/s | ≤ 1.5 m/s | 7 | C | 8 | A30 |

[1] Switching output is not adjustable
[2] Multiplexing and synchronization modes supported

We reserve the right to make technical alterations without prior notice.

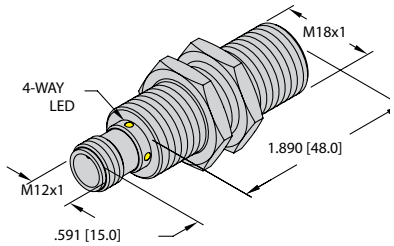
# Ultrasonics Sensors | 18 mm

## Front Sensing Transducer

### Housing Style

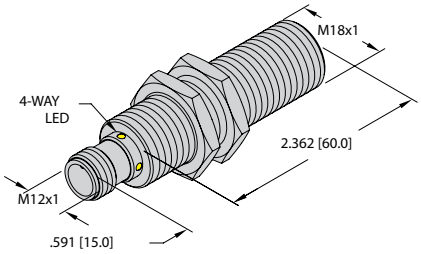
### Dimension Drawings

A



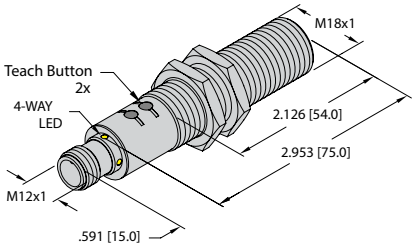

18 mm - Metal Barrel with M12 Eurofast Connection, **Teach-by-Wire**

B




18 mm - Metal Barrel with M12 Eurofast Connection, **Teach-by-Wire**

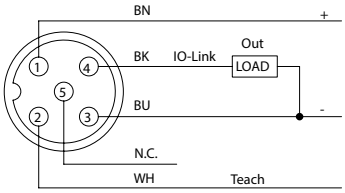
C




18 mm - Metal Barrel with M12 Eurofast Connection, **Teach-by-Wire or Button**

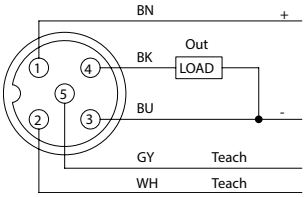
### Wiring Diagrams/Mating Cordsets

1



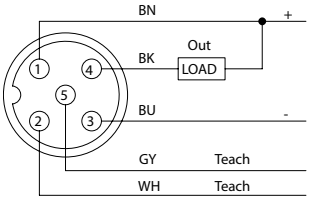

Mating Cordset: RK 4.4T-*

2



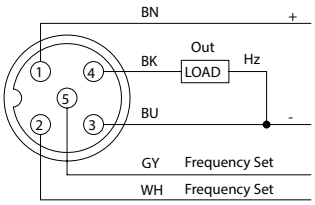

Mating Cordset: RK 4.5T-*

3



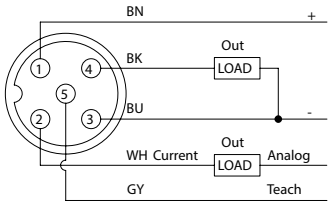

Mating Cordset: RK 4.5T-*

4



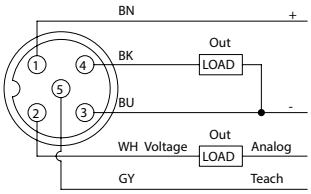

Mating Cordset: RK 4.5T-*

5



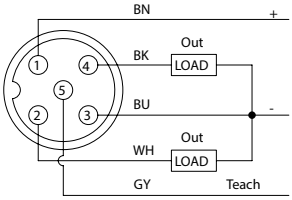

Mating Cordset: RK 4.5T-*

6



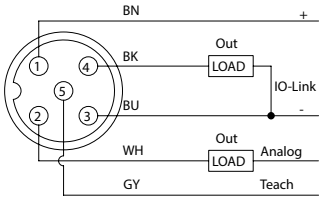

Mating Cordset: RK 4.5T-*

7




Mating Cordset: RK 4.5T-*

8




Mating Cordset: RK 4.5T-*

### A30 — Ultrasonic Barrels

| | |
|---|---|
| Operating Voltage: | 15-30 VDC |
| Voltage Drop Across Conducting Sensor: | ≤2.5 V |
| Continuous Switching Current: | ≤150 mA |
| No-Load Current: | ≤50 mA |
| Residual Current: | ≤0.1 mA |
| Load Resistance: | ≤1000 Ω |
| Readiness Delay: | ≤300 ms |
| Repeatability: | 0.15% of full scale |
| Switching Output: | Programmable NO or NC |
| Frequency Output (where applicable): | 240-1600 Hz or 0-400 Hz Selectable |
| Short-Circuit Protection: | Yes |
| Reverse Polarity Protection: | Yes |
| Operating Temp: | -25 to +70 °C |
| Temperature Drift: | 1.5% of full scale |
| Internal Protection Rating: | IP67 |
| Housing Material: | CPB |
| Transducer Material: | PET/PU/Epoxy |
| LED: | Yellow/Green |

We reserve the right to make technical alterations without prior notice.

# Ultrasonics Sensors | 18 mm

## Front Sensing Transducer

| Part Number/ ID Number | Rated Operating Distance (cm) | 1 X PNP Output | 1 X NPN Output | 2 X PNP Output | 2X PNP/NPN or Programmable 4-20 mA/0-10 v Analog & 1 X PNP/NPN output | Analog 0-10v | Analog 4-20mA | Frequency Output | Retroreflective Programmable | Retroreflective Only | Window Mode Programmable | IO-Link V1.1 | Blind Zone (cm) | Sonic Cone Angle | Resolution (mm) | Switching Hyst. (mm) | Max Approach Speed | Max Pass Speed | Switching Freq. (Hz) | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **RU100U-M18M-AP8X2-H1151** 1610095 | 100 | ● | | | | | | | | | | ● | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | A | 1 | A30 |
| **RU100U-M18M-UP8X2-H1151** 1610010 | 100 | ● | | | | | | | | | | | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | A | 2 | A30 |
| **RU100U-M18M-UN8X2-H1151** 1610081 | 100 | | ● | | | | | | | | | | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | A | 3 | A30 |
| **RU100U-M18M-LFX-H1151** 1610022 | 100 | | | | | | | ● | | | | | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | A | 4 | A30 |
| **RU100L-M18M-UP8X2-H1151** 1610077 | 100 | ● | | | | | | | | ● | | | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | A | 2 | A30 |
| **RU100L-M18M-UN8X2-H1151** 1610085 | 100 | | ● | | | | | | | ● | | | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | A | 3 | A30 |
| **RU130U-M18E-LI8X2-H1151** 1610089 | 130 | ●[1] | | | | | ● | | | | | | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | B | 5 | A30 |
| **RU130U-M18E-LU8X2-H1151** 1610110 | 130 | ●[1] | | | | ● | | | | | | | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | B | 6 | A30 |
| **RU130U-M18E-2UP8X2-H1151** 1610014 | 130 | | | ● | | | | | ● | | ● | | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | B | 7 | A30 |
| **RU130U-M18E-2UP8X2T-H1151** 1610018 | 130 | | | ● | | | | | ● | | ● | | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | C | 7 | A30 |
| **RU130U-M18E-LIU2PN8X2T-H1151** 1610026 | 130 | | | | ● | | | | ● | | ● | ●[2] | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | C | 8 | A30 |

[1] Switching output is not adjustable
[2] Multiplexing and synchronization modes supported

We reserve the right to make technical alterations without prior notice.

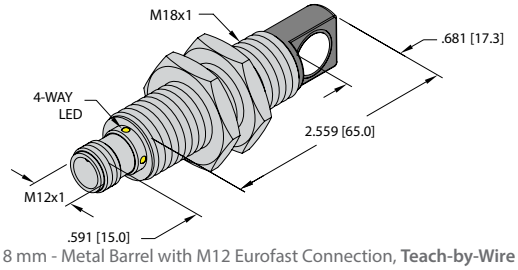
# Ultrasonics Sensors | 18 mm

## Side Sensing Transducer

### Housing Style

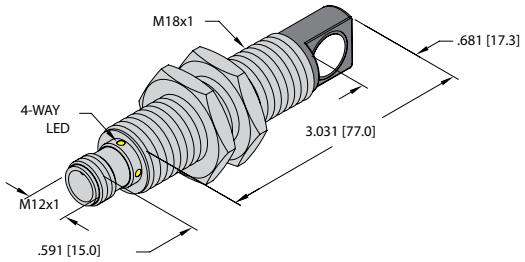
### Dimension Drawings

A



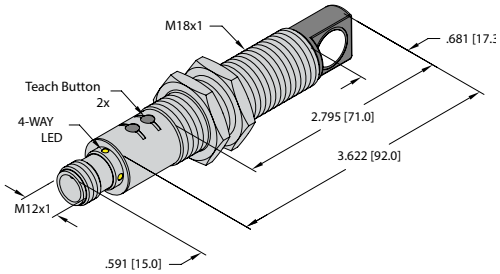

18 mm - Metal Barrel with M12 Eurofast Connection, **Teach-by-Wire**

B




18 mm - Metal Barrel with M12 Eurofast Connection, **Teach-by-Wire**

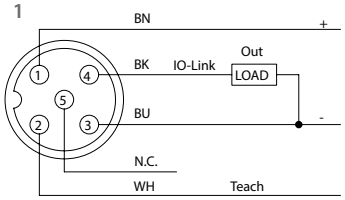
C




18 mm - Metal Barrel with M12 Eurofast Connection, **Teach-by-Wire or Button**

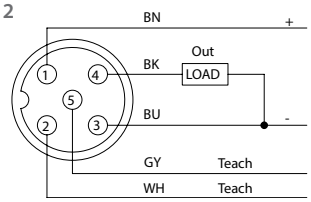
### Wiring Diagrams/Mating Cordsets

1



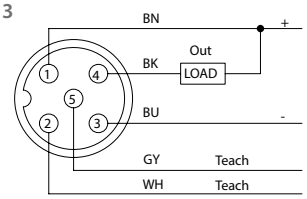

Mating Cordset: RK 4.4T-*

2



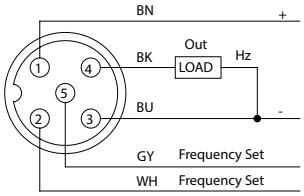

Mating Cordset: RK 4.5T-*

3



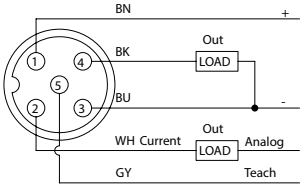

Mating Cordset: RK 4.5T-*

4



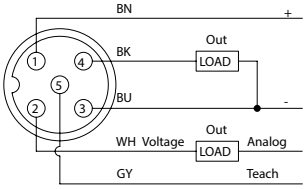

Mating Cordset: RK 4.5T-*

5



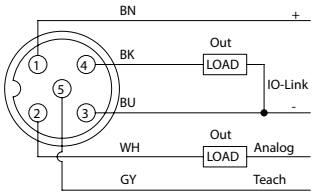

Mating Cordset: RK 4.5T-*

6




Mating Cordset: RK 4.5T-*

7




Mating Cordset: RK 4.5T-*

### A30 — Ultrasonic Barrels

| | |
|---|---|
| Operating Voltage: | 15-30 VDC |
| Voltage Drop Across Conducting Sensor: | ≤2.5 V |
| Continuous Switching Current: | ≤150 mA |
| No-Load Current: | ≤50 mA |
| Residual Current: | ≤0.1 mA |
| Load Resistance: | ≤1000 Ω |
| Readiness Delay: | ≤300 ms |
| Repeatability: | 0.15% of full scale |
| Switching Output: | Programmable NO or NC |
| Frequency Output (where applicable): | 240-1600 Hz or 0-400 Hz Selectable |
| Short-Circuit Protection: | Yes |
| Reverse Polarity Protection: | Yes |
| Operating Temp: | -25 to +70 °C |
| Temperature Drift: | 1.5% of full scale |
| Internal Protection Rating: | IP67 |
| Housing Material: | CPB |
| Transducer Material: | PET/PU/Epoxy |
| LED: | Yellow/Green |

We reserve the right to make technical alterations without prior notice.

# Ultrasonics Sensors | 18 mm

## Side Sensing Transducer

| Part Number/ ID Number | Rated Operating Distance (cm) | 1 X PNP Output | 1 X NPN Output | 2X PNP/NPN or Programmable 4-20 mA/0-10 v Analog & 1 X PNP/NPN output | Analog 0-10v | Analog 4-20mA | Frequency Output | Retroreflective Programmable | Retroreflective Only | Window Mode Programmable | IO-Link V1.1 | Blind Zone (cm) | Sonic Cone Angle | Resolution (mm) | Switching Hyst. (mm) | Max Approach Speed | Max Pass Speed | Switching Freq. (Hz) | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **RU40U-M18MS-AP8X2-H1151** 1610105 | 40 | ● | | | | | | | | | ● | 2.5 | 9° | 0.5 | 5 | ≤ 4 m/s | ≤ 1.5 m/s | 7 | A | 1 | A30 |
| **RU40U-M18MS-UP8X2-H1151** 1610009 | 40 | ● | | | | | | | | | | 2.5 | 9° | 0.5 | 5 | ≤ 4 m/s | ≤ 1.5 m/s | 7 | A | 2 | A30 |
| **RU40U-M18MS-UN8X2-H1151** 1610082 | 40 | | ● | | | | | | | | | 2.5 | 9° | 0.5 | 5 | ≤ 4 m/s | ≤ 1.5 m/s | 7 | A | 3 | A30 |
| **RU40U-M18MS-LFX-H1151** 1610019 | 40 | | | | | | ● | | | | | 2.5 | 9° | 0.5 | 5 | ≤ 4 m/s | ≤ 1.5 m/s | 7 | A | 4 | A30 |
| **RU40U-M18ES-LI8X2-H1151** 1610097 | 40 | ●[1] | | | | ● | | | | | | 2.5 | 9° | 0.5 | 5 | ≤ 4 m/s | ≤ 1.5 m/s | 7 | B | 5 | A30 |
| **RU40U-M18ES-LU8X2-H1151** 1610111 | 40 | ●[1] | | | ● | | | | | | | 2.5 | 9° | 0.5 | 5 | ≤ 4 m/s | ≤ 1.5 m/s | 7 | B | 6 | A30 |
| **RU40L-M18MS-UP8X2-H1151** 1610078 | 40 | ● | | | | | | | ● | | | 2.5 | 9° | 0.5 | 5 | ≤ 4 m/s | ≤ 1.5 m/s | 7 | A | 2 | A30 |
| **RU40L-M18MS-UN8X2-H1151** 1610086 | 40 | | ● | | | | | | ● | | | 2.5 | 9° | 0.5 | 5 | ≤ 4 m/s | ≤ 1.5 m/s | 7 | A | 3 | A30 |
| **RU40U-M18ES-LIU2PN8X2T-H1151** 1610025 | 40 | | | ● | | | | ● | | ● | ●[2] | 2.5 | 9° | 0.5 | 5 | ≤ 4 m/s | ≤ 1.5 m/s | 7 | C | 7 | A30 |

[1] Switching output is not adjustable
[2] Multiplexing and synchronization modes supported

We reserve the right to make technical alterations without prior notice.

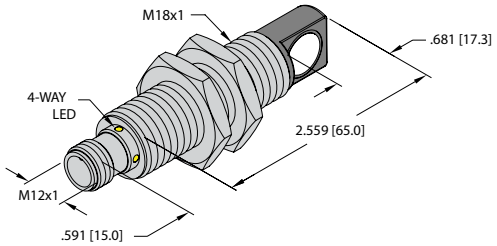
# Ultrasonics Sensors | 18 mm

## Side Sensing Transducer

### Housing Style

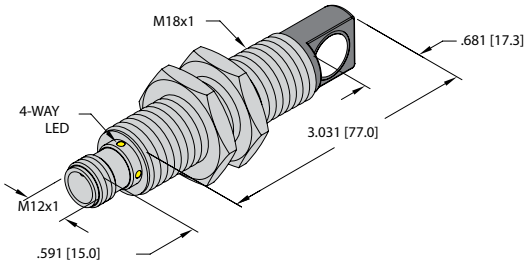
### Dimension Drawings

A



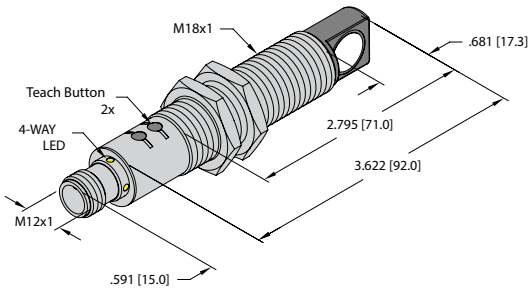

18 mm - Metal Barrel with M12 Eurofast Connection, **Teach-by-Wire**

B




18 mm - Metal Barrel with M12 Eurofast Connection, **Teach-by-Wire**

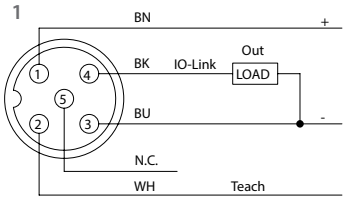
C




18 mm - Metal Barrel with M12 Eurofast Connection, **Teach-by-Wire or Button**

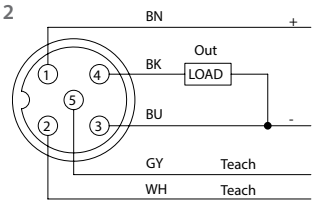
### Wiring Diagrams/Mating Cordsets

1



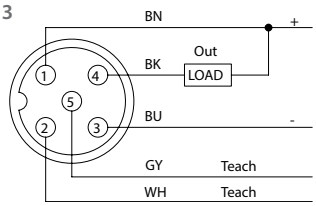

Mating Cordset: RK 4.4T-*

2



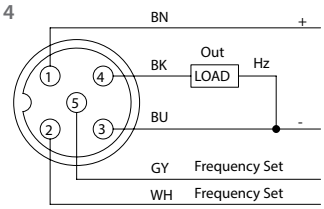

Mating Cordset: RK 4.5T-*

3



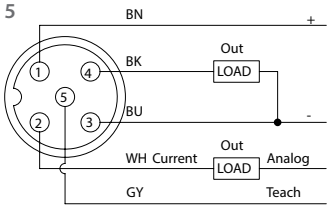

Mating Cordset: RK 4.5T-*

4



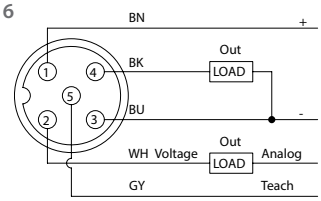

Mating Cordset: RK 4.5T-*

5



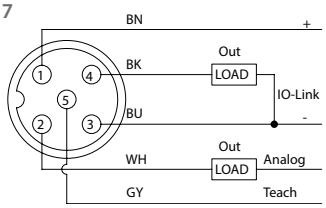

Mating Cordset: RK 4.5T-*

6




Mating Cordset: RK 4.5T-*

7




Mating Cordset: RK 4.5T-*

### A30 — Ultrasonic Barrels

| | |
|---|---|
| Operating Voltage: | 15-30 VDC |
| Voltage Drop Across Conducting Sensor: | ≤2.5 V |
| Continuous Switching Current: | ≤150 mA |
| No-Load Current: | ≤50 mA |
| Residual Current: | ≤0.1 mA |
| Load Resistance: | ≤1000 Ω |
| Readiness Delay: | ≤300 ms |
| Repeatability: | 0.15% of full scale |
| Switching Output: | Programmable NO or NC |
| Frequency Output (where applicable): | 240-1600 Hz or 0-400 Hz Selectable |
| Short-Circuit Protection: | Yes |
| Reverse Polarity Protection: | Yes |
| Operating Temp: | -25 to +70 °C |
| Temperature Drift: | 1.5% of full scale |
| Internal Protection Rating: | IP67 |
| Housing Material: | CPB |
| Transducer Material: | PET/PU/Epoxy |
| LED: | Yellow/Green |

We reserve the right to make technical alterations without prior notice.

# Ultrasonics Sensors | 18 mm

## Side Sensing Transducer

| Part Number/ ID Number | Rated Operating Distance (cm) | 1 X PNP Output | 1 X NPN Output | 2X PNP/NPN or Programmable 4-20 mA/0-10 v Analog & 1 X PNP/NPN output | Analog 0-10v | Analog 4-20mA | Frequency Output | Retroreflective Programmable | Retroreflective Only | Window Mode Programmable | IO-Link V1.1 | Blind Zone (cm) | Sonic Cone Angle | Resolution (mm) | Switching Hyst. (mm) | Max Approach Speed | Max Pass Speed | Switching Freq. (Hz) | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **RU100U-M18MS-AP8X2-H1151** 1610106 | 100 | ● | | | | | | | | | ● | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | A | 1 | A30 |
| **RU100U-M18MS-UP8X2-H1151** 1610011 | 100 | ● | | | | | | | | | | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | A | 2 | A30 |
| **RU100U-M18MS-UN8X2-H1151** 1610083 | 100 | | ● | | | | | | | | | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | A | 3 | A30 |
| **RU100U-M18MS-LFX-H1151** 1610020 | 100 | | | | | | ● | | | | | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | A | 4 | A30 |
| **RU100L-M18MS-UP8X2-H1151** 1610079 | 100 | ● | | | | | | | ● | | | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | A | 2 | A30 |
| **RU100L-M18MS-UN8X2-H1151** 1610087 | 100 | | ● | | | | | | ● | | | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | A | 3 | A30 |
| **RU130U-M18ES-LI8X2-H1151** 1610098 | 130 | ●[1] | | | | ● | | | | | | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | B | 5 | A30 |
| **RU130U-M18ES-LU8X2-H1151** 1610112 | 130 | ●[1] | | | ● | | | | | | | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | B | 6 | A30 |
| **RU130U-M18ES-LIU2PN8X2T-H1151** 1610027 | 130 | | | ● | | | | ● | | ● | ●[2] | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | C | 7 | A30 |

[1] Switching output is not adjustable
[2] Multiplexing and synchronization modes supported

We reserve the right to make technical alterations without prior notice.

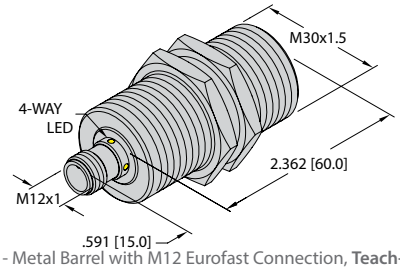
# Ultrasonics Sensors | 30 mm

## Front Sensing Transducer

### Housing Style

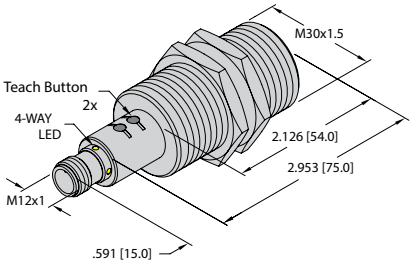
### Dimension Drawings

A



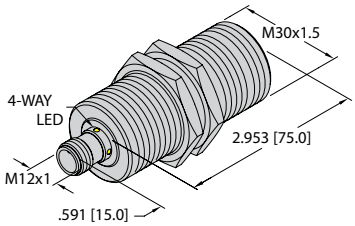

30 mm - Metal Barrel with M12 Eurofast Connection, **Teach-by-Wire**

B



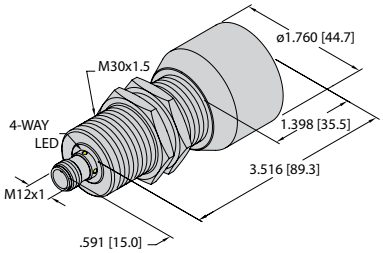

30 mm - Metal Barrel with M12 Eurofast Connection, **Teach-by-Wire or Button**

C



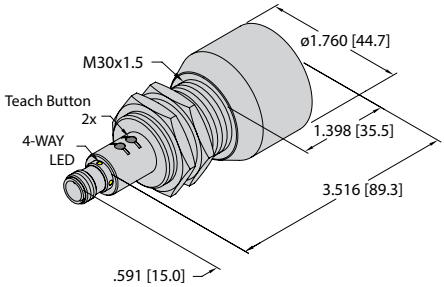

30 mm - Metal Barrel with M12 Eurofast Connection, **Teach-by-Wire**

D




30 mm - Metal Barrel with M12 Eurofast Connection, **Teach-by-Wire**

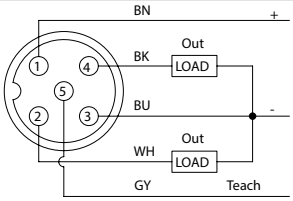
E




30 mm - Metal Barrel with M12 Eurofast Connection, **Teach-by-Wire or Button**

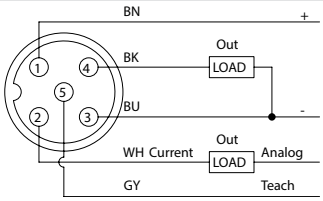
### Wiring Diagrams/Mating Cordsets

1



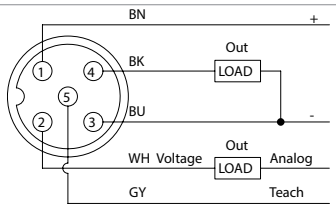

Mating Cordset: RK 4.5T-*

2



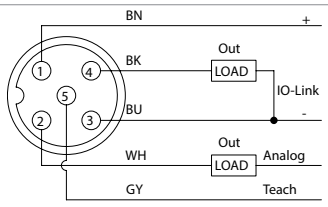

Mating Cordset: RK 4.5T-*

3




Mating Cordset: RK 4.5T-*

4




Mating Cordset: RK 4.5T-*

### A30 — Ultrasonic Barrels

| | |
|---|---|
| Operating Voltage: | 15-30 VDC |
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| Continuous Switching Current: | ≤150 mA |
| No-Load Current: | ≤50 mA |
| Residual Current: | ≤0.1 mA |
| Load Resistance: | ≤1000 Ω |
| Readiness Delay: | ≤300 ms |
| Repeatability: | 0.15% of full scale |
| Switching Output: | Programmable NO or NC |
| Frequency Output (where applicable): | 240-1600 Hz or 0-400 Hz Selectable |
| Short-Circuit Protection: | Yes |
| Reverse Polarity Protection: | Yes |
| Operating Temp: | -25 to +70 °C |
| Temperature Drift: | 1.5% of full scale |
| Internal Protection Rating: | IP67 |
| Housing Material: | CPB |
| Transducer Material: | PET/PU/Epoxy |
| LED: | Yellow/Green |

We reserve the right to make technical alterations without prior notice.

# Ultrasonics Sensors | 30 mm

## Front Sensing Transducer

| Part Number/ ID Number | Rated Operating Distance (cm) | 1 X PNP Output | 2 X PNP Output | 2X PNP/NPN or Programmable 4-20 mA/0-10 v Analog & 1 X PNP/NPN output | Analog 0-10v | Analog 4-20mA | Retroreflective Programmable | Window Mode Programmable | IO-Link V1.1 | Blind Zone (cm) | Sonic Cone Angle | Resolution (mm) | Switching Hyst. (mm) | Max Approach Speed | Max Pass Speed | Switching Freq. (Hz) | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **RU40U-M30M-2UP8X2-H1151** 1610032 | 40 | | ● | | | | ● | ● | | 2.5 | 9° | 0.5 | 5 | ≤ 4 m/s | ≤ 1.5 m/s | 7 | A | 1 | A30 |
| **RU130U-M30M-2UP8X2-H1151** 1610034 | 130 | | ● | | | | ● | ● | | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | A | 1 | A30 |
| **RU130U-M30E-2UP8X2T-H1151** 1610038 | 130 | | ● | | | | ● | ● | | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | B | 1 | A30 |
| **RU130U-M30E-LIU2PN8X2T-H1151** 1610046 | 130 | | | ● | | | ● | ● | ●[2] | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | B | 4 | A30 |
| **RU300U-M30M-2UP8X2-H1151** 1610036 | 300 | | ● | | | | ● | ● | | 30 | 15° | 1 | 25 | ≤ 8 m/s | ≤ 1.5 m/s | 4 | C | 1 | A30 |
| **RU300U-M30E-LI8X2-H1151** 1610099 | 300 | ●[1] | | | | ● | | | | 30 | 15° | 1 | 25 | ≤ 8 m/s | ≤ 1.5 m/s | 4 | A | 2 | A30 |
| **RU300U-M30E-LU8X2-H1151** 1610113 | 300 | ●[1] | | | ● | | | | | 30 | 15° | 1 | 25 | ≤ 8 m/s | ≤ 1.5 m/s | 4 | A | 3 | A30 |
| **RU300U-M30E-2UP8X2T-H1151** 1610040 | 300 | | ● | | | | ● | ● | | 30 | 15° | 1 | 25 | ≤ 8 m/s | ≤ 1.5 m/s | 4 | B | 1 | A30 |
| **RU300U-M30E-LIU2PN8X2T-H1151** 1610048 | 300 | | | ● | | | ● | ● | ●[2] | 30 | 15° | 1 | 25 | ≤ 8 m/s | ≤ 1.5 m/s | 4 | B | 4 | A30 |
| **RU600U-M30M-2UP8X2-H1151** 1610037 | 600 | | ● | | | | ● | ● | | 60 | 15° | 1 | 50 | ≤ 9 m/s | ≤ 3 m/s | 1.6 | D | 1 | A30 |
| **RU600U-M30E-LI8X2-H1151** 1610100 | 600 | ●[1] | | | | ● | | | | 60 | 15° | 1 | 50 | ≤ 9 m/s | ≤ 3 m/s | 1.6 | D | 2 | A30 |
| **RU600U-M30E-LU8X2-H1151** 1610114 | 600 | ●[1] | | | ● | | | | | 60 | 15° | 1 | 50 | ≤ 9 m/s | ≤ 3 m/s | 1.6 | D | 3 | A30 |
| **RU600U-M30E-2UP8X2T-H1151** 1610041 | 600 | | ● | | | | ● | ● | | 60 | 15° | 1 | 50 | ≤ 9 m/s | ≤ 3 m/s | 1.6 | E | 1 | A30 |
| **RU600U-M30E-LIU2PN8X2T-H1151** 1610049 | 600 | | | ● | | | ● | ● | ●[2] | 60 | 15° | 1 | 50 | ≤ 9 m/s | ≤ 3 m/s | 1.6 | E | 4 | A30 |

[1] Switching output is not adjustable
[2] Multiplexing and synchronization modes supported

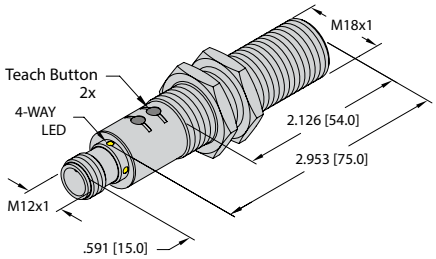
We reserve the right to make technical alterations without prior notice.

# Ultrasonics Sensors | Hazardous Area

## ATEX and IECEx Approval

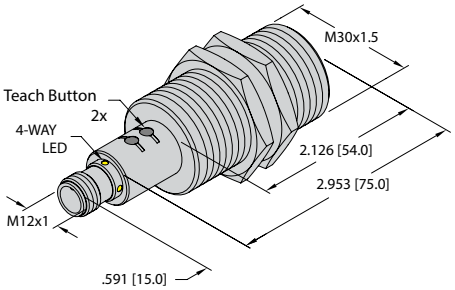
| Housing Style | Dimension Drawings |
|---|---|

A



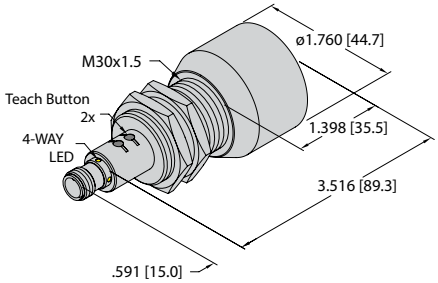

18 mm - Metal Barrel with M12 Eurofast Connection, **Teach-by-Wire or Button**

B




30 mm - Metal Barrel with M12 Eurofast Connection, **Teach-by-Wire or Button**

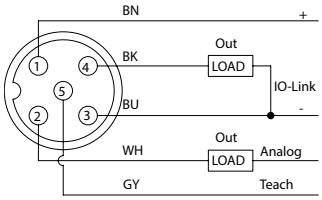
C




30 mm - Metal Barrel with M12 Eurofast Connection, **Teach-by-Wire or Button**

### Wiring Diagrams/Mating Cordsets

1




Mating Cordset: RK 4.5T-*

### A31 — Ultrasonic Barrel w/ ATEX Approval

| | |
|---|---|
| Operating Voltage: | 15-30 VDC |
| Voltage Drop Across Conducting Sensor: | ≤2.5 V |
| Continuous Switching Current: | ≤150 mA |
| No-Load Current: | ≤50 mA |
| Residual Current: | ≤0.1 mA |
| Load Resistance: | ≤1000 Ω |
| Readiness Delay: | ≤300 ms |
| Repeatability: | 0.15% of full scale |
| Switching Output: | Programmable NO or NC |
| Short-Circuit Protection: | Yes |
| Reverse Polarity Protection: | Yes |
| Operating Temp: | -25 to +70 °C |
| Temperature Drift: | 1.5% of full scale |
| Internal Protection Rating: | IP67 |
| Housing Material: | SS |
| Transducer Material: | PET/PU/Epoxy |
| LED: | Yellow/Green |
| Approval with Teach Button: | II 3G Ex nA nC IIC T6 Gc<br>II 3D Ex tc IIIC T70°C Dc |
| Approval without Teach Button: | II 3G Ex nA IIC T6 Gc<br>II 3D Ex tc IIIC T70°C Dc |

We reserve the right to make technical alterations without prior notice.

# Ultrasonics Sensors | Hazardous Area

## ATEX and IECEx Approval

| Part Number/ ID Number | Rated Operating Distance (cm) | 2X PNP/NPN or Programmable 4-20 mA/0-10 v Analog & 1 X PNP/NPN output | Retroreflective Programmable | Window Mode Programmable | IO-Link V1.1 IO-Link | Blind Zone (cm) | Sonic Cone Angle | Resolution (mm) | Switching Hyst. (mm) | Max Approach Speed | Max Pass Speed | Switching Freq. (Hz) | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **RU40U-EM18E-LIU2PN8X2T-H1151/3GD** 1610071 | 40 | ● | ● | ● | ●[1] | 2.5 | 9° | 0.5 | 5 | ≤ 4 m/s | ≤ 1.5 m/s | 7 | A | 1 | A31 |
| **RU130U-EM18E-LIU2PN8X2T-H1151/3GD** 1610072 | 130 | ● | ● | ● | ●[1] | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | A | 1 | A31 |
| **RU130U-EM30E-LIU2PN8X2T-H1151/3GD** 1610073 | 130 | ● | ● | ● | ●[1] | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | B | 1 | A31 |
| **RU300U-EM30E-LIU2PN8X2T-H1151/3GD** 1610074 | 300 | ● | ● | ● | ●[1] | 30 | 15° | 1 | 25 | ≤ 8 m/s | ≤ 1.5 m/s | 4 | B | 1 | A31 |
| **RU600U-EM30E-LIU2PN8X2T-H1151/3GD** 1610075 | 600 | ● | ● | ● | ●[1] | 60 | 15° | 1 | 50 | ≤ 9 m/s | ≤ 3 m/s | 1.6 | C | 1 | A31 |

[1] Multiplexing and synchronization modes supported.

We reserve the right to make technical alterations without prior notice.

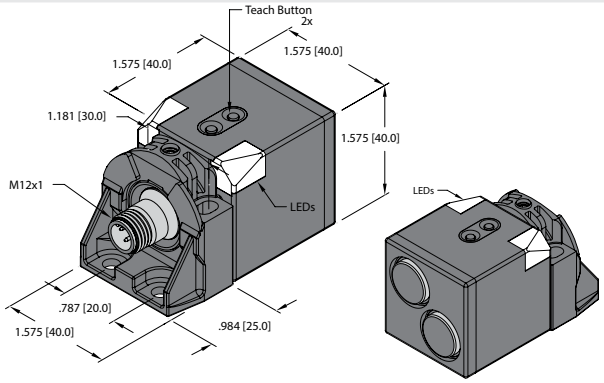
# Ultrasonics Sensors | CK40 & CP40

## 5 Way Rotatable Sensing Head

### Housing Style

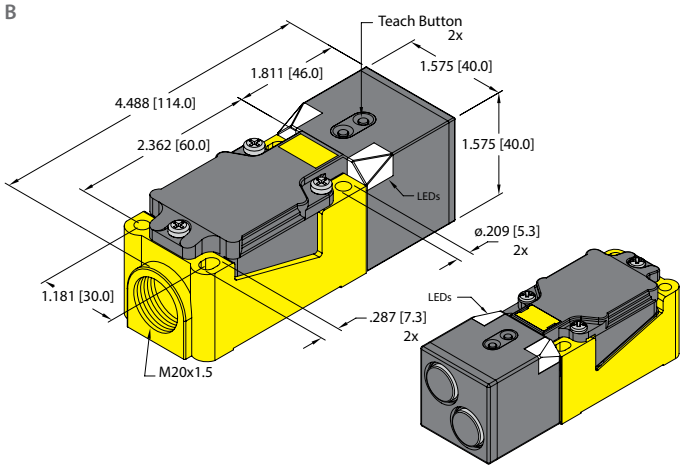
### Dimension Drawings

A



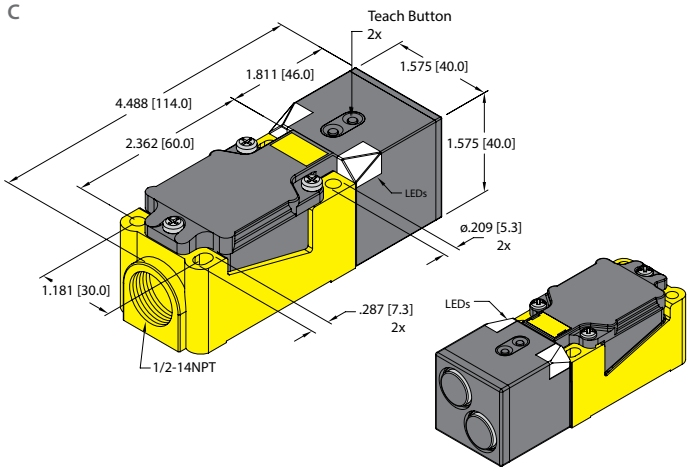

CK40 - M12 Eurofast Connection, **Teach-by-Wire or Button**

B




CP40 - Terminal Chamber with M20x1.5 Conduit Connection, **Teach-by-Button**

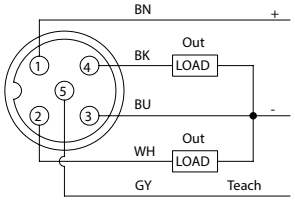
C




CP40 - Terminal Chamber with 1/2 NPT Conduit Connection, **Teach-by-Button**

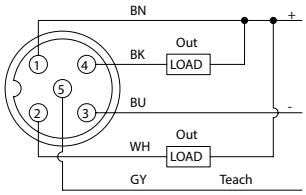
### Wiring Diagrams/Mating Cordsets

1



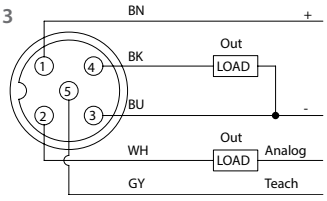

Mating Cordset: RK 4.4T-*

2



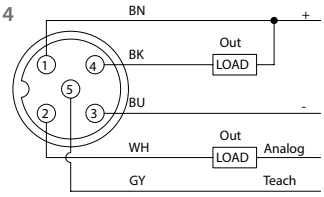

Mating Cordset: RK 4.5T-*

3



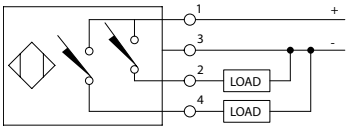

Mating Cordset: RK 4.5T-*

4

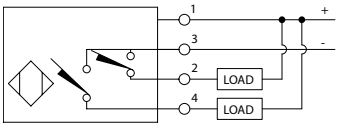



Mating Cordset: RK 4.5T-*

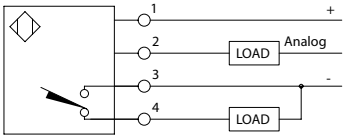
5



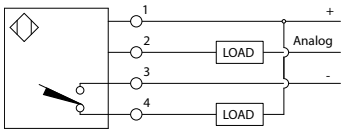

6




7




8




### A32 — Ultrasonic Rectangular

| | |
|---|---|
| Operating Voltage: | 15-30 VDC |
| Voltage Drop Across Conducting Sensor: | ≤2.5 V |
| Continuous Switching Current: | ≤150 mA |
| No-Load Current: | ≤50 mA |
| Residual Current: | ≤0.1 mA |
| Load Resistance: | ≤1000 Ω |
| Readiness Delay: | ≤300 ms |
| Repeatability: | 0.25% of full scale |
| Switching Output: | Programmable NO or NC |

| | |
|---|---|
| Analog Output: | 4-20 mA or 0-10 V Programmable |
| Short Circuit Protection: | Yes |
| Reverse Polarity Protection: | Yes |
| Operating Temp: | 0 to +70 °C |
| Temperature Drift: | 1.5% of full scale |
| Internal Protection Rating: | IP40 |
| Housing Material: | PBT-GF30 |
| Transducer Material: | AL/Ceramic |
| LED: | Yellow/Green |

We reserve the right to make technical alterations without prior notice.

# Ultrasonics Sensors | CK40 & CP40

## 5 Way Rotatable Sensing Head

| Part Number/ ID Number | Rated Operating Distance (cm) | 2 X PNP Output | 2 X NPN Output | Programmable 4-20 mA/0-10 v Analog & 1 X PNP output | Programmable 4-20 mA/0-10 v Analog & 1 X NPN output | Retroreflective Programmable | Window Mode Programmable | Blind Zone (cm) | Sonic Cone Angle | Resolution (mm) | Switching Hyst. (mm) | Max Approach Speed | Max Pass Speed | Switching Freq. (Hz) | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **RU200-CK40-2UP8X2T-H1151** 1610051 | 200 | ● | | | | ● | ● | 5 | 60° | 1 | 20 | ≤ 1 m/s | ≤ 2 m/s | 3 | A | 1 | A32 |
| **RU200-CK40-2UN8X2T-H1151** 1610057 | 200 | | ● | | | ● | ● | 5 | 60° | 1 | 20 | ≤ 1 m/s | ≤ 2 m/s | 3 | A | 2 | A32 |
| **RU200-CK40-LIU2P8X2T-H1151** 1610053 | 200 | | | ● | | ● | ● | 5 | 60° | 1 | 20 | ≤ 1 m/s | ≤ 2 m/s | 3 | A | 3 | A32 |
| **RU200-CK40-LIU2N8X2T-H1151** 1610058 | 200 | | | | ● | ● | ● | 5 | 60° | 1 | 20 | ≤ 1 m/s | ≤ 2 m/s | 3 | A | 4 | A32 |
| **RU200-CP40-2UP8X2T** 1610052 | 200 | ● | | | | ● | ● | 5 | 60° | 1 | 20 | ≤ 1 m/s | ≤ 2 m/s | 3 | B | 5 | A32 |
| **RU200-CP40-2UN8X2T** 1610055 | 200 | | ● | | | ● | ● | 5 | 60° | 1 | 20 | ≤ 1 m/s | ≤ 2 m/s | 3 | B | 6 | A32 |
| **RU200-CP40-2UP8X2T/S10** 1610092 | 200 | ● | | | | ● | ● | 5 | 60° | 1 | 20 | ≤ 1 m/s | ≤ 2 m/s | 3 | C | 5 | A32 |
| **RU200-CP40-2UN8X2T/S10** 1610090 | 200 | | ● | | | ● | ● | 5 | 60° | 1 | 20 | ≤ 1 m/s | ≤ 2 m/s | 3 | C | 6 | A32 |
| **RU200-CP40-LIU2P8X2T** 1610054 | 200 | | | ● | | ● | ● | 5 | 60° | 1 | 20 | ≤ 1 m/s | ≤ 2 m/s | 3 | B | 7 | A32 |
| **RU200-CP40-LIU2N8X2T** 1610056 | 200 | | | | ● | ● | ● | 5 | 60° | 1 | 20 | ≤ 1 m/s | ≤ 2 m/s | 3 | B | 8 | A32 |
| **RU200-CP40-LIU2P8X2T/S10** 1610093 | 200 | | | ● | | ● | ● | 5 | 60° | 1 | 20 | ≤ 1 m/s | ≤ 2 m/s | 3 | C | 7 | A32 |
| **RU200-CP40-LIU2NP8X2T/S10** 1610091 | 200 | | | | ● | ● | ● | 5 | 60° | 1 | 20 | ≤ 1 m/s | ≤ 2 m/s | 3 | C | 8 | A32 |

We reserve the right to make technical alterations without prior notice.

Notes

Notes

# Cylinder Position Sensor Selection Guide

| Cylinder Position Sensors | | | | |
|---|---|---|---|---|
| | | | | |
| **Housing** | **UNT** | **UNTK** | **INT** | **UNR** |
| **Pages** | **G13** | **G15** | **G17** | **G19** |
| **Style of Cylinder** | | | | |

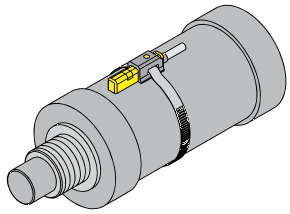
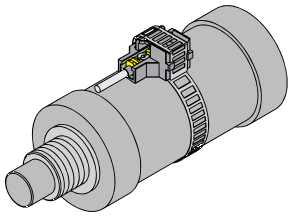
| Cylinder Position Sensors | | | | |
|---|---|---|---|---|
| | | | | |
| **Housing** | **PST** | **KST** | **AKT** | **IKE/IKT** |
| **Pages** | **G21** | **G23** | **G25** | **G27** |
| **Style of Cylinder** | | | | |

| Cylinder Position Sensors | | | Inductive | World Clamp Sensors |
|---|---|---|---|---|
| | | | | |
| **Housing** | **IKM** | **NST** | **CRS** | **Variable** |
| **Pages** | **G29** | **G31** | **G33 - 36** | **G37 - 42** |
| **Style of Cylinder** | | | | |

| | Magnetic Analog | | |
|---|---|---|---|
| | | | |
| **Housing** | **UNTL** | **25 mm** | **Variable** |
| **Pages** | **G43** | **G45** | **G47** |
| **Style of Cylinder** | | | |

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors

| Drawing | Manufacturer | Cylinder Series | Turck Sensor | Turck Bracket | |
|---|---|---|---|---|---|
|  | Parker | P, SRM, SRDM, XLT, XLR, XKB, (S, SRD)[3] | UNT Style | KLRC-UNT*[4] | KLRC with ASB Clamp[2] |
| | | | UNR Style | KLRC-2 with ASB Clamp[2] | |
| | Festo | CRDG, CRDSNU, CRDSW, DSNU, SDNUL, DSEU, ESEU, ESNU, ESW, (DSN)[3] | UNT Style | KLRC-UNT*[4] | KLRC with ASB Clamp[2] |
| | | | UNR Style | KLRC-2 with ASB Clamp[2] | |
| | Bimba | Original Line II (0L2), Original Line (M, MH, MNR, MC, MRS), Doublle Wall (DW, DWD, DWN, DWM), PC, Z Series (M04, M09, M17, M31), Linear Thrusters (T, TE) | UNT Style | KLRC-UNT*[4] | KLRC with ASB Clamp[2] |
| | | | UNR Style | KLRC-2 with ASB Clamp[2] | |
| | SMC | NCM, NCJ2, NCG, NCA1, CJ2, CM2, CG1, MGG | UNT Style | KLRC-UNT*[4] | KLRC with ASB Clamp[2] |
| | | | UNR Style | KLRC-2 with ASB Clamp[2] | |
|  | Norgren | Round Line (RL) | UNT Style | KLRC-UNT*[4] | KLRC with ASB Clamp[2] |
| | | | UNR Style | KLRC-2 with ASB Clamp[2] | |
| | Fabco-Air | Pancake (X, XK, O, OP, XDR, XDRK, ODR), Linear Slide (L, S, E,) | UNT Style | KLRC-UNT*[4] | KLRC with ASB Clamp[2] |
| | | | UNR Style | KLRC-2 with ASB Clamp[2] | |

1. This Mounting is to be used only when "Switch Rail" is present on the cylinder.
2. ASB size is determined by the cylinder diameter. See Table 1. KLDT is required when the UNT sensor has integral quick disconnect.
3. These styles are not usually available with magnets.
4. Bracket size determined by the cylinder diameter. See Table 2.

| UNT Housing with KLDT-UNT and ASB Style Strap | | |
|---|---|---|
| Cylinder Diameter | | Clamp |
| Inches | Millimeters | (Stainless Steel) |
| .276 - .433 | 7 - 11 | ASB-1 |
| .433 - .748 | 11 - 19 | ASB-2 |
| .709 - 1.142 | 18 - 29 | ASB-3 |
| 1.102 - 1.535 | 28 - 39 | ASB-4 |
| 1.496 - 1.929 | 38 - 49 | ASB-5 |
| 1.890 - 2.323 | 48 - 59 | ASB-6 |
| 2.283 - 2.717 | 58 - 69 | ASB-7 |
| 2.677 - 3.110 | 68 - 79 | ASB-8 |

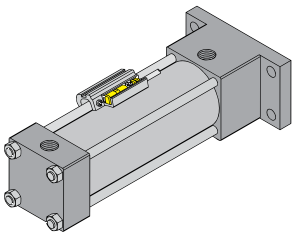
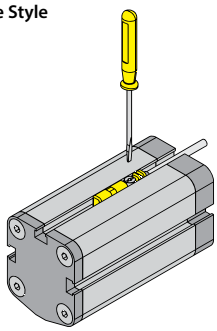
**Table 1**

| UNT Housing with KLRC-UNT* | | |
|---|---|---|
| Part Number | Cylinder Diameter | |
| | Inches | Millimeters |
| KLRC-UNT1 | .315 - .984 | 8 - 25 |
| KLRC-UNT2 | .984 - 2.480 | 25 - 63 |
| KLRC-UNT3 | 2.480 - 5.118 | 63 - 130 |
| KLRC-UNT4 | 5.118 - 9.843 | 130 - 250 |

**Table 2**

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors

| Drawing | Manufacturer | Cylinder Series | Turck Sensor | Turck Bracket |
|---|---|---|---|---|
| **Tie Rod Style**  **KLZ* (Table 3)** | Numatics | A, E, S, L, B Square, VDMA-Z | UNT Style | KLZ Series Clamp[1] |
| | Parker | P5E, HBT, LPM, (S, C, LP)[2] | UNT Style | KLZ Series Clamp[1] |
| | PHD | A2, A3, AS, AV, AV2, A3V, AVS, HV, HV2, H3V, HVS, DAV, DHV, EA, EL, EH, ES, NPG, NHG, NEAG, NEHG, TD, (A)[2] | UNT Style | KLZ Series Clamp[1] |
| | Festo | DNGU, DNGUL, DNGUT, DNU, DNUL, CRDNG, CRDNGS, DNG, DNGL, DNGZK, DNGZL, DNGZS, DKE | UNT Style | KLZ Series Clamp[1] |
| | Bimba | Flat-I (FO, FOD, FOP, FOR, FOS, FS, FSD, FSR, FSS, F02, F03, F04), Flat-II (FT, FST) | UNT Style | KLZ Series Clamp[1] |
| | SMC | ECQ2, MB, C95 | UNT Style | KLZ Series Clamp[1] |
| | Norgren | A, EA, SS, N, J, EJ, 8000/M | UNT Style | KLZ Series Clamp[1] |
| | Turn-Act | NFPA Series | UNT Style | KLZ Series Clamp[1] |
| | Fabco-Air | Long Stroke (321, 521, 721, 1221, S321, S521, S721, S1221), Hi-Power (HP, THP, UHP), Multi-Power (MP, BA, BP), Linear Slide [3] (SE, EZ, TS) | UNT Style | KLZ Series Clamp[1] |
| **T-Groove Style**  | Parker | P1M, P5T, SST | UNT Style | No Additional Bracket Required |
| | Festo | DNC, DNCT, DFM, DPZ, DPZJ, DZF, EZH, ADVU, ADVULQ, ADVUL | UNT Style | No Additional Bracket Required |
| | SMC | CUJ, CXS, MGQ, MY1B, MHC, MHL2 | UNT Style | No Additional Bracket Required |

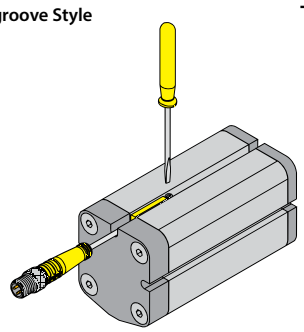
1. When using KLZ Series Clamps, user must determine clamp size best suited for application.
2. These styles are usually not available with magnets.
3. Some of these may be equipped to handle 5, 8, or 12 mm inductive proximity sensors.

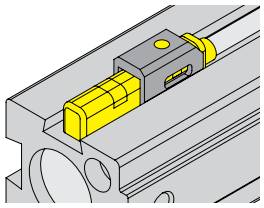
| UNT Sensor with KLZ* Mounting | | |
|---|---|---|
| **Part Number** | **Tie Rod Diameter Maximum** | |
| | **Inches** | **Millimeters** |
| KLZ1A-INT CLAMP | .236 | 6.0 |
| KLZ1M-UNT CLAMP | .290 | 7.37 |
| KLZ2M-UNT CLAMP | .351 | 8.93 |
| KLZ3M-UNT CLAMP | .482 | 12.25 |

**Table 3**

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors

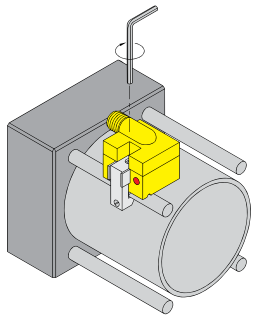
| Drawing | Manufacturer | Cylinder Series | Turck Sensor | Turck Bracket |
|---|---|---|---|---|
| **C-groove Style**  | Numatics | K | UNR Style | No Additional Bracket Required |
| | Festo | ADVC | UNR Style | No Additional Bracket Required |
| | Bimba | Twin Bore (TB, TBA, TBD), EF1 Series (EF, EFD, EFS, EFR), EF2 Series (EFT), PneuMoment Series (PM) | UNR Style | No Additional Bracket Required |
| | SMC | (CQ2, CQs, NCDQ2, NCQ2)[1], (CDQ2)[1], CU, CUK, CUW, MU, MHF2, Air Slides (MXQ) | UNR Style | No Additional Bracket Required |
| | Compact Air | B, C | UNR Style | No Additional Bracket Required |
| | PHD | CRH<br>O-groove | UNR Style | No Additional Bracket Required |

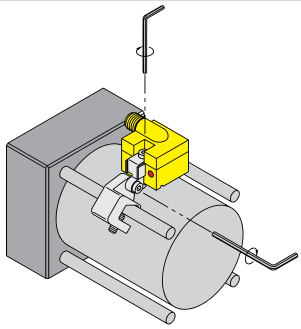
| Drawing | Manufacturer | Cylinder Series | Turck Sensor | Turck Bracket |
|---|---|---|---|---|
| **Dovetail Style**  | Numatics | B,F, Compact C, Short Stroke, Rotary Actuator, Pee Wee (O, P, Q), VDMA-V, Ring Series | UNT Style | KLDT-UNT3 |
| | Norgren | 90000, 91000, 92000, 93000, Lite (A44000) | UNT Style | KLDT-UNT3 |
| | Fabco-Air | Square 1 (SQ, SQF, SQL)<br>Pancake (X,XK, O, OP, XDR, XDRK, ODR)<br>Linear Slide1 (GB, L, S, E, SE, EZ, TS)[2] | UNR Style | KLFA-2UNR |
| | Compact Air | Inch Series (AB, AS, AR, AT)<br>Inch Series (B, R, S, T)[3]<br>Ball Slide (BSC)<br>GC, CD, ACLA, ACLAD, (CLA, CLAD)[3]<br>Metric Series (AWS, AWB, AWT)<br>Metric Series (WS, WB, WT)[3]<br>B/Base Mount, S/End Mount<br>R/ End Mount, (CSC, PSC, TCL)[4] | UNT Style | KLDT-UNT4 |
| | SMC | CP95 | UNT Style | KLDT-UNT6 |

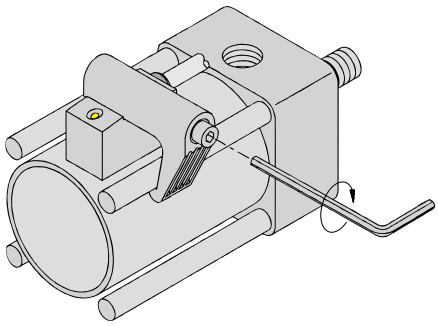
1. CQ2, NC(D) Q2, CQS, NCQ2 cylinders may have multiple grooves and may not be suited for the UNR style sensor.
2. This mounting is to be used only when dovetail style mounting rail is present on the cylinder.
3. These styles are usually not available with magnets.
4. This mounting is to be used only when sensor mounting rail is present on collet.

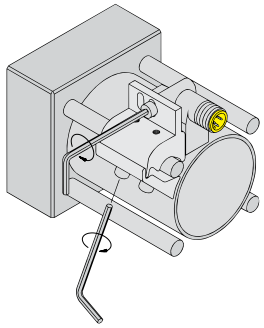
We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors

| Drawing | AKT Housing with KLA-1 Clamp | |
|---|---|---|
|  | **Cylinder Diameter** | 1.26 - 1.97 inches<br>32 - 50 mm |
| | **Rod Diameter** | 0.16 - 0.31 inches<br>4 - 8 mm |
| | **Clamp** | KLA-1<br>(Aluminum) |

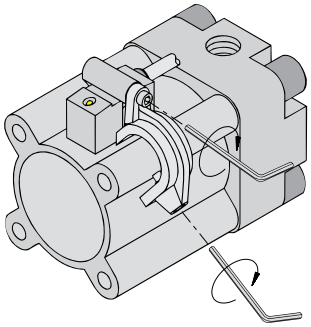
| Drawing | AKT Housing with KLA-2 Clamp | |
|---|---|---|
|  | **Cylinder Diameter** | 1.57 - 4.92 inches<br>40 - 125 mm |
| | **Rod Diameter** | 0.28 - 0.51 inches<br>7 - 13 mm |
| | **Clamp** | KLA-2<br>(Die-cast Zinc) |

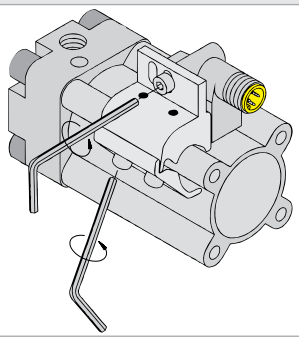
| Drawing | IKE, IKT, and IKM Housing with KLI-1 or KLI-3 Clamp | | |
|---|---|---|---|
|  | **Cylinder Diameter** | 1.26 - 3.94 inches<br>32 - 100 mm | 2.48 - 6.30 inches<br>63 - 160 mm |
| | **Rod Diameter** | 0.16 - 0.51 inches<br>4 - 13 mm | 0.24 - 0.63 inches<br>6 - 16 mm |
| | **Clamp** | KLI-1<br>(Die-cast Zinc) | KLI-3<br>(Die-cast Zinc) |

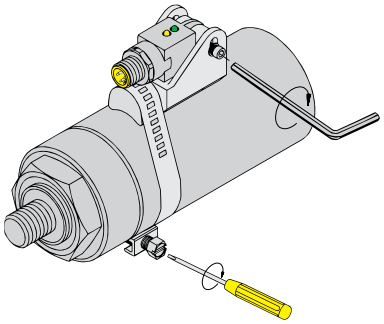
| Drawing | IKE, IKT, and IKM Housing with KLI-5Z or KLI-6Z Clamp | | |
|---|---|---|---|
|  | **Cylinder Diameter** | 1.26 - 2.48 inches<br>32 - 63 mm | 1.97 - 4.92 inches<br>50 - 125 mm |
| | **Rod Diameter** | 0.16 - 0.31 inches<br>4 - 8 mm | 0.24 - 0.51 inches<br>6 - 13 mm |
| | **Clamp** | KLI-5Z<br>(Aluminum) | KLI-6Z<br>(Aluminum) |

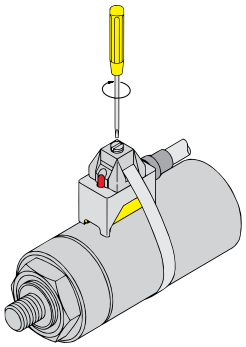
We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors

| Drawing | IKE, IKT, and IKM Housing with KLI-2 Clamp | |
|---|---|---|
|  | **Cylinder Diameter** | 1.26 - 3.94 inches<br>32 - 100 mm |
| | **Rod Diameter** | 0.35 - 0.79 inches<br>9 - 20 mm |
| | **Clamp** | KLI-2<br>(Die-cast Zinc) |

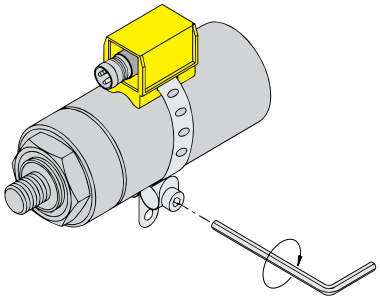
| Drawing | IKE, IKT, and IKM Housing with KLI-5 or KLI-6 Clamp | | |
|---|---|---|---|
|  | **Cylinder Diameter** | 1.26 - 1.97 inches<br>32 - 50 mm | 1.97 - 3.94 inches<br>50 - 100 mm |
| | **Rod Diameter** | 0.31 - 0.55 inches<br>8 - 14 mm | 0.43 - 0.75 inches<br>11 - 19 mm |
| | **Clamp** | KLI-5<br>(Aluminum) | KLI-6<br>(Aluminum) |

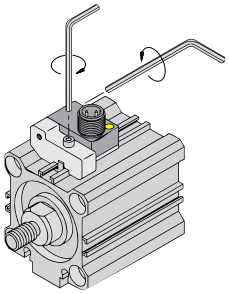
| Drawing | IKE, IKT, and IKM Housing with KLI-CB64 or KLI-CB124 Clamp | | |
|---|---|---|---|
|  | **Cylinder Diameter** | 0.79 - 2.52 inches<br>20 - 64 mm | 0.79 - 4.88 inches<br>20 - 124 mm |
| | **Rod Diameter** | 0.31 - 0.55 inches<br>8 - 14 mm | 0.43 - 0.75 inches<br>11 - 19 mm |
| | **Clamp** | KLI-CB64<br>(Stainless Steel/Steel) | KLI-CB124<br>(Stainless Steel/Steel) |

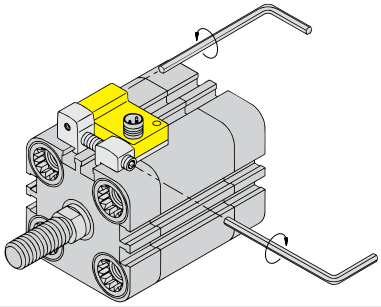
| Drawing | KST Housing with KST-SB170 and KST-SB335 Clamps | |
|---|---|---|
|  | **Cylinder Diameter** | 0.31 - 0.99 inches<br>8 - 25 mm | 0.31 - 3.15 inches<br>8 - 80 mm |
| | **Strap** | KST-SB170<br>(Stainless Steel) | KST-SB335<br>(Stainless Steel) |
| | **Mount** | KST-MG<br>(Die-cast Zinc) | |
| | **Screw Plate** | KST-SE<br>(Die-cast Zinc) | |

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors

| Drawing | PST Housing with KLP80-VA and KLP200-VA Clamps | | |
|---|---|---|---|
|  | **Cylinder Diameter** | 0.31 - 3.15 inches<br>8 - 80 mm | 3.15 - 7.87 inches<br>0 - 200 mm |
| | **Clamp** | KLP80-VA<br>(Stainless steel band, brass nuts) | KLP200-VA<br>(Stainless steel band, brass nuts) |

| Drawing | NST Housing with KLQ-1 or KLQ-2 Clamps | |
|---|---|---|
|  | **Cylinder Diameter** | 0.47 - 3.94 inches<br>12 - 100 mm |
| | **Cylinder Manufacturer** | SMC |
| | **Cylinder Family** | NCDQ2 |
| | **Clamp** | SMC-325<br>(Anodized Aluminum) |

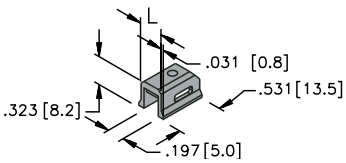
| Drawing | NST Housing with KLN-3 Clamp | |
|---|---|---|
|  | **Cylinder Diameter** | 0.47 - 3.94 inches<br>12 - 100 mm |
| | **Groove Diameter** | 0.20 - 0.53 (0.83) inches<br>5.2 - 13.5 (21)* mm |
| | **Clamp** | KLN-3<br>(Anodized Aluminum) |
| | ***Accessory** | Longer M5 x 35<br>set screw (A0050) |

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors

## UNT Mounting Clamps

**KLDT-UNT2**

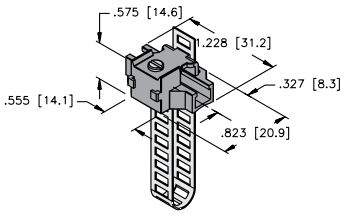



| Part Number | "L" inches | "L" mm |
|---|---|---|
| KLDT-UNT2 | .276 | 7 |
| KLDT-UNT3 | .370 | 9.4 |
| KLDT-UNT4 | .453 | 11.5 |
| KLDT-UNT5 | .496 | 12.6 |
| KLDT-UNT6 | .413 | 10.5 |
| KLDT-UNT7 | .260 | 6.6 |

**Note:** For outside dimension of beveled ears add 1.6 mm to bracket width listed.

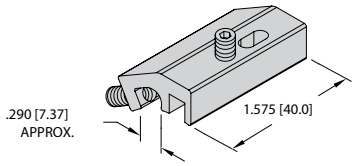
| UNT Housing with KLDT-UNT and ASB Style Strap | | |
|---|---|---|
| Cylinder Diameter | | Clamp (Stainless Steel) |
| Inches | Millimeters | |
| .276 - .433 | 7 - 11 | ASB-1 |
| .433 - .748 | 11 - 19 | ASB-2 |
| .709 - 1.142 | 18 - 29 | ASB-3 |
| 1.102 - 1.535 | 28 - 39 | ASB-4 |
| 1.496 - 1.929 | 38 - 49 | ASB-5 |
| 1.890 - 2.323 | 48 - 59 | ASB-6 |

**KLRC-UNT2**

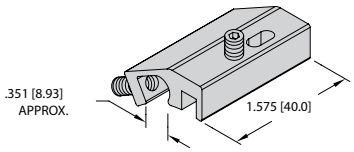



| Part Number | Inches | Millimeters |
|---|---|---|
| KLRC-UNT1 | .315 - .984 | 8 - 25 |
| KLRC-UNT2 | .984 - 2.480 | 25 - 63 |
| KLRC-UNT3 | 2.480 - 5.118 | 63 - 130 |
| KLRC-UNT4 | 5.118 - 9.843 | 130 - 250 |

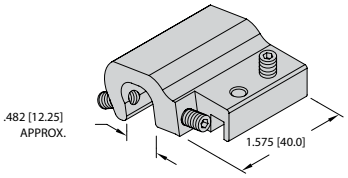
**KLZ1M-UNT CLAMP**



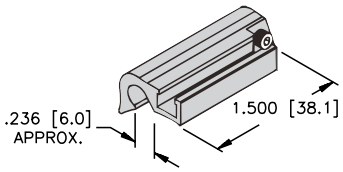

**KLZ2M-UNT CLAMP**




**KLZ3M-UNT CLAMP**

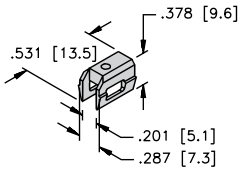
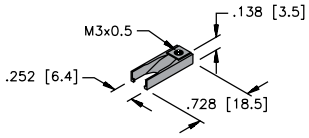
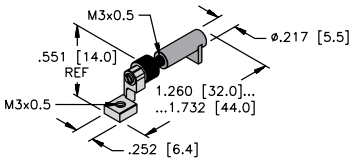
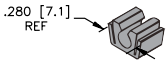
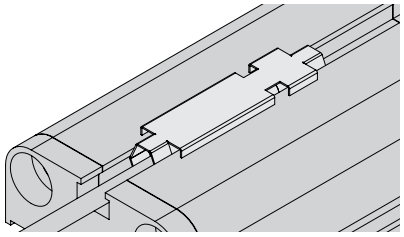
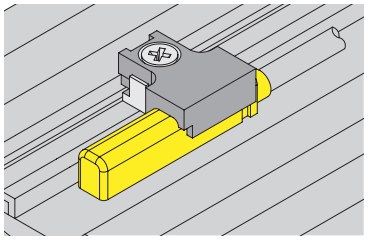



**KLZ1A-INT CLAMP**



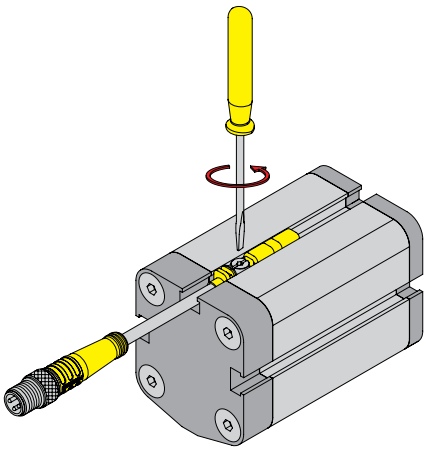

We reserve the right to make technical alterations without prior notice.

## UNT Mounting Accessories

| KLDT-UNT6 (6913355) | UNT-Stopper (4685751) | UNT-Adjusting Bracket (4685750) |
|---|---|---|
|   |   |   |
| **UNT Mounting Screw, 2.5 mm (6901056)** | **M2-BIM-UNT MTG SCRW. 1.5 mm (6901050)** | **UNT-Cable Clip (6900456)** |
| | |   |
| **SG-UNT (A9800)** | **KLT-UNT1 (6913377)** | |
|  |  For use with SMC 325 Rail | |

## UNT Sensor Mounting

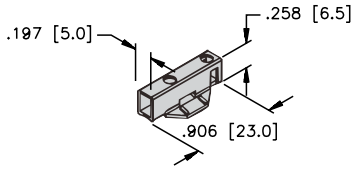
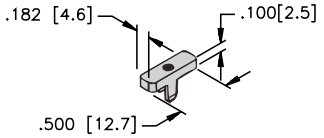
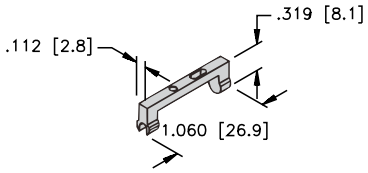
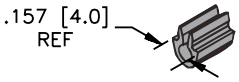
**Note:** Turn screw counter-clockwise to tighten.



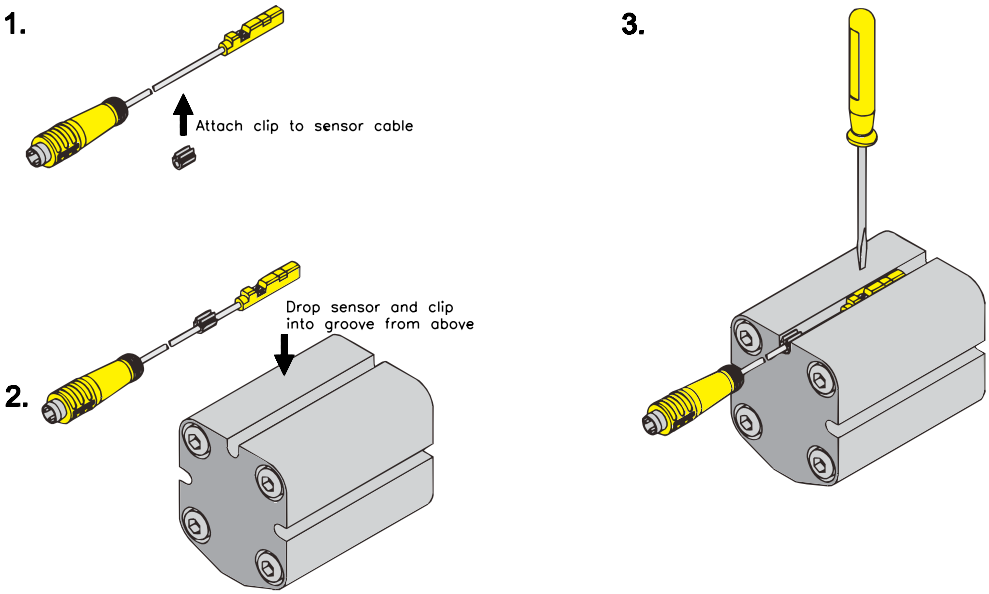
We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors

## UNR Mounting Accessories

| KLR-2 UNR | KLFA-UNR | KLTR-2 UNR |
|---|---|---|
|   |   |   |
| **UNR Cable Clip (6900428)** | **M1.6 BIM-UNR-MTG SCR. 1.3 mm (6901055)** | |
|   | | |

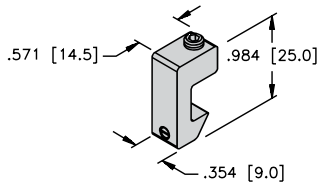
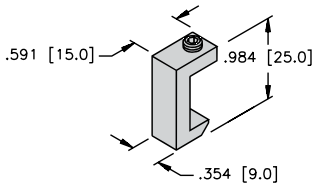
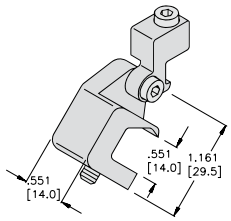
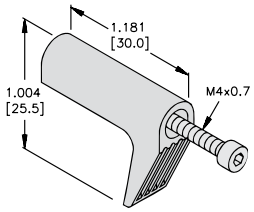
## UNR Sensor Mounting

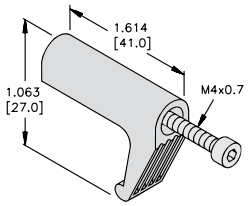
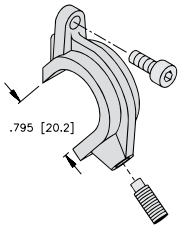
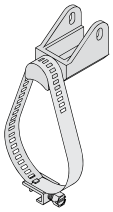



**Note:** Turn screw counter-clockwise to tighten. Use of mounting clip is optional.

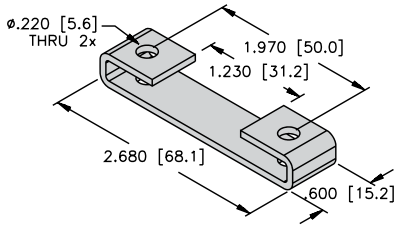
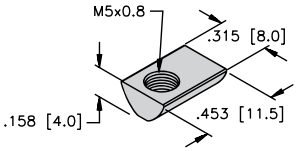
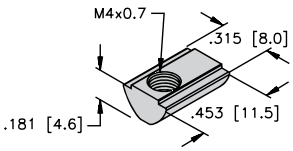
We reserve the right to make technical alterations without prior notice.

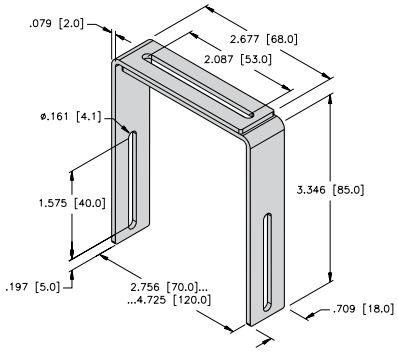
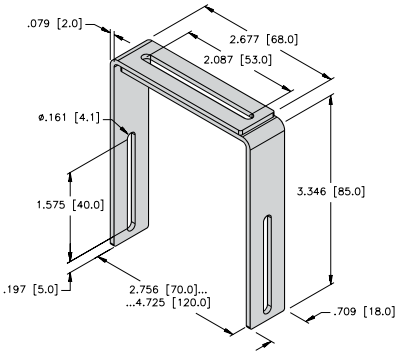
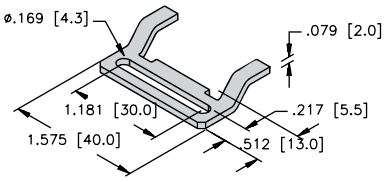
## Mounting Clamps

| KLA-1 | KLA-3M | KLA-2 | KLI-1 |
|---|---|---|---|
|   |   |   |   |

| KLI-3 | KLI-2 | KLI-CB64 and KLI-CB124 |
|---|---|---|
|   |   |  |

## Mounting Brackets for Q25L Sensor

| MB-Q21 | MN-M5-Q25 | MN-M4-Q25 |
|---|---|---|
|   Mounting Bracket |   Sliding block with M5 thread for the backside profile |   Sliding block with M4 thread for the backside profile |

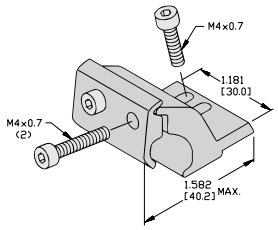
| MB2.1-Q25 | MB2.2-Q25 | MB1-Q25 |
|---|---|---|
|   Mounting bracket for cylinders 40-60 mm |   Mounting bracket for cylinders 70-120 mm |   Mounting Clip |

We reserve the right to make technical alterations without prior notice.

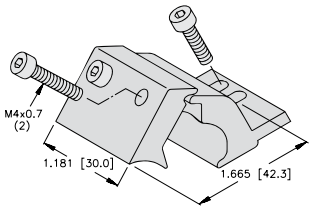
# Cylinder Position Sensors

## Mounting Clamps

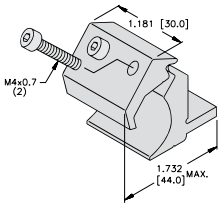
### KLI-5



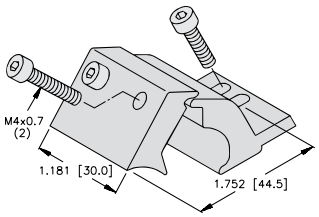

### KLI-5Z



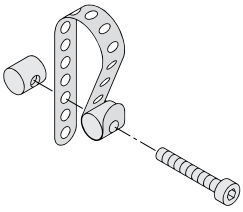

### KLI-6



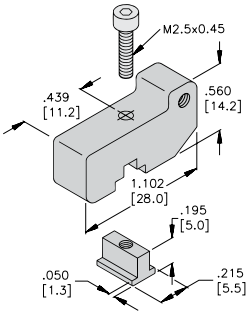

### KLI-6Z



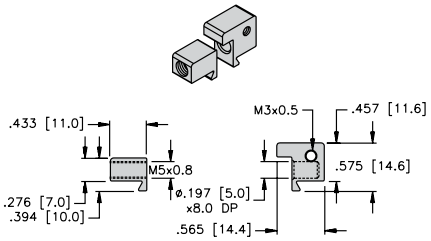

### KLP 80-VA and KLP 200-VA



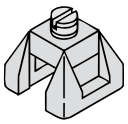
### SMC-325



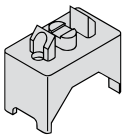

### KLN-3



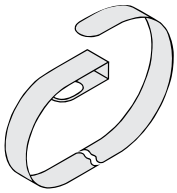

### KST-SE (46736)



### KST-MG (46735)



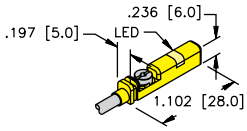
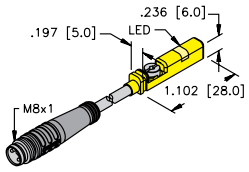
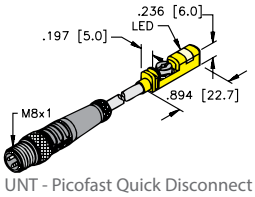
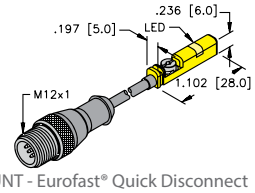
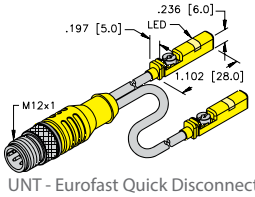
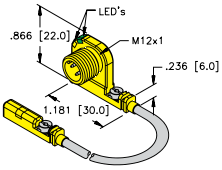
### KST-SB170 and KST-SB335



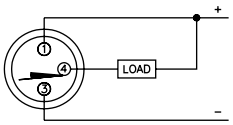
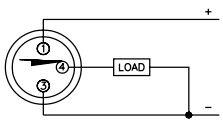
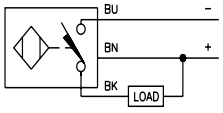
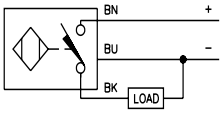
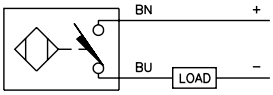
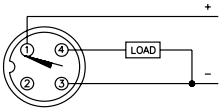
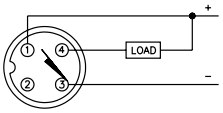
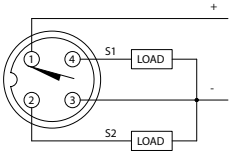
We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | BIM-UNT

**T-groove, C-groove, Tie-rod, and Round Cylinder Style**

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   UNT - Potted-In Cable | B   UNT - Picofast® Quick Disconnect |
| C   UNT - Picofast Quick Disconnect | D   UNT - Eurofast® Quick Disconnect | E   UNT - Eurofast Quick Disconnect |
| F   UNT - Eurofast Quick Disconnect | | |

**Wiring Diagrams/Mating Cordsets**

| | | | |
|---|---|---|---|
| 1   Mating Cordset: PKG 3Z-* | 2   Mating Cordset: PKG 3Z-*; PKG 3M-* | 3   | 4   |
| 5   | 6   Mating Cordset: RK 4T-* | 7   Mating Cordset: RK 4T-* | 8   Mating Cordset: RK 4.4T-*; RKC 4.4T-* |

**A13** — **3-wire DC - Magnetic (AN, RN, AP, RP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | ≤1 mm | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥170 mA on 150 mA Load Current | Temperature Drift: | ≤0.1 mm, ≤0.3 mm (UNR) |
| | ≥120 mA on 100 mA Load Current | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| No-Load Current: | ≤15 mA; | Repeatability: | ≥± 0.1 mm, ≥± 0.3 mm (UNR) |
| Pass Speed: | ≤10 ms; ≤3 ms (UNR) | | |

**A14** — **2-wire DC - Magnetic (AD, AG)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | ≤1 mm | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-Polarized (AD) ≤4 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤3.5 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Pass Speed: | ≤3 ms, ≤10 ms (UNT) | Repeatability: | ≥± 0.1 mm |

**Additional Specifications**

**Magnetic Actuation Strength (Gauss):** 20-350

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | BIM-UNT

**T-groove, C-groove, Tie-rod, and Round Cylinder Style**

| Part Number/ ID Number | Features | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BIM-UNT-AN6X** 4685702 | | 3-wire DC, NPN | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | PA 12 | 2M/TPU | A | 3 | A13 |
| **BIM-UNT-AP6X** 4685741 | | 3-wire DC, PNP | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | PA 12 | 2M/TPU | A | 4 | A13 |
| **BIM-UNT-AG41X/S1139/S1160** 4685766 | Irradiated TPU Cable, Wider Range | 2-wire DC | 10-55 VDC | 300 | ≤ 100 | -25 to +70 | IP67 | PA 12 | 2M/TPU | A | 5 | A14 |
| **BIM-UNT-AN6X-0.3-PSG3S** 4685705 | Fixed Coupling Nut | 3-wire DC, NPN | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | PA 12 | 0.3M/TPU | B | 1 | A13 |
| **BIM-UNT-AP6X-0.3-PSG3S** 4685722 | Fixed Coupling Nut | 3-wire DC, PNP | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | PA 12 | 0.3M/TPU | B | 2 | A13 |
| **BIM-UNT-AP6X-0.3-PSG3M** 4685723 | Rotating Coupling Nut | 3-wire DC, PNP | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | PA 12 | 0.3M/TPU | C | 2 | A13 |
| **BIM-UNT-AP6X-0.3-RS4T** 46857260 | | 3-wire DC, PNP | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | PA 12 | 0.3M/TPU | D | 6 | A13 |
| **BIM-UNT-AN6X-0.3-RS4T** 4685792 | | 3-wire DC, NPN | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | PA 12 | 0.3M/TPU | D | 7 | A13 |
| **BIM-UNT-0.3-UNT-2AP6X3-H1141** 4685730 | Dual Switch | 4-wire DC, PNP | 10-30 VDC | 1000 | ≤ 150 | -25 to +70 | IP67 | PP | 0.3M/TPU | F | 8 | A13 |
| **BIM-UNT-AP6X/S991** 4685728 | Radial Magnetic Fields | 3-wire DC, PNP | 10-30 VDC | 1000 | ≤ 150 | -25 to +70 | IP67 | PP | 2M/TPU | B | 4 | A13 |
| **BIM-UNT-2AP6X-0.2-RSC4.4T** 4685891 | Dual Switch | 4-wire DC, PNP | 10-30 VDC | 1000 | ≤ 150 | -25 to +70 | IP67 | PP | 0.2M/TPU | E | 8 | A13 |

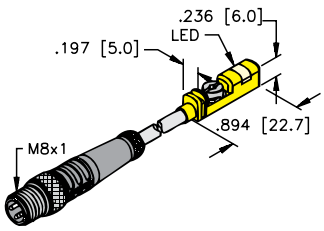
We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | BIM-UNTK

**T-groove Short Cylinder Style**

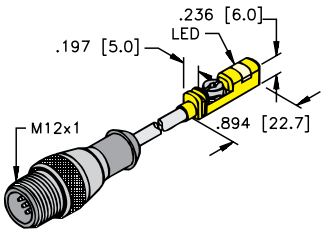
| Housing Style | Dimension Drawings |
|---|---|

A



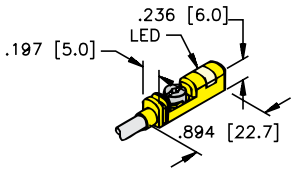

UNTK - Picofast Quick Disconnect

B




UNTK - Eurofast Quick Disconnect

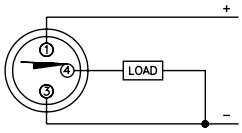
C




UNTK - Potted-In Cable

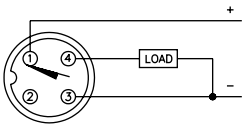
## Wiring Diagrams/Mating Cordsets

1



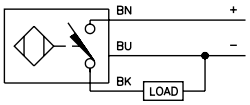

Mating Cordset: PKG 3Z-*

2

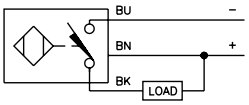



Mating Cordset: RK 4T-*

3




4




## A13 — 3-wire DC - Magnetic (AN, RN, AP, RP)

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | ≤1 mm |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current<br>≥170 mA on 150 mA Load Current<br>≥120 mA on 100 mA Load Current |
| Off-State (Leakage) Current: | ≤0.1 mA |
| No-Load Current: | ≤15 mA; |
| Pass Speed: | ≤10 ms; ≤3 ms (UNR) |
| Power-On Effect: | Per IEC 947-5-2 |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Transient Protection: | Per EN 60947-5-2 |
| Temperature Drift: | ≤0.1 mm, ≤0.3 mm (UNR) |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≥± 0.1 mm, ≥± 0.3 mm (UNR) |

## A17 — 3-wire DC - Magnetic w/o Short Circuit Protection (AP7)

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | ≤1 mm |
| Voltage Drop Across Conducting Sensor: | ≤1.4 V |
| Short Circuit Protection: | No |
| Off-State (Leakage) Current: | ≤0.1 mA |
| No-Load Current: | ≤10 mA; |
| Pass Speed: | ≤3 ms |
| Power-On Effect: | Per IEC 947-5-2 |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Transient Protection: | Per EN 60947-5-2 |
| Temperature Drift: | ≤0.3 mm |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≥± 0.3 mm |

## Additional Specifications

**Magnetic Actuation Strength (Gauss):** 20-350

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | BIM-UNTK

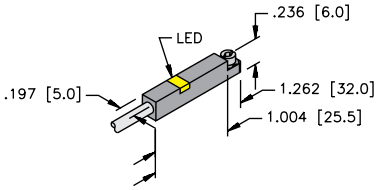
**T-groove Short Cylinder Style**

| Part Number/ ID Number | Features | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BIM-UNTK-AP7X-0.3-PSG3M** 4686011 | Short Body | 3-wire DC, PNP | 10-30 VDC | 300 | ≤ 100 | -25 to +70 | IP67 | PP | 0.3M/TPU | A | 1 | A17 |
| **BIM-UNTK-AP7X-0.3-RS4T** 4686021 | Short Body | 3-wire DC, PNP | 10-30 VDC | 300 | ≤ 100 | -25 to +70 | IP67 | PP | 0.3M/TPU | B | 2 | A17 |
| **BIM-UNTK-AP7X** 4686001 | Short Body | 3-wire DC, PNP | 10-30 VDC | 300 | ≤ 100 | -25 to +70 | IP67 | PP | 2M TPU | C | 3 | A17 |
| **BIM-UNTK-AP6X** 4686005 | short Body | 3-wire DC, PNP | 10-30 VDC | 300 | ≤ 100 | -25 to +70 | IP68 | PP | 2M TPU | C | 3 | A13 |
| **BIM-UNTK-AN6X** 4686006 | Short Body | 3-wire DC, PNP | 10-30 VDC | 300 | ≤ 100 | -25 to +70 | IP69 | PP | 2M TPU | C | 4 | A13 |

We reserve the right to make technical alterations without prior notice.

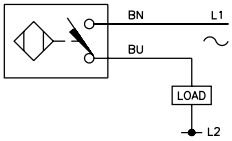
# Cylinder Position Sensors | BR-INT

**T-groove Cylinder Style or Universal Mount with Brackets**

| Housing Style | Dimension Drawings |
|---|---|
| | A   INT - Picofast Potted-In Cable |

**Wiring Diagrams/Mating Cordsets**

1




**A3** — **2-wire Reed AC and DC (ADZ71)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Reverse Polarity Protection: | Yes |
| Differential Travel (Hysteresis): | ≤1 mm (Depends on magnet) | Shock: | 30 g, 11 ms |
| Maximum Switching Capacity: | ≤10 W | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Off-State (Leakage) Current: | 0 mA | Repeatability: | ≥±0.1 mm |
| Pass Speed: | ≤10 m/s | | (constant temperature & voltage) |
| Power-On Effect: | Per IEC 947-5-2 | Temperature Drift: | ≤0.1 mm |
| Transient Protection: | Per EN 60947-5-2 | Voltage Drop: | ≤0.5 V |

**Additional Specifications**

**Magnetic Actuation Strength (Gauss):** 20-350

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | BR-INT

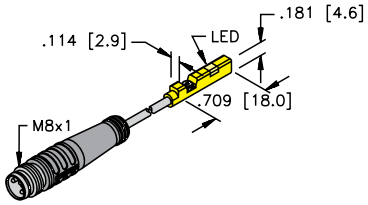
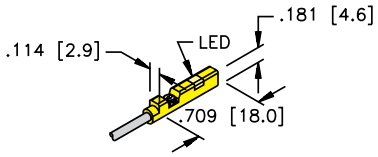
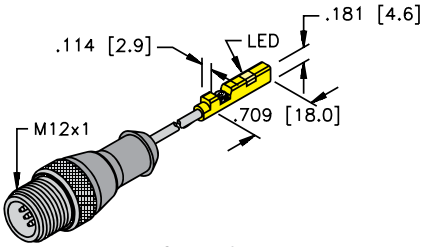
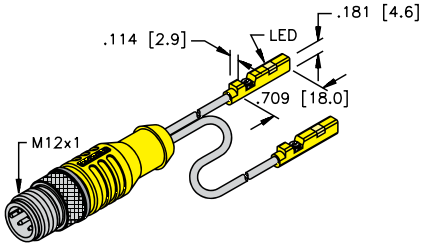
**T-groove Cylinder Style or Universal Mount with Brackets**

| Part Number/ ID Number | Features | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BR-INT-ADZ71X** 4700510 | Reed Contact | 2-wire AC/DC, Reed Contact | 3-140 VAC/4-200 VDC | 500 | ≤ 500 | -25 to +70 | IP67 | PA 12 | 2M/PVC | A | 1 | A3 |

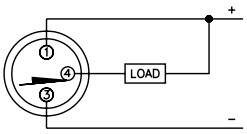
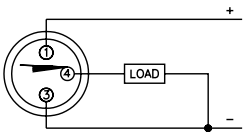
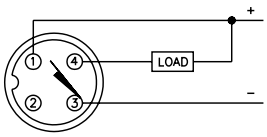
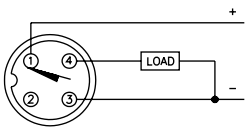
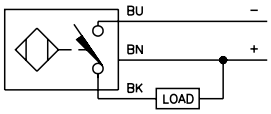
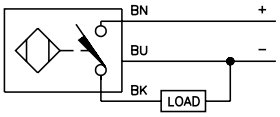
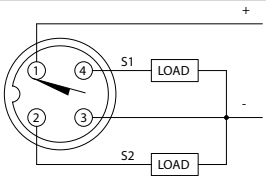
We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | BIM-UNR

**C-groove Cylinder Style**

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   UNR - Picofast Quick Disconnect | B   UNR - Potted-In Cable |
| C   UNR - Eurofast Quick Disconnect | D   UNR - Eurofast Quick Disconnect | |

**Wiring Diagrams/Mating Cordsets**

| 1 | 2 | 3 | 4 |
|---|---|---|---|
|   Mating Cordset: PKG 3Z-* |   Mating Cordset: PKG 3Z-* |   Mating Cordset: RK 4T-* |   Mating Cordset: RK 4T-* |
| 5 | 6 | 7 | |
|   |   |   Mating Cordset: RKC 4.4T-* | |

**A13** — **3-wire DC - Magnetic (AN, RN, AP, RP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | ≤1 mm | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥170 mA on 150 mA Load Current | Temperature Drift: | ≤0.1 mm, ≤0.3 mm (UNR) |
| | ≥120 mA on 100 mA Load Current | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| No-Load Current: | ≤15 mA; | Repeatability: | ≥± 0.1 mm, ≥± 0.3 mm (UNR) |
| Pass Speed: | ≤10 ms; ≤3 ms (UNR) | | |

**Additional Specifications**

**Magnetic Actuation Strength (Gauss):** 20-350

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | BIM-UNR

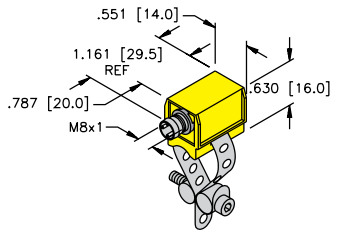
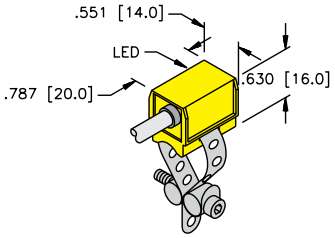
## C-groove Cylinder Style

| Part Number/ ID Number | Features | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BIM-UNR-AN6X-0.3-PSG3S W/M** 4685848 | Fixed Coupling Nut | 3-wire DC, NPN | 10-30 VDC | 300 | ≤ 100 | -25 to +70 | IP67 | PP | 0.3M/TPU | A | 1 | A13 |
| **BIM-UNR-AP6X-0.3-PSG3S W/M** 4685843 | Fixed Coupling Nut | 3-wire DC, PNP | 10-30 VDC | 300 | ≤ 100 | -25 to +70 | IP67 | PP | 0.3M/TPU | A | 2 | A13 |
| **BIM-UNR-AN6X-0.3-RS4 W/M** 4685850 | | 3-wire DC, NPN | 10-30 VDC | 300 | ≤ 100 | -25 to +70 | IP67 | PP | 0.3M/TPU | C | 3 | A13 |
| **BIM-UNR-AP6X-0.3-RS4 W/M** 4685845 | | 3-wire DC, PNP | 10-30 VDC | 300 | ≤ 100 | -25 to +70 | IP67 | PP | 0.3M/TPU | C | 4 | A13 |
| **BIM-UNR-AN6X W/M** 4685847 | | 3-wire DC, NPN | 10-30 VDC | 300 | ≤ 100 | -25 to +70 | IP67 | PP | 2M/TPU | B | 5 | A13 |
| **BIM-UNR-AP6X W/M** 4685842 | | 3-wire DC, PNP | 10-30 VDC | 300 | ≤ 100 | -25 to +70 | IP67 | PP | 2M/TPU | B | 6 | A13 |
| **BIM-UNR-2AP6X-0.2-RSC4.4T** 4685899 | Dual Switch | 4-wire DC, PNP | 10-30 VDC | 300 | ≤ 100 | -25 to +70 | IP67 | PP | 0.2M/TPU | D | 7 | A13 |

We reserve the right to make technical alterations without prior notice.

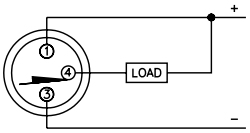
# Cylinder Position Sensors | BIM-PST

**Round Cylinder Style**

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   PST - Picofast Quick Disconnect | B   PST - Potted-In Cable |

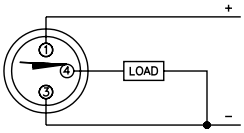
**Wiring Diagrams/Mating Cordsets**

1



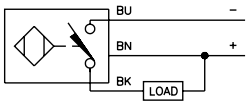

Mating Cordset: PKG 3Z-*

2

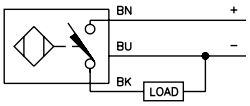



Mating Cordset: PKG 3Z-*

3




4




**A13** — **3-wire DC - Magnetic (AN, RN, AP, RP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | ≤1 mm | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥170 mA on 150 mA Load Current | Temperature Drift: | ≤0.1 mm, ≤0.3 mm (UNR) |
| | ≥120 mA on 100 mA Load Current | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| No-Load Current: | ≤15 mA; | Repeatability: | ≥± 0.1 mm, ≥± 0.3 mm (UNR) |
| Pass Speed: | ≤10 ms; ≤3 ms (UNR) | | |

**Additional Specifications**

**Magnetic Actuation Strength (Gauss):** 20-350

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | BIM-PST

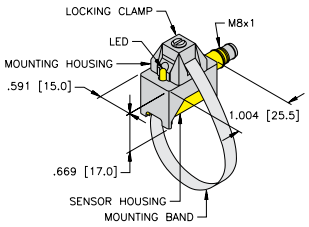
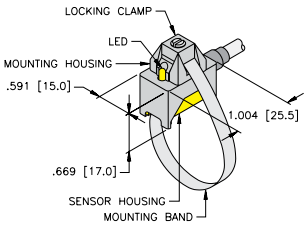
## Round Cylinder Style

| Part Number/ ID Number | Features | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BIM-PST-AN6X-V1131 W/KLP-80** 4625190 | KLP-80 Included | 3-wire DC, NPN | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | PA 12 | -- | A | 1 | A13 |
| **BIM-PST-AP6X-V1131 W/KLP-80** 4625090 | KLP-80 Included | 3-wire DC, PNP | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | PA 12 | -- | A | 2 | A13 |
| **BIM-PST-AN6X W/KLP-80** 4624191 | KLP-80 Included | 3-wire DC, NPN | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | PA 12 | 2M/PVC | B | 3 | A13 |
| **BIM-PST-AP6X W/KLP-80** 4624090 | KLP-80 Included | 3-wire DC, PNP | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | PA 12 | 2M/PVC | B | 4 | A13 |

We reserve the right to make technical alterations without prior notice.

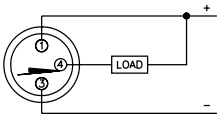
# Cylinder Position Sensors | BIM-KST

**Round Cylinder Style**

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   KST - Picofast Quick Disconnect | B   KST - Potted-In Cable |

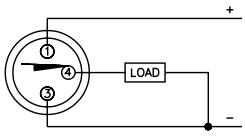
**Wiring Diagrams/Mating Cordsets**

1



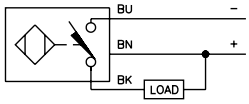

Mating Cordset: PKG 3Z-*

2




Mating Cordset: PKG 3Z-*

3

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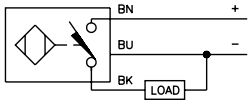



**A13** — **3-wire DC - Magnetic (AN, RN, AP, RP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | ≤1 mm | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥170 mA on 150 mA Load Current | Temperature Drift: | ≤0.1 mm, ≤0.3 mm (UNR) |
| | ≥120 mA on 100 mA Load Current | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| No-Load Current: | ≤15 mA; | Repeatability: | ≥± 0.1 mm, ≥± 0.3 mm (UNR) |
| Pass Speed: | ≤10 ms; ≤3 ms (UNR) | | |

**Additional Specifications**

**Magnetic Actuation Strength (Gauss):** 20-350

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | BIM-KST

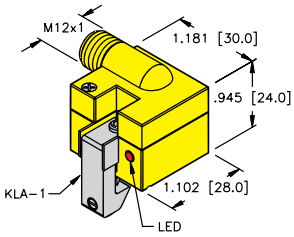
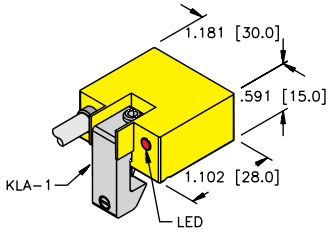
**Round Cylinder Style**

| Part Number/ ID Number | Features | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BIM-KST-AN6X-V1131** 46743 | KST SB170 and KST SB335 Straps Included | 3-wire DC, NPN | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | Zinc | -- | A | 1 | A13 |
| **BIM-KST-AP6X-V1131** 46742 | KST SB170 and KST SB335 Straps Included | 3-wire DC, PNP | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | Zinc | -- | A | 2 | A13 |
| **BIM-KST-AN6X** 46741 | KST SB170 and KST SB335 Straps Included | 3-wire DC, NPN | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | Zinc | 2M/ PVC | B | 3 | A13 |
| **BIM-KST-AP6X** 46740 | KST SB170 and KST SB335 Straps Included | 3-wire DC, PNP | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | Zinc | 2M/ PVC | B | 4 | A13 |

We reserve the right to make technical alterations without prior notice.

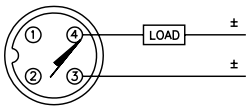
# Cylinder Position Sensors | BIM-AKT

**Tie-rod Cylinder Style**

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   AKT - Eurofast Connector | B   AKT - Potted-In Cable |

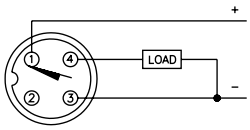
**Wiring Diagrams/Mating Cordsets**

1



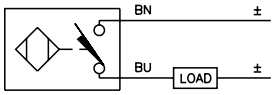

Mating Cordset: RK 4.2T-*

2




Mating Cordset: RK 4T-*

3

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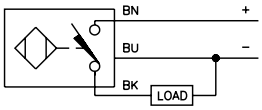



**A13** — **3-wire DC - Magnetic (AN, RN, AP, RP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | ≤1 mm | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥170 mA on 150 mA Load Current | Temperature Drift: | ≤0.1 mm, ≤0.3 mm (UNR) |
| | ≥120 mA on 100 mA Load Current | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| No-Load Current: | ≤15 mA; | Repeatability: | ≥± 0.1 mm, ≥± 0.3 mm (UNR) |
| Pass Speed: | ≤10 ms; ≤3 ms (UNR) | | |

**A14** — **2-wire DC - Magnetic (AD, AG)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | ≤1 mm | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-Polarized (AD) ≤4 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤3.5 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Pass Speed: | ≤3 ms, ≤10 ms (UNT) | Repeatability: | ≥± 0.1 mm |

**Additional Specifications**

**Magnetic Actuation Strength (Gauss):** 20-350

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | BIM-AKT

**Tie-rod Cylinder Style**

| Part Number/ ID Number | Features | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BIM-AKT-AD4X-H1141 W/KLA-1** 4480290 | KLA-1 Included | 2-wire DC | 10-65 VDC | 300 | ≤ 100 | -25 to +70 | IP67 | PA 12 | -- | A | 1 | A14 |
| **BIM-AKT-AP6X-H1141 W/KLA-1** 4675290 | KLA-1 Included | 3-wire DC, PNP | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | PA 12 | -- | A | 2 | A13 |
| **BIM-AKT-AD4X W/KLA-1** 4480090 | KLA-1 Included | 2-wire DC | 10-65 VDC | 300 | ≤ 100 | -25 to +70 | IP67 | PA 12 | 2M/PVC | B | 3 | A14 |
| **BIM-AKT-AP6X W/KLA-1** 4675090 | KLA-1 Included | 3-wire DC, PNP | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | PA 12 | 2M/PVC | B | 4 | A13 |

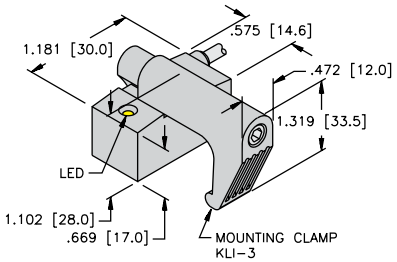
We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | BIM-IKE/IKT

**Tie-rod Cylinder Style**

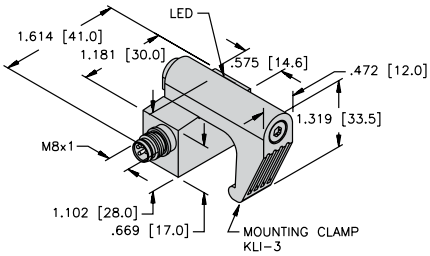
| Housing Style | Dimension Drawings |
|---|---|

A



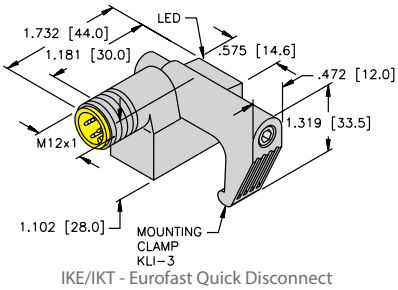

IKE/IKT - Potted-In Cable

B




IKE/IKT - Picofast Quick Disconnect

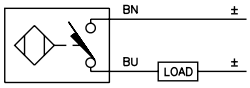
C



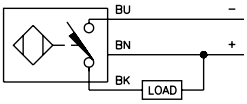

IKE/IKT - Eurofast Quick Disconnect

## Wiring Diagrams/Mating Cordsets

1




2

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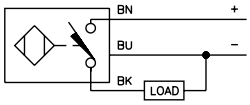
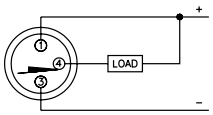
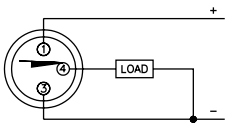



4



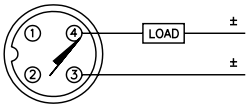

Mating Cordset: PKG 3Z-*

5



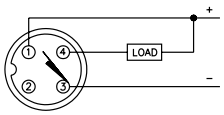

Mating Cordset: PKG 3Z-*

6



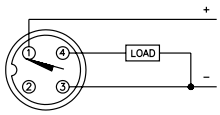

Mating Cordset: RK 4.2T-*

7




Mating Cordset: RK 4T-*

8




Mating Cordset: RK 4T-*

## A13 — 3-wire DC - Magnetic (AN, RN, AP, RP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | ≤1 mm | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥170 mA on 150 mA Load Current | Temperature Drift: | ≤0.1 mm, ≤0.3 mm (UNR) |
| | ≥120 mA on 100 mA Load Current | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| No-Load Current: | ≤15 mA; | Repeatability: | ≥± 0.1 mm, ≥± 0.3 mm (UNR) |
| Pass Speed: | ≤10 ms; ≤3 ms (UNR) | | |

## A14 — 2-wire DC - Magnetic (AD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | ≤1 mm | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-Polarized (AD) ≤4 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤3.5 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Pass Speed: | ≤3 ms, ≤10 ms (UNT) | Repeatability: | ≥± 0.1 mm |

## Additional Specifications

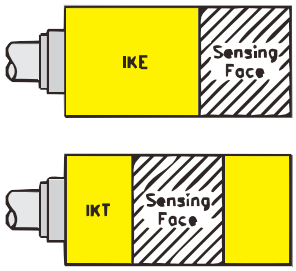
**Magnetic Actuation Strength (Gauss):** 20-350

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | BIM-IKE/IKT

**Tie-rod Cylinder Style**

| Part Number/ ID Number | Features | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BIM-IKE-AD4X W/KLI-3** 4421490 | KLI-3 Included | 2-wire DC | 10-65 VDC | 300 | ≤ 100 | -25 to +70 | IP67 | Zinc | 2M/PVC | A | 1 | A14 |
| **BIM-IKT-AD4X W/KLI-3** 4482090 | KLI-3 Included | 2-wire DC | 10-65 VDC | 300 | ≤ 100 | -25 to +70 | IP67 | Zinc | 2M/PVC | A | 1 | A14 |
| **BIM-IKE-AN6X W/KLI-3** 4621590 | KLI-3 Included | 3-wire DC, NPN | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | Zinc | 2M/PVC | A | 2 | A13 |
| **BIM-IKT-AN6X W/KLI-3** 4620190 | KLI-3 Included | 3-wire DC, NPN | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | Zinc | 2M/PVC | A | 2 | A13 |
| **BIM-IKE-AP6X W/KLI-3** 4621490 | KLI-3 Included | 3-wire DC, PNP | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | Zinc | 2M/PVC | A | 3 | A13 |
| **BIM-IKT-AP6X W/KLI-3** 4620090 | KLI-3 Included | 3-wire DC, PNP | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | Zinc | 2M/PVC | A | 3 | A13 |
| **BIM-IKE-AN6X-V1131 W/KLI-3** 4621795 | KLI-3 Included | 3-wire DC, NPN | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | Zinc | -- | B | 4 | A13 |
| **BIM-IKT-AN6X-V1131 W/KLI-3** 4622195 | KLI-3 Included | 3-wire DC, NPN | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | Zinc | -- | B | 4 | A13 |
| **BIM-IKE-AP6X-V1131 W/KLI-3** 4621695 | KLI-3 Included | 3-wire DC, PNP | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | Zinc | -- | B | 5 | A13 |
| **BIM-IKT-AP6X-V1131 W/KLI-3** 4622095 | KLI-3 Included | 3-wire DC, PNP | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | Zinc | -- | B | 5 | A13 |
| **BIM-IKE-AD4X-H1141 W/KLI-3** 4421690 | KLI-3 Included | 2-wire DC | 10-65 VDC | 300 | ≤ 100 | -25 to +70 | IP67 | Zinc | -- | C | 6 | A14 |
| **BIM-IKT-AD4X-H1141 W/KLI-3** 4482290 | KLI-3 Included | 2-wire DC | 10-65 VDC | 300 | ≤ 100 | -25 to +70 | IP67 | Zinc | -- | C | 6 | A14 |
| **BIM-IKE-AN6X-H1141 W/KLI-3** 4621790 | KLI-3 Included | 3-wire DC, NPN | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | Zinc | -- | C | 7 | A13 |
| **BIM-IKT-AN6X-H1141 W/KLI-3** 4621190 | KLI-3 Included | 3-wire DC, NPN | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | Zinc | -- | C | 7 | A13 |
| **BIM-IKE-AP6X-H1141 W/KLI-3** 4621690 | KLI-3 Included | 3-wire DC, PNP | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | Zinc | -- | C | 8 | A13 |
| **BIM-IKT-AP6X-H1141 W/KLI-3** 4621090 | KLI-3 Included | 3-wire DC, PNP | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | Zinc | -- | C | 8 | A13 |



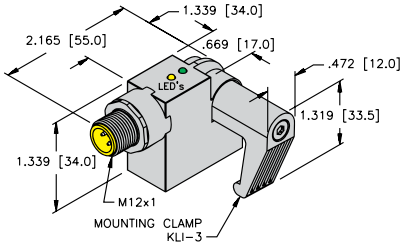

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | BIM-IKM

**Tie-rod Cylinder Style**

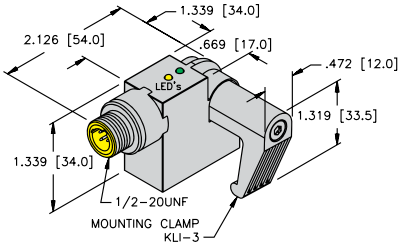
| Housing Style | Dimension Drawings |
|---|---|

A



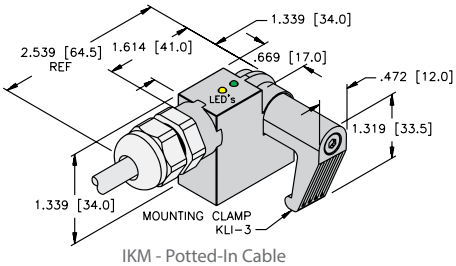

IKM - Eurofast Connector

B




IKM - Microfast® Connector

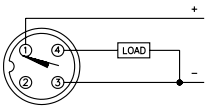
C




IKM - Potted-In Cable

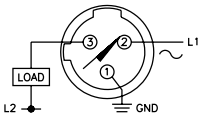
## Wiring Diagrams/Mating Cordsets

1



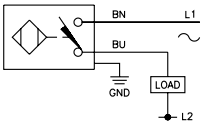

Mating Cordset: RK 4T-*

2




Mating Cordset: KB 3T-*

3




## A13 — 3-wire DC - Magnetic (AN, RN, AP, RP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | ≤1 mm | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥170 mA on 150 mA Load Current | Temperature Drift: | ≤0.1 mm, ≤0.3 mm (UNR) |
| | ≥120 mA on 100 mA Load Current | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| No-Load Current: | ≤15 mA; | Repeatability: | ≥± 0.1 mm, ≥± 0.3 mm (UNR) |
| Pass Speed: | ≤10 ms; ≤3 ms (UNR) | | |

## A15 — 2-wire AC w/o Short-Circuit Protection - Magnetic (AZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Pass Speed: | ≤1 ms |
| Differential Travel (Hysteresis): | ≤1 mm | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | Transient Protection: | Per EN 60947-5-2 |
| Continuous Load Current: | AC: ≤500 mA | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤1.7 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Minimum Load Current: | ≥5.0 mA | Repeatability: | ≥± 0.1 mm |

## Additional Specifications

**Magnetic Actuation Strength (Gauss):** 20-350

We reserve the right to make technical alterations without prior notice.

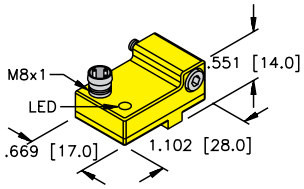
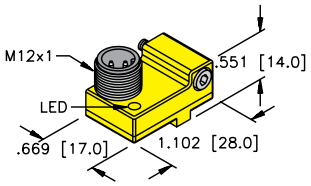
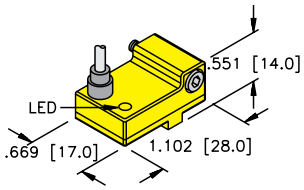
# Cylinder Position Sensors | BIM-IKM

**Tie-rod Cylinder Style**

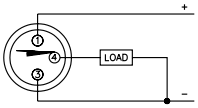
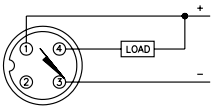
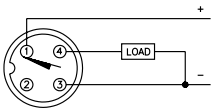
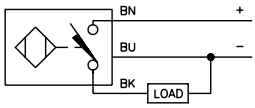
| Part Number/ ID Number | Features | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BIM-IKM-AP6X2-H1141/S34W/KLI-3** 4627290 | KLI-3 Included, WFI | 3-wire DC, PNP | 10-30 VDC | 20 | ≤ 200 | -25 to +70 | IP67 | Zinc | -- | A | 1 | A13 |
| **BIM-IKM-AZ3X2-B3131 W/KLI-3** 1347190 | KLI-3 Included | 2-wire AC | 20-250 VAC | 20 | ≤ 500 | -25 to +70 | IP67 | Zinc | -- | B | 2 | A15 |
| **BIM-IKM-AZ3X2 W/KLI-3** 1347290 | KLI-3 Included | 2-wire AC | 20-250 VAC | 20 | ≤ 500 | -25 to +70 | IP67 | Zinc | 2M/PVC | C | 3 | A15 |

We reserve the right to make technical alterations without prior notice.

**T-groove or Slot Style**

| Housing Style | Dimension Drawings |
|---|---|
| | A   NST - Picofast Connector |
| B   NST - Picofast Connector | C   NST - Potted-In Cable |

**Wiring Diagrams/Mating Cordsets**

| 1 | 2 | 3 | 4 |
|---|---|---|---|
|   |   |   |   |
| Mating Cordset: PKG 3Z-* | Mating Cordset: RK 4T-* | Mating Cordset: RK 4T-* | |

**A13** — **3-wire DC - Magnetic (AN, RN, AP, RP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | ≤1 mm | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥170 mA on 150 mA Load Current | Temperature Drift: | ≤0.1 mm, ≤0.3 mm (UNR) |
| | ≥120 mA on 100 mA Load Current | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| No-Load Current: | ≤15 mA; | Repeatability: | ≥± 0.1 mm, ≥± 0.3 mm (UNR) |
| Pass Speed: | ≤10 ms; ≤3 ms (UNR) | | |

**Additional Specifications**

**Magnetic Actuation Strength (Gauss):** 20-350

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | BIM-NST

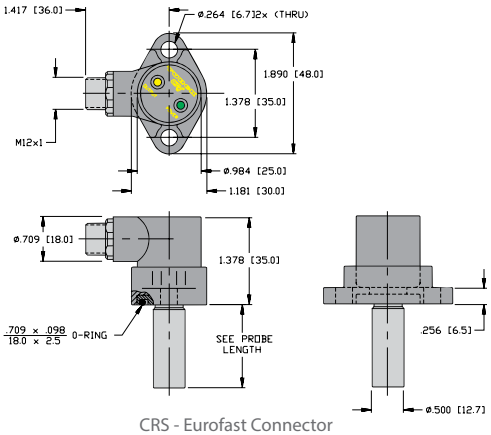
**T-groove or Slot Style**

| Part Number/ ID Number | Features | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BIM-NST-AP6X-V1131** 4685800 | w/o Bracket | 3-wire DC, PNP | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | PA 12 | -- | A | 1 | A13 |
| **BIM-NST-AN6X-H1141** 4685500 | w/o Bracket | 3-wire DC, NPN | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | PA 12 | -- | B | 2 | A13 |
| **BIM-NST-AP6X-H1141/S34** 4685401 | w/o Bracket, WFI | 3-wire DC, PNP | 10-30 VDC | 20 | ≤ 200 | -25 to +70 | IP67 | PA 12 | -- | B | 3 | A13 |
| **BIM-NST-AP6X-H1141** 4685400 | w/o Bracket | 3-wire DC, PNP | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | PA 12 | -- | B | 3 | A13 |
| **BIM-NST-AP6X** 4685600 | w/o Bracket | 3-wire DC, PNP | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | PA 12 | 2M/PVC | C | 4 | A13 |

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | CRS

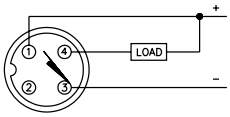
## In-Cylinder Position Sensors

| Housing Style | Dimension Drawings |
|---|---|
| | A  CRS - Eurofast Connector |



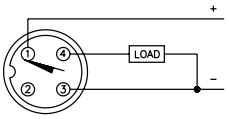
### Wiring Diagrams/Mating Cordsets

1




Mating Cordset: RK 4T-*

2




Mating Cordset: RK 4T-*

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current |
| | ≥170 mA on 150 mA Load Current |
| | ≥120 mA on 100 mA Load Current |
| Off-State (Leakage) Current: | ≤0.1 mA |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) |
| | ≤20 mA (Uprox+, Uprox 3) |
| Time Delay Before Availability: | ≤8 ms |
| Power-On Effect: | Per IEC 947-5-2 |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Transient Protection: | Per EN 60947-5-2 |
| Temperature Drift: | ≤±10% |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | CRS

## In-Cylinder Position Sensors

| Part Number/ ID Number | Features | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi2-CRS260-AN4X2-H1141/S34** 4580004 | WFI; 1,500 PSI Operating | 3-wire DC, NPN | 10-65 VDC | 30 | ≤ 200 | -25 to +70 | IP67 | Zinc | A | 1 | A4 |
| **Bi2-CRS317-AN4X2-H1141/S34** 4580093 | WFI; 1,500 PSI Operating | 3-wire DC, NPN | 10-65 VDC | 30 | ≤ 200 | -25 to +70 | IP67 | Zinc | A | 1 | A4 |
| **Bi2-CRS343-AN4X2-H1141/S34** 4571890 | WFI; 1,500 PSI Operating | 3-wire DC, NPN | 10-65 VDC | 30 | ≤ 200 | -25 to +70 | IP67 | Zinc | A | 1 | A4 |
| **Bi2-CRS524-AN4X2-H1141/S34** 4568096 | WFI; 1,500 PSI Operating | 3-wire DC, NPN | 10-65 VDC | 30 | ≤ 200 | -25 to +70 | IP67 | Zinc | A | 1 | A4 |
| **Bi2-CRS232-AP4X2-H1141/S34** 4570492 | WFI; 1,500 PSI Operating | 3-wire DC, PNP | 10-65 VDC | 30 | ≤ 200 | -25 to +70 | IP67 | Zinc | A | 2 | A4 |
| **Bi2-CRS260-AP4X2-H1141/S34** 4570890 | WFI; 1,500 PSI Operating | 3-wire DC, PNP | 10-65 VDC | 30 | ≤ 200 | -25 to +70 | IP67 | Zinc | A | 2 | A4 |
| **Bi2-CRS287-AP4X2-H1141/S34** 4571290 | WFI; 1,500 PSI Operating | 3-wire DC, PNP | 10-65 VDC | 30 | ≤ 200 | -25 to +70 | IP67 | Zinc | A | 2 | A4 |
| **Bi2-CRS317-AP4X2-H1141/S34** 4571690 | WFI; 1,500 PSI Operating | 3-wire DC, PNP | 10-65 VDC | 30 | ≤ 200 | -25 to +70 | IP67 | Zinc | A | 2 | A4 |
| **Bi2-CRS343-AP4X2-H1141/S34** 4571800 | WFI; 1,500 PSI Operating | 3-wire DC, PNP | 10-65 VDC | 30 | ≤ 200 | -25 to +70 | IP67 | Zinc | A | 2 | A4 |
| **Bi2-CRS476-AP4X2-H1141/S34** 4580091 | WFI; 1,500 PSI Operating | 3-wire DC, PNP | 10-65 VDC | 30 | ≤ 200 | -25 to +70 | IP67 | Zinc | A | 2 | A4 |
| **Bi2-CRS524-AP4X2-H1141/S34** 4580090 | WFI; 1,500 PSI Operating | 3-wire DC, PNP | 10-65 VDC | 30 | ≤ 200 | -25 to +70 | IP67 | Zinc | A | 2 | A4 |
| **Bi2-CRS603-AP4X2-H1141/S34** 4580096 | WFI; 1,500 PSI Operating | 3-wire DC, PNP | 10-65 VDC | 30 | ≤ 200 | -25 to +70 | IP67 | Zinc | A | 2 | A4 |
| **Bi2-CRS705-AP4X2-H1141/S34** 4580089 | WFI; 1,500 PSI Operating | 3-wire DC, PNP | 10-65 VDC | 30 | ≤ 200 | -25 to +70 | IP67 | Zinc | A | 2 | A4 |
| **Bi2-CRS730-AP4X2-H1141/S34** 4580003 | WFI; 1,500 PSI Operating | 3-wire DC, PNP | 10-65 VDC | 30 | ≤ 200 | -25 to +70 | IP67 | Zinc | A | 2 | A4 |
| **Bi2-CRS959-AP4X2-H1141/S34** 4571891 | WFI; 1,500 PSI Operating | 3-wire DC, PNP | 10-65 VDC | 30 | ≤ 200 | -25 to +70 | IP67 | Zinc | A | 2 | A4 |
| **Bi2-CRS1159-AP4X2-H1141/S34** 4570899 | WFI; 1,500 PSI Operating | 3-wire DC, PNP | 10-65 VDC | 30 | ≤ 200 | -25 to +70 | IP67 | Zinc | A | 2 | A4 |
| **Bi1.5-CRS524C-AP6X2-H1141** 4279091 | High Pressure; 3,000 PSI Operating | 3-wire DC, PNP | 10-30 VDC | 30 | ≤ 200 | -25 to +70 | IP67 | Zinc | A | 2 | A4 |
| **Bi1.5-CRS260C-AP6X2-H1141** 4279092 | High Pressure; 3,000 PSI Operating | 3-wire DC, PNP | 10-30 VDC | 30 | ≤ 200 | -25 to +70 | IP67 | Zinc | A | 2 | A4 |

Bi *-CRS-XXXX-.. = Length of probe in mm. Example: CRS260 = 26.0 mm

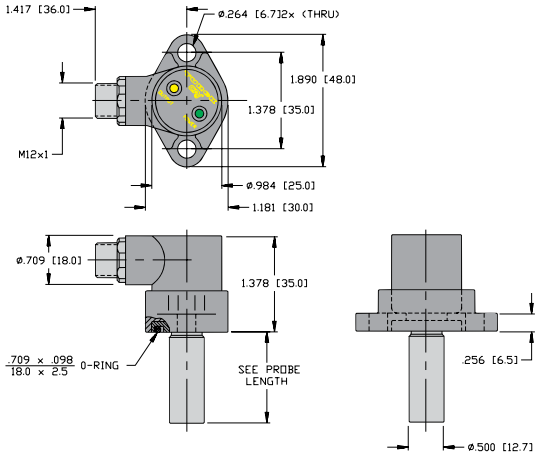
We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | CRS

## In-Cylinder Position Sensors

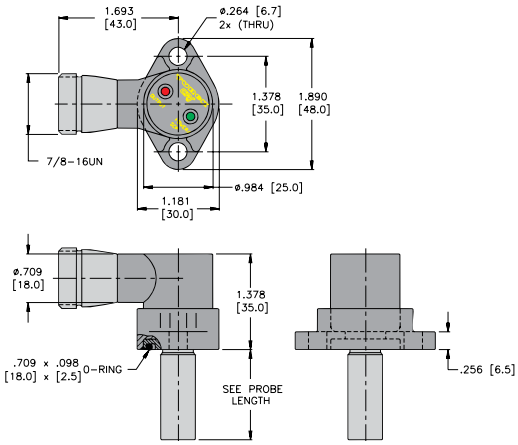
| Housing Style | Dimension Drawings |
|---|---|

A




CRS - Microfast Connector

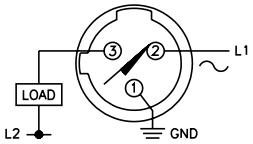
B




CRS - Minifast® Connector

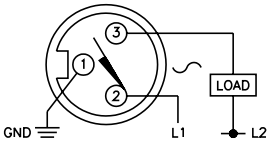
### Wiring Diagrams/Mating Cordsets

1




Mating Cordset: KB 3T-*

2




Mating Cordset: RKM 311-*M

### A5 — 2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA |
| | AC: ≥120 mA; DC: ≥120 mA |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA (AC) |
| | ≤1.5 mA (DC) |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤3 A (≤20 ms, max 5 Hz) |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | CRS

## In-Cylinder Position Sensors

| Part Number/ ID Number | Features | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi2-CRS232-ADZ30X2-B3131/S34** 4275093 | WFI; 1,500 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | A | 1 | A5 |
| **Bi2-CRS260-ADZ30X2-B3131/S34** 4275493 | WFI; 1,500 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | A | 1 | A5 |
| **Bi2-CRS317-ADZ30X2-B3131/S34** 4276293 | WFI; 1,500 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | A | 1 | A5 |
| **Bi2-CRS476-ADZ30X2-B3131/S34** 4276693 | WFI; 1,500 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | A | 1 | A5 |
| **Bi2-CRS524-ADZ30X2-B3131/S34** 4277093 | WFI; 1,500 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | A | 1 | A5 |
| **Bi2-CRS730-ADZ30X2-B3131/S34** 4278293 | WFI; 1,500 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | A | 1 | A5 |
| **Bi2-CRS959-ADZ30X2-B3131/S34** 4279093 | WFI; 1,500 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | A | 1 | A5 |
| **Bi2-CRS1159-ADZ30X2-B3131/S34** 4279493 | WFI; 1,500 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | A | 1 | A5 |
| **Bi2-CRS232-ADZ30X2-B1131/S34** 4270093 | WFI; 1,500 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | B | 2 | A5 |
| **Bi2-CRS260-ADZ30X2-B1131/S34** 4270493 | WFI; 1,500 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | B | 2 | A5 |
| **Bi2-CRS317-ADZ30X2-B1131/S34** 4271293 | WFI; 1,500 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | B | 2 | A5 |
| **Bi2-CRS343-ADZ30X2-B1131/S34** 4271493 | WFI; 1,500 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | B | 2 | A5 |
| **Bi2-CRS476-ADZ30X2-B1131/S34** 4271693 | WFI; 1,500 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | B | 2 | A5 |
| **Bi2-CRS524-ADZ30X2-B1131/S34** 4272093 | WFI; 1,500 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | B | 2 | A5 |
| **Bi2-CRS603-ADZ30X2-B1131/S34** 4272493 | WFI; 1,500 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | B | 2 | A5 |
| **Bi2-CRS705-ADZ30X2-B1131/S34** 4272893 | WFI; 1,500 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | B | 2 | A5 |
| **Bi2-CRS730-ADZ30X2-B1131/S34** 4273293 | WFI; 1,500 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | B | 2 | A5 |
| **Bi2-CRS959-ADZ30X2-B1131/S34** 4274093 | WFI; 1,500 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | B | 2 | A5 |
| **Bi2-CRS1159-ADZ30X2-B1131/S34** 4274493 | WFI; 1,500 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | B | 2 | A5 |
| **Bi1.5-CRS959C-ADZ30X2-B1131** 4279094 | High Pressure; 3,000 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | B | 2 | A5 |
| **Bi1.5-CRS730C-ADZ30X2-B1131** 4279095 | High Pressure; 3,000 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | B | 2 | A5 |
| **Bi1.5-CRS260C-ADZ30X2-B1131** 4279096 | High Pressure; 3,000 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | B | 2 | A5 |
| **Bi1.5-CRS232C-ADZ30X2-B1131** 4279097 | High Pressure; 3,000 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | B | 2 | A5 |
| **Bi1.5-CRS524C-ADZ30X2-B1131** 4279098 | High Pressure; 3,000 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | B | 2 | A5 |
| **Bi1.5-CRS317C-ADZ30X2-B1131** 4279099 | High Pressure; 3,000 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | B | 2 | A5 |

Bi *-CRS-XXXX-.. = Length of probe in mm. Example: CRS260 = 26.0 mm

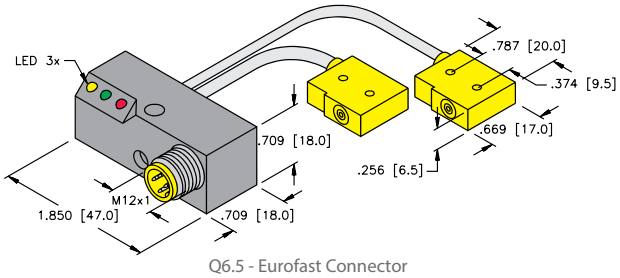
We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | Q6.5

## Power Clamp Position Sensors

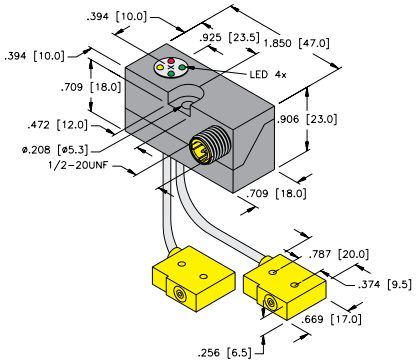
| Housing Style | Dimension Drawings |
|---|---|

A



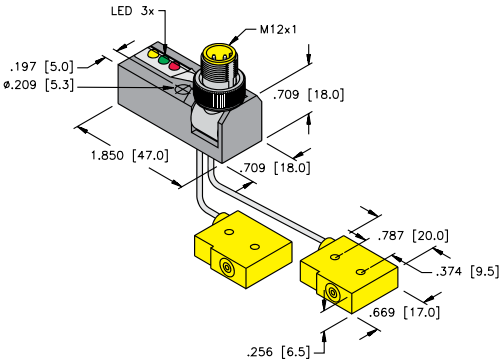

Q6.5 - Eurofast Connector

B




Q6.5 - Microfast Connector

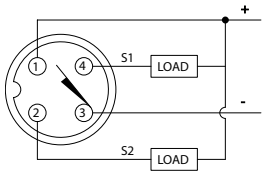
C




Q6.5 - Eurofast Connector

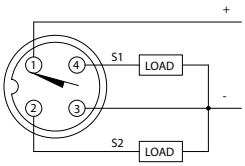
### Wiring Diagrams/Mating Cordsets

1



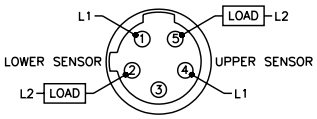

Mating Cordset: RK 4.4T-*

2




Mating Cordset: RK 4.4T-*

3




Mating Cordset: KB 5T-*

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox 3) | Repeatability: | ≤2% of Rated Operating Distance |

### A5 — 2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Minimum Load Current: | ≥3.0 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Inrush Current: | ≤3 A (≤20 ms, max 5 Hz) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | Power-On Effect: | Per IEC 947-5-2 |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA | Transient Protection: | Per EN 60947-5-2 |
| | AC: ≥120 mA; DC: ≥120 mA | Shock: | 30 g, 11 ms |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | AC: ≤100 mA; DC: ≤100 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Off-State (Leakage) Current: | ≤1.7 mA (AC) | | |
| | ≤1.5 mA (DC) | | |

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | Q6.5

## Power Clamp Position Sensors

| Part Number/ ID Number | Features | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni2-Q6.5-AN6-0.1-FS4.4X3/S304** 1650079 | | 4-wire DC, NPN | 10-30 VDC | 30 | ≤ 500 | -25 to +70 | IP67 | PBT | 0.1M/TPU | A | 1 | A4 |
| **Ni2-Q6.5-AN6-0.16-FS4.4X3/S304** 1650085 | | 4-wire DC, NPN | 10-30 VDC | 30 | ≤ 150 | -25 to +70 | IP67 | PBT | 0.16M/TPU | A | 1 | A4 |
| **Ni2-Q6.5-AP6-0.1-FS4.4X3/S304** 1650048 | | 4-wire DC, PNP | 10-30 VDC | 30 | ≤ 150 | -25 to +70 | IP67 | PBT | 0.1M/TPU | A | 2 | A4 |
| **Ni2-Q6.5-AP6-0.16-FS4.4X3/S304** 1650086 | | 4-wire DC, PNP | 10-30 VDC | 30 | ≤ 150 | -25 to +70 | IP67 | PBT | 0.16M/TPU | A | 2 | A4 |
| **Ni2-Q6.5-AP6-0.2-FS4.4X3/S304** 1650047 | | 4-wire DC, PNP | 10-30 VDC | 30 | ≤ 150 | -25 to +70 | IP67 | PBT | 0.2M/TPU | A | 2 | A4 |
| **Ni2-Q6.5-0.1-BDS-2AP6X3-H1141/S34** 1650098 | WFI | 4-wire DC, PNP | 10-30 VDC | 30 | ≤ 150 | -25 to +70 | IP67 | PBT | 0.1M/TPU | C | 2 | A4 |
| **Ni2-Q6.5-0.16-BDS-2AP6X3-H1141/S34** 1650110 | WFI | 4-wire DC, PNP | 10-30 VDC | 30 | ≤ 150 | -25 to +70 | IP67 | PBT | 0.16M/TPU | C | 2 | A4 |
| **Ni2-Q6.5-ADZ32-0.1-FSB5.4X4/S304** 4200204 | | 4-wire, VAC/DC | 20-250 VAC/10-300 VDC | 30 | ≤ 100 | -25 to +70 | IP67 | PBT | 0.1M/TPU | B | 3 | A5 |
| **Ni2-Q6.5-ADZ32-0.16-FS 5.4X4/S304** 4200203 | | 4-wire, VAC/DC | 20-250 VAC/10-300 VDC | 30 | ≤ 100 | -25 to +70 | IP67 | PBT | 0.16M/TPU | B | 3 | A5 |

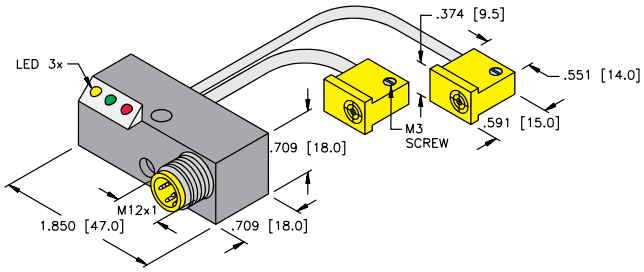
We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | Q9.5

**Power Clamp Position Sensors**

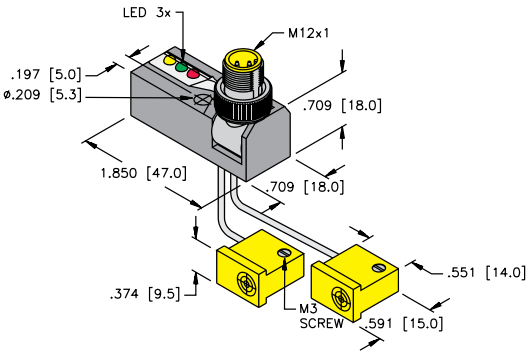
| Housing Style | Dimension Drawings |
|---|---|

A



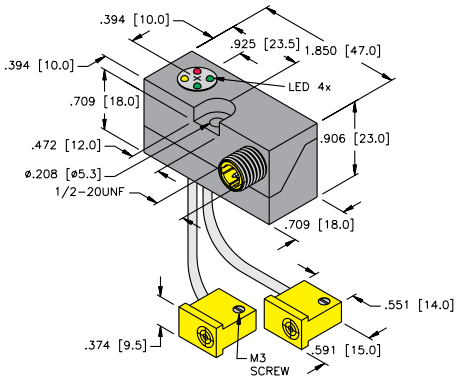

Q9.5 - Eurofast Connector

B




Q9.5 - Eurofast Connector

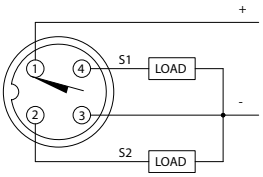
C




Q9.5 - Microfast Connector

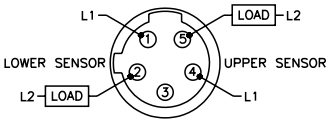
**Wiring Diagrams/Mating Cordsets**

1




Mating Cordset: RK 4.4T-*

2




Mating Cordset: KB 5T-*

**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox 3) | Repeatability: | ≤2% of Rated Operating Distance |

**A5** — **2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)**

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Minimum Load Current: | ≥3.0 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Inrush Current: | ≤3 A (≤20 ms, max 5 Hz) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | Power-On Effect: | Per IEC 947-5-2 |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA | Transient Protection: | Per EN 60947-5-2 |
| | AC: ≥120 mA; DC: ≥120 mA | Shock: | 30 g, 11 ms |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | AC: ≤100 mA; DC: ≤100 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Off-State (Leakage) Current: | ≤1.7 mA (AC) | | |
| | ≤1.5 mA (DC) | | |

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | Q9.5

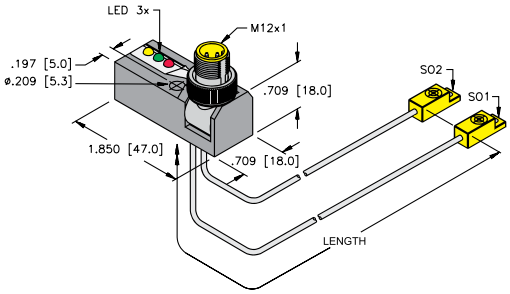
## Power Clamp Position Sensors

| Part Number/ ID Number | Features | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni2-Q9.5-AP6-0.1-FS4.4X3/S304** 1650060 | | 4-wire DC, PNP | 10-30 VDC | 30 | ≤ 150 | -25 to +70 | IP67 | PBT | 0.1M/TPU | A | 1 | A4 |
| **Ni2-Q9.5-0.1-BDS-2AP6X3-H1141/S34** 1650099 | WFI | 4-wire DC, PNP | 10-30 VDC | 30 | ≤ 150 | -25 to +70 | IP67 | PBT | 0.1M/TPU | B | 1 | A4 |
| **Ni2-Q9.5-ADZ32-0.1-FSB5.4X4/S304** 4200210 | | 4-wire, VAC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 100 | -25 to +70 | IP67 | PBT | 0.1M/TPU | C | 2 | A5 |

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | ISI

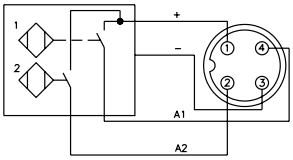
**Power Clamp Position Sensors**

| Housing Style | Dimension Drawings |
|---|---|
| | A  ISI - Eurofast Connector |



**Wiring Diagrams/Mating Cordsets**

1





Mating Cordset: RK 4.4T-*

**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox 3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | ISI

**Power Clamp Position Sensors**

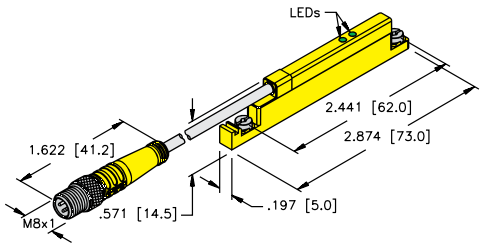
| Part Number/ ID Number | Features | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni2-ISI-0.1-BDS-2AP6X3-H1141/S34**<br>1650133 | WFI | 4-wire DC, PNP | 10-30 VDC | 30 | ≤ 150 | -25 to +70 | IP67 | PBT | 0.1M/TPU | A | 1 | A4 |

We reserve the right to make technical alterations without prior notice.

## Power Clamp Position Sensors

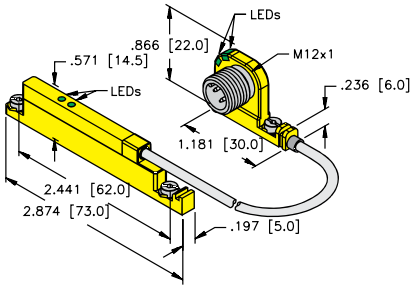
| Housing Style | Dimension Drawings |
|---|---|

A



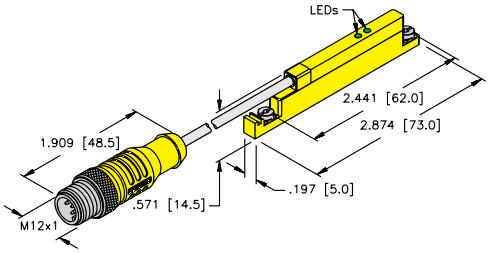

23 mm - Embeddable, T-groove Pneumatic Cylinders Picofast Quick Disconnect

B




23 mm - Embeddable, T-groove Pneumatic Cylinders Eurofast Quick Disconnect

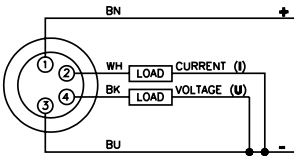
C




23 mm - Embeddable, T-groove Pneumatic Cylinders Eurofast Quick Disconnect

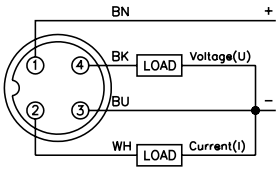
### Wiring Diagrams/Mating Cordsets

1




Mating Cordset: RK 4.4T-*; PKG 4M-*

2




Mating Cordset: RK 4.4T-*

### A7 — 3 and 4-wire DC Analog - (LIU, SIU)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Transient Protection: | Per EN 60947-5-2 |
| No-Load Current: | ≤8.0 mA | Shock: | 30 g, 11 ms |
| Load Resistance Voltage Output: | 0-10 V/$R_L$ ≥4.7 kΩ | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Load Resistance Current Output: | 0-20 mA/$R_L$ ≤0.4 kΩ | Repeatability: | ≤1% of measuring range \|A-B\| |
| Temperature Drift: | ±0.06% / °C | | (0.5% after 30 min. warm up) |
| LIU5: | 4-20 mA, 0-10 V | Short-Circuit Protection: | Yes |
| LIU2: | 4-20 mA, 2-10 V | Reverse Polarity Protection: | Incorporated |

### A8 — 3 and 4-wire DC Analog - (LU)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Short-Circuit Protection: | Yes |
| No-Load Current: | ≤8.0 mA | Wire-Break Protection: | Yes |
| Load Resistance Voltage Output: | 0-10 V/$R_L$ ≥4.7 kΩ | Shock: | 30 g, 11 ms |
| Temperature Drift: | ±0.06% / °C | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Reverse Polarity Protection: | Incorporated | Repeatability: | ≤1% of measuring range \|A-B\| |
| Transient Protection: | Per EN 60947-5-2 | | (0.5% after 30 min. warm up) |

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | WIM

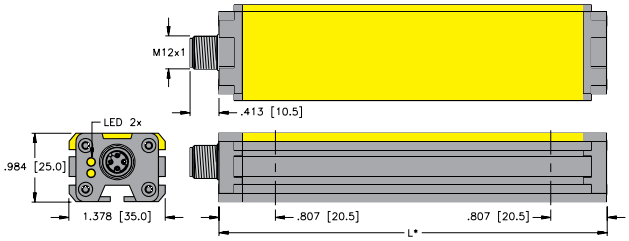
## Power Clamp Position Sensors

| Part Number/ ID Number | Linear Operating Distance (mm) | Resolution | Output | Voltage | Output Voltage/ Current | Operating Temp. (°C) | Protection | Housing | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **WIM45-UNTL-LIU5X2-0.3-PSG4M** 1536620 | 45 | 10 bit | 4-wire DC, Current and Voltage | 15-30 VDC | 0-10 V/4-20 mA | -25 to +70 | IP67 | PA 12 | 0.3M/TPU | A | 1 | A7 |
| **WIM45-UNTL-0.3-BIM-UNT-LUAP6X4-H1141** 1536623 | 45 | 10 bit | 4-wire DC, Current and Voltage | 15-30 VDC | 0-10 V/4-20 mA | -25 to +70 | IP67 | PA 12 | 0.3M/TPU | B | 2 | A8 |
| **WIM45-UNTL-LIU5X2-0.3-RS4** 1536621 | 45 | 10 bit | 4-wire DC, Current and Voltage | 15-30 VDC | 0-10 V/4-20 mA | -25 to +70 | IP67 | PA 12 | 0.3M/TPU | C | 1 | A7 |

We reserve the right to make technical alterations without prior notice.

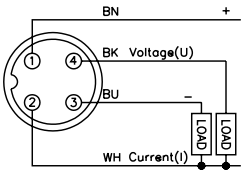
# Cylinder Position Sensors | WIM

**Magnetic Linear Position Sensors**

| Housing Style | Dimension Drawings |
|---|---|
| | A   25 mm - Embeddable, Eurofast Quick Disconnect |

**Wiring Diagrams/ Mating Cordset**

1




Mating Cordset: RK 4.4T-*

**A7** — **3 and 4-wire DC Analog - (LIU, SIU)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Transient Protection: | Per EN 60947-5-2 |
| No-Load Current: | ≤8.0 mA | Shock: | 30 g, 11 ms |
| Load Resistance Voltage Output: | 0-10 V/$R_L$ ≥4.7 kΩ | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Load Resistance Current Output: | 0-20 mA/$R_L$ ≤0.4 kΩ | Repeatability: | ≤1% of measuring range \|A-B\| |
| Temperature Drift: | ±0.06% / °C | | (0.5% after 30 min. warm up) |
| LIU5: | 4-20 mA, 0-10 V | Short-Circuit Protection: | Yes |
| LIU2: | 4-20 mA, 2-10 V | Reverse Polarity Protection: | Incorporated |

**Additional Specifications**

**Magnetic Actuation Strength (Gauss):** 50-100

For mounting accessories see page G9

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | WIM

## Magnetic Linear Position Sensors

| Part Number/ ID Number | Linear Operating Distance (mm) | Resolution | Output | Voltage | Output Voltage/ Current | Operating Temp. (°C) | Protection | Housing | Face | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **WIM100-Q25L141-LIU5X2-H1141** 1536630 | 100 | 10 bit | 4-wire DC, Current and Voltage | 15-30 VDC | 0-10 V/4-20 mA | -25 to +70 | IP67 | AL | PC-GF20 | A | 1 | A7 |
| **WIM125-Q25L166-LIU5X2-H1141** 1536631 | 125 | 10 bit | 4-wire DC, Current and Voltage | 15-30 VDC | 0-10 V/4-20 mA | -25 to +70 | IP67 | AL | PC-GF20 | A | 1 | A7 |
| **WIM160-Q25L201-LIU5X2-H1141** 1536632 | 160 | 10 bit | 4-wire DC, Current and Voltage | 15-30 VDC | 0-10 V/4-20 mA | -25 to +70 | IP67 | AL | PC-GF20 | A | 1 | A7 |
| **WIM200-Q25L241-LIU5X2-H1141** 1536633 | 200 | 10 bit | 4-wire DC, Current and Voltage | 15-30 VDC | 0-10 V/4-20 mA | -25 to +70 | IP67 | AL | PC-GF20 | A | 1 | A7 |

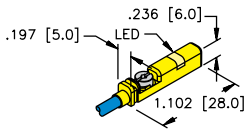
We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | Namur

**Intrinsically Safe**

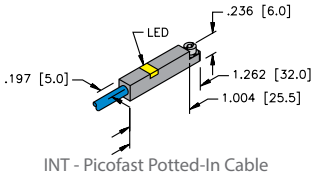
## Dimension Drawings

A



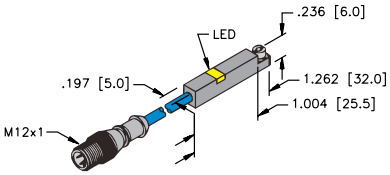

UNT - Potted-In Cable

B



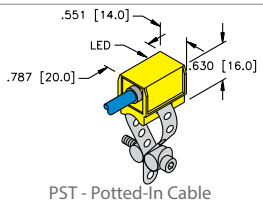

INT - Picofast Potted-In Cable

C



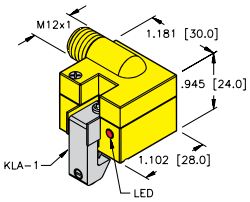

INT - Eurofast Quick Disconnect

D



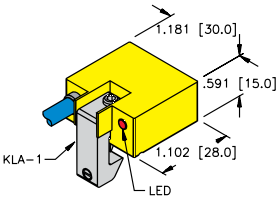

PST - Potted-In Cable

E



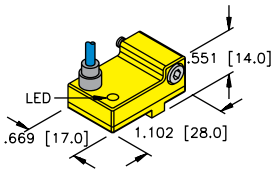

AKT - Eurofast Connector

F



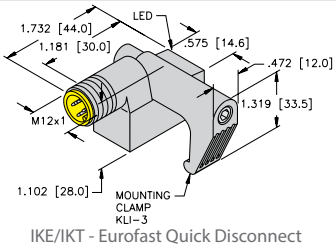

AKT - Potted-In Cable

G



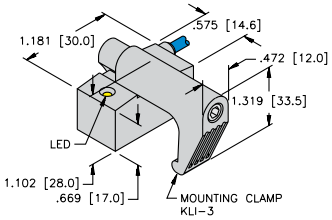

NST - Potted-In Cable

H




IKE/IKT - Eurofast Quick Disconnect

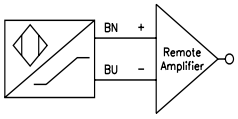
I



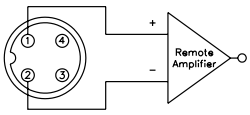

IKE/IKT - Potted-In Cable

## Wiring Diagrams/Mating Cordsets

1




2




Mating Cordset: RK 4.21T-*

## A16 — 2-wire DC NAMUR - Magnetic (Y0 and Y1)

| | |
|---|---|
| Differential Travel (Hysteresis): | ≤1 mm |
| Nominal Voltage: | 8.2 VDC (EN60947-5-6) |
| Load Resistance: | 1000 Ω |
| Non-activated Current Consumption: | ≤1.2 mA |
| Activated Current Consumption: | ≥2.1 mA |
| Recommended Switching Point for Remote Amplifier: | >1.2 to <2.1 mA, typ. 1.55 mA ON/1.75 mA OFF |
| Power-On Effect: | Realized in Amplifier |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Realized in Amplifier |
| Transient Protection: | Realized in Amplifier |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≥± 0.1 mm |
| Pass Speed: | ≤10 ms |

## Additional Specifications

**Magnetic Actuation Strength (Gauss):** 20-350

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | Namur

**Intrinsically Safe** IS

| Part Number/ ID Number | Features | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) VAC/VDC | Operating Temp. (°C) | Protection | Housing | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BIM-UNT-AY1X/S1139** 4685763 | Wider Range | 2-wire DC NAMUR | 8.2 VDC nominal | 1000 | Remote | -25 to +70 | IP67 | PA 12 | N/A | YE | 2M/ PVC | A | 1 | A16 |
| **BIM-INT-Y1X** 1056800 | | 2-wire DC NAMUR | 8.2 VDC nominal | 1000 | Remote | -25 to +70 | IP67 | PA 12 | N/A | YE | 2M/ PVC | B | 1 | A16 |
| **BIM-INT-Y1X-0.2-RS4.21T** 1056892 | | 2-wire DC NAMUR | 8.2 VDC nominal | 1000 | Remote | -25 to +70 | IP67 | PA 12 | N/A | YE | 0.2M/ PVC | C | 2 | A16 |
| **BIM-PST-Y1X W/KLP-80** 1057090 | KLP-80 Included | 2-wire DC NAMUR | 8.2 VDC nominal | 1000 | Remote | -25 to +70 | IP67 | PA 12 | N/A | YE | 2M/ PVC | D | 1 | A16 |
| **BIM-AKT-Y1X-H1141 W/KLA-1** 1055290 | KLA-1 Included | 2-wire DC NAMUR | 8.2 VDC nominal | 1000 | Remote | -25 to +70 | IP67 | PA 12 | N/A | YE | -- | E | 2 | A16 |
| **BIM-AKT-Y1X W/KLA-1** 1055090 | KLA-1 Included | 2-wire DC NAMUR | 8.2 VDC nominal | 1000 | Remote | -25 to +70 | IP67 | PA 12 | N/A | YE | 2M/ PVC | F | 1 | A16 |
| **BIM-IKE-Y1X W/KLI-3** 1056490 | KLI-3 Included | 2-wire DC NAMUR | 8.2 VDC nominal | 1000 | Remote | -25 to +70 | IP67 | Zinc | N/A | YE | 2M/ PVC | I | 1 | A16 |
| **BIM-IKE-Y1X-H1141 W/KLI-3** 1056690 | KLI-3 Included | 2-wire DC NAMUR | 8.2 VDC nominal | 1000 | Remote | -25 to +70 | IP67 | Zinc | N/A | YE | -- | H | 2 | A16 |
| **BIM-NST-Y1X** 1058400 | w/o Bracket | 2-Wire DC NAMUR | 8.2 VDC nominal | 1000 | Remote | -25 to +70 | IP67 | PA 12 | N/A | YE | 2M/ PVC | G | 1 | A16 |

We reserve the right to make technical alterations without prior notice.

Notes

Notes

# Mating Cordset Selection Guide

| | Picofast | |
|---|---|---|
| | | |
| **Housing** | **M8 Cordsets** | **M8 Field Wireables** |
| **Pages** | **H7** | **H11** |

| | Eurofast | |
|---|---|---|
| | | |
| **Housing** | **M12 Cordsets** | **M12 Field Wireables** |
| **Pages** | **H13** | **H17** |

| | Microfast | |
|---|---|---|
| | | |
| **Housing** | **1/2" Cordsets** | **1/2" Field Wireables** |
| **Pages** | **H18** | **H20** |

| | Minifast | |
|---|---|---|
| | | |
| **Housing** | **7/8" Cordsets** | **7/8" Field Wireables** |
| **Pages** | **H21** | **H25** |

We reserve the right to make technical alterations without prior notice.

# Mating Cordset Selection Guide

## Connectivity

Rugged, durable, and reliable, Turck connectivity products consolidate wiring, connect sensing devices, and distribute power and signals.

### Cordsets

- Environmentally sealed for harsh environments
- Pin count 2-28 pole
- Power range up to 35 A
- LED visibility
- Industry specific jacketed cable

### Rugged, Sealed Junction Boxes

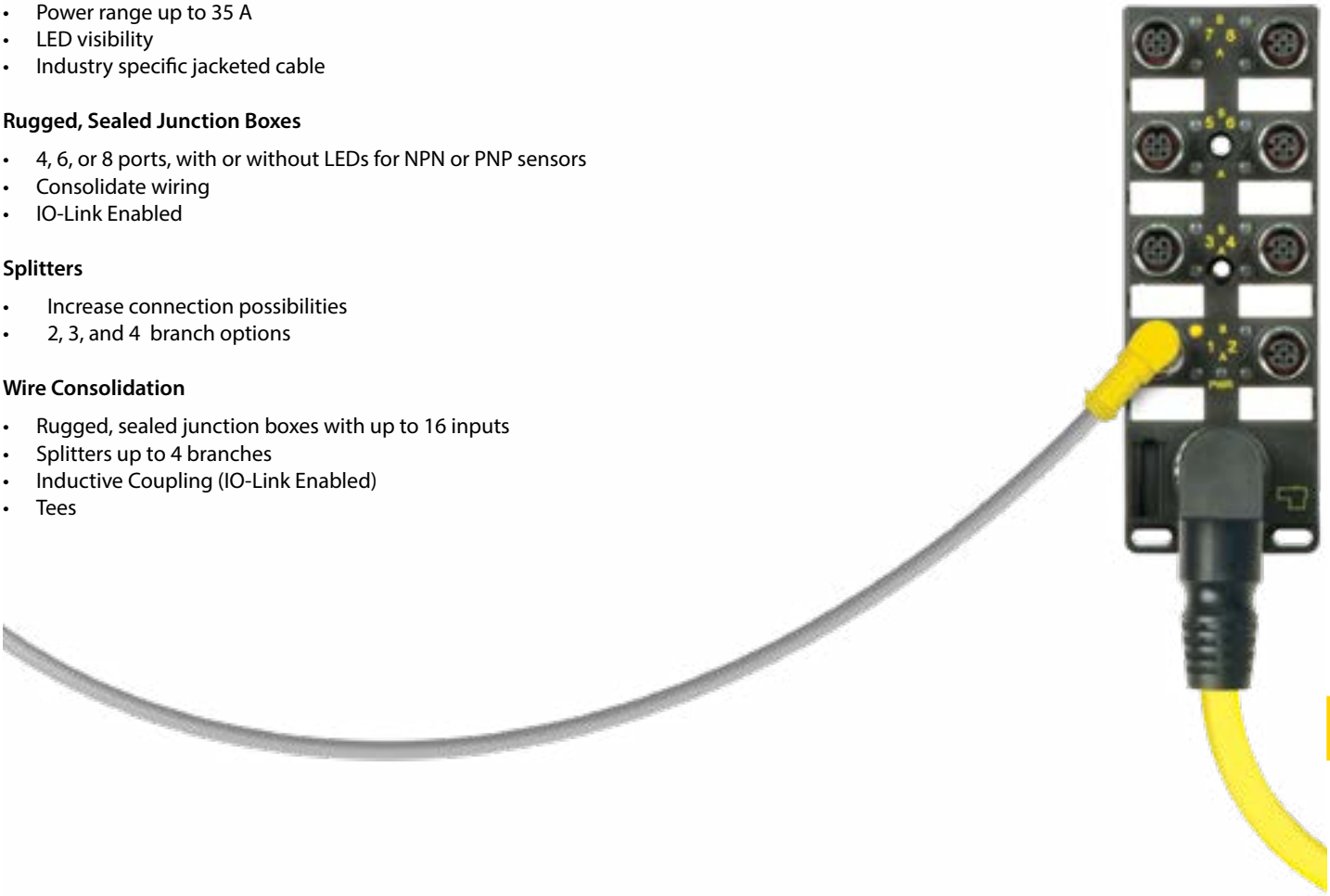
- 4, 6, or 8 ports, with or without LEDs for NPN or PNP sensors
- Consolidate wiring
- IO-Link Enabled

### Splitters

- Increase connection possibilities
- 2, 3, and 4 branch options

### Wire Consolidation

- Rugged, sealed junction boxes with up to 16 inputs
- Splitters up to 4 branches
- Inductive Coupling (IO-Link Enabled)
- Tees



We reserve the right to make technical alterations without prior notice.

# Mating Cordset Selection Guide

| Attributes | Instrumentation Tray Cable | | General Purpose Cable | | Instrumentation Tray/Exposed Run/Direct Burial Cable | |
|---|---|---|---|---|---|---|
| **Material:** | PVC | TPE | PVC | TPU | PVC | TPE |
| **Temp Range:** | -40 to 105 °C | -40 to 105 °C | -40 to 105 °C | -40 to 90 °C | -40 to 105 °C | -40 to 105 °C |
| **Cold Bend:** | -40 °C | -40 °C | -40 °C | -40 °C | -40 °C | -40 °C |
| **Cold Impact:** | --- | --- | --- | --- | --- | --- |
| **Crush and Impact:** | --- | --- | --- | --- | Excellent | Excellent |
| **Cut and Abrasion:** | Fair | Fair/Good | Fair | Excellent | Good | Fair/Good |
| **UV/Sunlight Resistant:** | Excellent | Excellent | Excellent | Poor/Fair | Excellent | Excellent |
| **Flame Retardant:** | UL 1685/CSA FT4 | UL 1685/CSA FT4 | UL 1061/CSA FT1 | UL 1061/ CSA FT1 | UL 1685/CSA FT4 | UL 1685/CSA FT4 |
| **Weld Slag/Spatter:** | Poor | Very Good | Poor | Poor | Poor | Very Good |
| **Water:** | Very Good | Very Good | Very Good | Very Good | Very Good | Very Good |
| **Flexibility:** | Very Good | Very Good | Very Good | Good | Fair | Good |
| **Flexlife:** | Good | Good | Good | Good | Fair | Fair/Good |
| **Oils:** | Excellent | Excellent | Very Good | Good | Very Good | Excellent |
| **Greases:** | Excellent | Excellent | Very Good | Good | Very Good | Excellent |
| **Gasoline:** | Fair | Good | Fair | Fair | Poor | Good |
| **Alcohols:** | Good | Very Good | Good | Poor/Fair | Very Good | Very Good |
| **Acids <20%:** | Good | Poor | Good | Fair | Good | Poor |
| **General Approvals:** | UL ITC, PLTC, AWM CSA AWM CMX OUT-DOOR-CMG, MSHA 300 V, 600 V | UL ITC, PLTC, AWM CSA AWM CMX OUT-DOOR-CMG, MSHA 300 V, 600 V | UL/CSA, AWM, MSHA 300 V or 600 V | UL/CSA, AWM, MSHA 300 V or 600 V | UL ITC, PLTC, ERDB, AWM, CSA CIC or CMX OUTDOOR-CM AWM, Marine Shipboard UL 1309, IEEE 1580-2010, CSA 245, ABS, 300 V, 600 V | UL ITC, PLTC, ERDB, AWM CSA CMX OUTDOOR-CMG 150 V, 300 V, 600 V |

- Attributes are general statements for materials at room temperature. Each application should be evaluated individually.
- Temperature, the percentage of chemical present, type of chemical exposure, and installation practices will all affect performance. For specific recommendations, please contact Turck.

We reserve the right to make technical alterations without prior notice.

# Mating Cordset Selection Guide

| Attributes | Power Tray/Exposed Run/Direct Burial Cable | | Industrial Ethernet Cable | Fieldbus Technology Cable | | |
|---|---|---|---|---|---|---|
| **Material:** | PVC | TPE | TPE | PVC | TPE | TPU |
| **Temp Range:** | -40 to 90 °C | -40 to 105 °C | -40 to 80 °C | -40 to 105 °C | -40 to 80 °C | -40 to 80 °C |
| **Cold Bend:** | -40 °C | -40 °C | -40 °C | -40 °C | -40 °C | -40 °C |
| **Cold Impact:** | --- | --- | --- | --- | --- | --- |
| **Crush and Impact:** | Excellent | Excellent | --- | Excellent | --- | --- |
| **Cut and Abrasion:** | Good | Fair/Good | Fair/Good | Good | Fair/Good | Excellent |
| **UV/Sunlight Resistant:** | Excellent | Excellent | Excellent | Excellent | Excellent | Poor/Fair |
| **Flame Retardant:** | UL 1685/CSA FT4 | UL 1685/CSA FT4 | UL 1061/CSA FT1 | UL 1685/CSA FT4 IEC 60332-3-22 | UL 1061/ CSA FT1 | UL 1061/ CSA FT1 |
| **Weld Slag/Spatter:** | Poor | Very Good | Very Good | Poor | Very Good | Poor |
| **Water:** | Very Good | Very Good | Very Good | Very Good | Very Good | Very Good |
| **Flexibility:** | Fair | Good | Good/Excellent | Fair | Good | Good |
| **Flexlife:** | Fair | Good | Very Good | Poor | Fair | Good |
| **Oils:** | Very Good | Excellent | Excellent | Fair | Excellent | Good |
| **Greases:** | Very Good | Excellent | Excellent | Fair | Excellent | Good |
| **Gasoline:** | Poor | Good | Good | Poor | Good | Fair |
| **Alcohols:** | Very Good | Very Good | Very Good | Good | Very Good | Poor/Fair |
| **Acids <20%:** | Good | Poor | Poor | Good | Poor | Fair |
| **General Approvals:** | UL WTTC, TC-ERDB ITC, PLTC, ERDB CSA CIC/TC 600 V, 1000 V | UL WTTC, TC-ERDB ITC, PLTC, ERDB CSA CIC/TC 600 V, 1000 V | UL AWM, CSA CMX OUTDOOR-CM 300 V or 600 V | UL ITC, PLTC, ERDB, AWM, CSA CIC or CMX OUT-DOOR-CM AWM, Marine Shipboard UL 1309, IEEE 1580-2010, CSA 245, ABS, 300 V, 600 V | UL/CSA, AWM 300 V or 600 V | UL/CSA, AWM 300 V or 600 V |

- Attributes are general statements for materials at room temperature. Each application should be evaluated individually.
- Temperature, the percentage of chemical present, type of chemical exposure, and installation practices will all affect performance. For specific recommendations, please contact Turck.

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# Mating Cordset Selection Guide

| Attributes | Extremelife Cable | Flexlife Cable | | Weldlife Cable |
|---|---|---|---|---|
| **Material:** | EX60 | TPE | TPU | TPE |
| **Temp Range:** | -60 to 105 °C | -40 to 105 °C | -40 to 90 °C | -40 to 105 °C |
| **Cold Bend:** | -60 °C | -40 °C | -40 °C | -40 °C |
| **Cold Impact:** | -40 °C | --- | --- | --- |
| **Crush and Impact:** | Excellent | --- | --- | --- |
| **Cut and Abrasion:** | Very Good | Fair/Good | Excellent | Fair/Good |
| **UV/Sunlight Resistant:** | Excellent | Excellent | Poor/Fair | Excellent |
| **Flame Retardant:** | UL 1685/CSA FT4 IEC 60332-3-22 | UL 1061/CSA FT1 | UL 1061/CSA FT1 | UL 1061/CSA FT1 |
| **Weld Slag/Spatter:** | Good | Very Good | Poor | Very Good |
| **Water:** | Very Good | Very Good | Very Good | Very Good |
| **Flexibility:** | Good | Excellent | Good | Very Good |
| **Flexlife:** | Very Good | Excellent | Good | Good |
| **Oils:** | Excellent | Excellent | Good | Excellent |
| **Greases:** | Excellent | Excellent | Good | Excellent |
| **Gasoline:** | Good | Good | Fair | Good |
| **Alcohols:** | Excellent | Very Good | Poor/Fair | Very Good |
| **Acids <20%:** | Good | Poor | Fair | Poor |
| **General Approvals:** | UL TC-ERDB, ITC, PLTC, ERDB, CSA CIC/TC Marine Shipboard UL 1309, IEEE 1580-2010, ABS, 300 V, 600 V | UL/CSA, AWM 300 V or 600 V | UL/CSA, AWM 300 V or 600 V | UL/CSA, AWM 300 V or 600 V |

- Attributes are general statements for materials at room temperature. Each application should be evaluated individually.
- Temperature, the percentage of chemical present, type of chemical exposure, and installation practices will all affect performance. For specific recommendations, please contact Turck.

We reserve the right to make technical alterations without prior notice.

# Mating Cordset Selection Guide

| Attributes | Armorfast Instrumentation Cable | Flexible Service Cable | Washdown Cable | Halogen Free Cable/Low Smoke Cable |
|---|---|---|---|---|
| **Material:** | PVC | PVC | TPV | TPU |
| **Temp Range:** | -40 to 105 °C | -40 to 105 °C | -60 to 105 °C | -40 to 80 °C |
| **Cold Bend:** | -40 °C | -40 °C | -60 °C | -40 °C |
| **Cold Impact:** | --- | --- | --- | --- |
| **Crush and Impact:** | Excellent | --- | --- | --- |
| **Cut and Abrasion:** | Good | Good | Poor/Fair | Excellent |
| **UV/Sunlight Resistant:** | Excellent | Excellent | Poor | Poor/Fair |
| **Flame Retardant:** | UL 1685/CSA FT4 | UL Horizontal Flame/CSA FT2 | Poor | UL 1061/CSA FT1 |
| **Weld Slag/Spatter:** | Poor | Poor | --- | Poor |
| **Water:** | Very Good | Very Good | Excellent | Very Good |
| **Flexibility:** | Fair | Good | Excellent | Good |
| **Flexlife:** | Poor | Good | --- | Good |
| **Oils:** | Very Good | Very Good | Poor | Good |
| **Greases:** | Very Good | Very Good | Poor | Good |
| **Gasoline:** | Poor | Poor | Poor | Fair |
| **Alcohols:** | Very Good | Very Good | Good | Poor/Fair |
| **Acids <20%:** | Good | Good | Good | Fair |
| **General Approvals:** | UL MC, ITC, PLTC, ERDB, CSA ACIC, 300 V, 600 V, HL ABCD | UL/CSA, STOOW MSHA, 600 V | None | UL/CSA, AWM 300 V |

- Attributes are general statements for materials at room temperature. Each application should be evaluated individually.
- Temperature, the percentage of chemical present, type of chemical exposure, and installation practices will all affect performance. For specific recommendations, please contact Turck.

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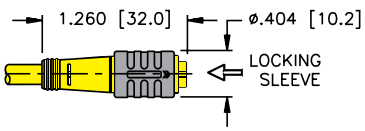
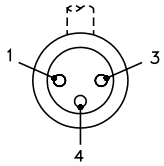
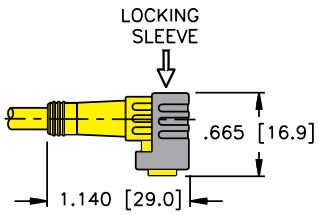
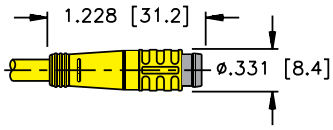
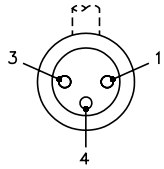
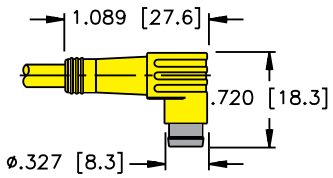
# M8 Picofast Connectivity

**3-Wire Cordsets, Snap Lock (Locking Sleeve)**

- NEMA 1, 3, 4, 6P
- IEC IP67 Protection
- 125 V, 4 A

| Connector Style | Female Part Number | Male Part Number | Features | Pinout | |
|---|---|---|---|---|---|
| **PKG ..Z****   | **PKG 3Z-***<br>**PKW 3Z-*** | **PSG 3-***<br>**PSW 3-*** | AWM, PVC Yellow, 3x24 AWG, 105 °C, 4.4 mm OD, Cable #RF50642-*M, Flexlife® | 1. BN<br>3. BU<br>4. BK | **Female**   |
| **PKW ..Z****   | **PKG 3Z-*/S90**<br>**PKW 3Z-*/S90** | **PSG 3-*/S90**<br>**PSW 3-*/S90** | AWM, TPU Black, 3x24 AWG, 90 °C, 4.2 mm OD, Cable #RF50587-*M, Cut/Abrasion Immune | | |
| **PSG ..**   | **PKG 3Z-*/S90/S101**<br>**PKW 3Z-*/S90/S101** | **PSG 3-*/S90/S101**<br>**PSW 3-*/S90/S101** | AWM, TPU Black, 3x24 AWG, 90 °C, 4.4 mm OD, Cable #RF51166-*M, Cut/Abrasion Immune, Flexlife-20, High Flex - Over 20 Million Cycles | | |
| | **PKG 3Z-*/S90/S618**<br>**PKW 3Z-*/S90/S618** | **PSG 3-*/S90/S618**<br>**PSW 3-*/S90/S618** | AWM, TPU Black, 3x24 AWG, 90 °C, 4.2 mm OD, Cable #RF50601-*M, Cut/Abrasion Immune, EMI/RFI Protection | | **Male**   |
| **PSW ..**   | **PKG 3Z-*/S760**<br>**PKW 3Z-*/S760** | **PSG 3-*/S760**<br>**PSW 3-*/S760** | AWM, PVC Black, 3x24 AWG, 105 °C, 4.2 mm OD, Cable #RF50585-M, Flexlife | | |

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters.

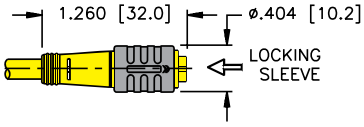
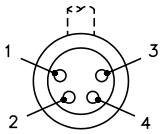
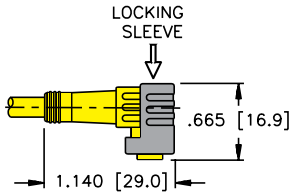
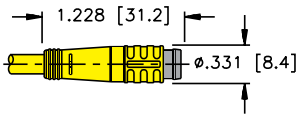
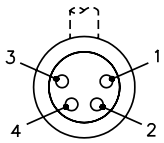
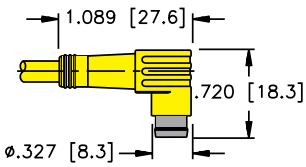
** Locking sleeve material is POM.."PKG..Z".

We reserve the right to make technical alterations without prior notice.

# M8 Picofast Connectivity

## 4-Wire Cordsets, Snap Lock (Locking Sleeve)

- NEMA 1, 3, 4, 6P
- IEC IP67 Protection
- 125 V, 2 A

| Connector Style | Female Part Number | Male Part Number | Features | Pinout | |
|---|---|---|---|---|---|
| PKG ..Z**<br>  <br> | PKG 4Z-*<br>PKW 4Z-* | PSG 4-*<br>PSW 4-* | AWM, PVC Yellow, 4x26 AWG, 105 °C, 4.4 mm OD, Cable #RF50697-*M, Flexlife® | 1. BN<br>2. WH<br>3. BU<br>4. BK | Female<br>  <br> |
| | PKG 4Z-*/S90<br>PKW 4Z-*/S90 | PSG 4-*/S90<br>PSW 4-*/S90 | AWM, TPU Black, 4x26 AWG, 90 °C, 4.2 mm OD, Cable #RF50586-*M, Cut/Abrasion Immune | | |
| PKW ..Z**<br>  <br> | PKG 4Z-*/S90/S101<br>PKW 4Z-*/S90/S101 | PSG 4-*/S90/S101<br>PSW 4-*/S90/S101 | AWM, TPU Black, 4x26 AWG, 90 °C, 4.4 mm OD, Cable #RF50935-*M, Cut/Abrasion Immune, Flexlife-20, High Flex - Over 20 Million Cycles | | |
| PSG ..<br>  <br> | PKG 4Z-*/S90/S618<br>PKW 4Z-*/S90/S618 | PSG 4-*/S90/S101<br>PSW 4-*/S90/S101 | AWM, TPU Black, 4x26 AWG, 90 °C, 4.2 mm OD, Cable #RF50602-*M, Cut/Abrasion Immune, EMI/RFI Protection | | Male<br>  <br> |
| | PKG 4Z-*/S760<br>PKW 4Z-*/S760 | PSG 4-*/S760<br>PSW 4-*/S760 | AWM, PVC Black, 4x26 AWG, 105 °C, 4.4 mm OD, Cable #RF50870-*M, Flexlife | | |
| PSW ..<br>  <br> | PKG 4Z-*/S90/S653<br>PKW 4Z-*/S90/S653 | PSG 4-*/S90/S653<br>PSW 4-*/S90/S653 | AWM, TPU Black, 3x24 AWG, 90 °C, 4.2 mm OD, Cable #RF50601-*M, Cut/Abrasion Immune, EMI/RFI Protection | 1. BN<br>2. Drain<br>3. BU<br>4. BK | |

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters.

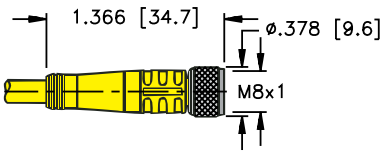
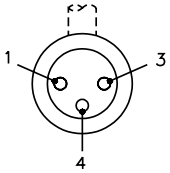
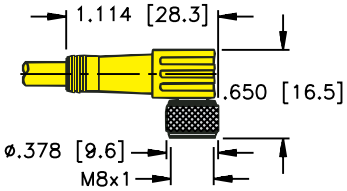
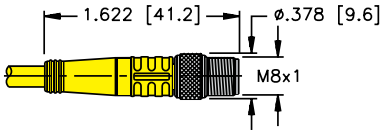
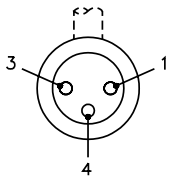
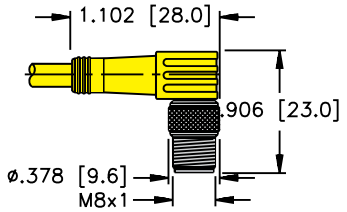
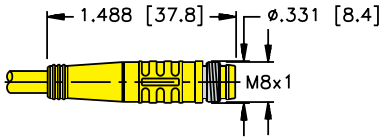
** Locking sleeve material is POM.."PKG..Z".

We reserve the right to make technical alterations without prior notice.

# M8 Picofast Connectivity

## 3-Wire Cordsets, Threaded Coupling Nut

- NEMA 1, 3, 4, 6P
- IEC IP67 Protection
- 125 V, 4 A

| Connector Style | Female Part Number | Male Part Number | Features | Pinout | |
|---|---|---|---|---|---|
| PKG ..Z**   | PKG 3M-*<br>PKW 3M-* | PSG 3M-*<br>PSW 3M-* | AWM, PVC Yellow, 3x24 AWG, 105 °C, 4.4 mm OD, Cable #RF50642-*M, Flexlife® | 1. BN<br>3. BU<br>4. BK | Female   |
| | PKG 3M-*/S90<br>PKW 3M-*/S90 | PSG 3M-*/S90<br>PSW 3M-*/S90 | AWM, TPU Black, 3x24 AWG, 90 °C, 4.2 mm OD, Cable #RF50587-*M, Cut/Abrasion Immune | | |
| PKW ..M**   | PKG 3M-*/S90/S101<br>PKW 3M-*/S90/S101 | PSG 3M-*/S90/S101<br>PSW 3M-*/S90/S101 | AWM, TPU Black, 3x24 AWG, 90 °C, 4.4 mm OD, Cable #RF51166-*M, Cut/Abrasion Immune, Flexlife-20, High Flex - Over 20 Million Cycles | | |
| PSG .. M**   | PKG 3M-*/S90/S618<br>PKW 3M-*/S90/S618 | PSG 3M-*/S90/S618<br>PSW 3M-*/S90/S618 | AWM, TPU Black, 3x24 AWG, 90 °C, 4.2 mm OD, Cable #RF50601-*M, Cut/Abrasion Immune, EMI/RFI Protection | | |
| | PKG 3M-*/S1587<br>PKW 3M-*/S1587 | PSG 3M-*/S1587<br>PSW 3M-*/S1587 | AWM, TPE Yellow, 3x24 AWG, 105 °C, 4.4 mm OD, Cable #RF51271-*M, Weldlife®, Weld Flash Immune | | Male   |
| PSW .. M**   | PKG 3M-*/S760<br>PKW 3M-*/S760 | PSG 3M-*/S760<br>PSW 3M-*/S760 | AWM, PVC Black, 3x24 AWG, 4.2 mm OD, Cable #RF50585-M, Flexlife | 1. BN<br>3. BU<br>4. Drain | |
| | PKG 3M-*/S90/S1084<br>PKW 3M-*/S90/S1084 | PSG 3M-*/S90/S1084<br>PSW 3M-*/S90/S1084 | AWM, TPU Black, 2x24 AWG, 90 °C, 4.2 mm OD, Cable #RF51197-*M, Cut/Abrasion Immune, Shielded | 1. BN<br>3. BU<br>4. BK | |
| PSG 3F .. **   | | PSG 3F-* | AWM, PVC Yellow, 3x24 AWG, 105 °C, 4.4 mm OD, Cable #RF50642-*M, Fixed coupling nut | | |

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters.

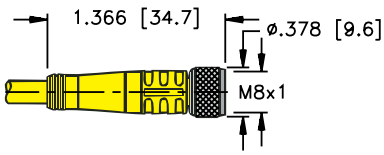
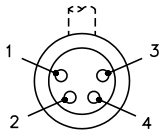
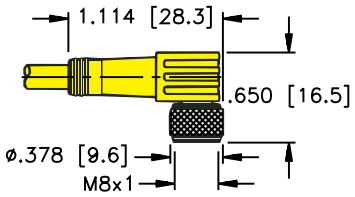
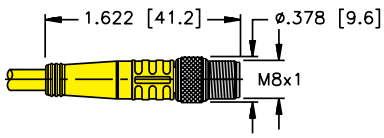
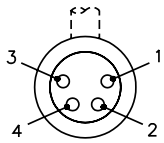
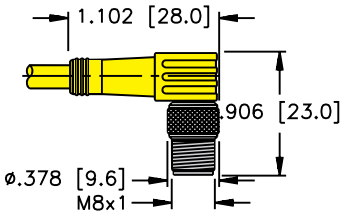
** Standard coupling material is nickel plated brass.."PKG..M"; "PKGV..M" indicates stainless steel.

We reserve the right to make technical alterations without prior notice.

# M8 Picofast Connectivity

## 4-Wire Cordsets, Threaded Coupling Nut

- NEMA 1, 3, 4, 6P
- IEC IP67 Protection
- 125 V, 4 A

| Connector Style | Female Part Number | Male Part Number | Features | Pinout | |
|---|---|---|---|---|---|
| PKG ..M**   | PKG 4M-*<br>PKW 4M-* | PSG 4M-*<br>PSW 4M-* | AWM PVC Yellow, 4x26 AWG, 105 °C, 4.4 mm OD, Cable #RF50697-*M, Flexlife® | 1. BN<br>2. WH<br>3. BU<br>4. BK | Female   |
| | PKG 4M-*/S90<br>PKW 4M-*/S90 | PSG 4M-*/S90<br>PSW 4M-*/S90 | AWM TPU Black, 4x26 AWG, 90 °C, 4.2 mm OD, Cable #RF50586-*M, Cut/Abrasion Immune | | |
| PKW ..M**   | PKG 4M-*/S90/S101<br>PKW 4M-*/S90/S101 | PSG 4M-*/S90/S101<br>PSW 4M-*/S90/S101 | AWM TPU Black, 4x26 AWG, 90 °C, 4.4 mm OD, Cable #RF50935-*M, Cut/Abrasion Immune, Flexlife-20, High Flex - Over 20 Million Cycles | | |
| PSG .. M**   | PKG 4M-*/S90/S618<br>PKW 4M-*/S90/S618 | PSG 4M-*/S90/S618<br>PSW 4M-*/S90/S618 | AWM TPU Black, 4x26 AWG, 90 °C, 4.2 mm OD, Cable #RF50602-*M, Cut/Abrasion Immune, EMI/RFI Protection | | Male   |
| | PKG 4M-*/S760<br>PKW 4M-*/S760 | PSG 4M-*/S760<br>PSW 4M-*/S760 | AWM PVC Black, 4x26 AWG, 105 °C, 4.4 mm OD, Cable #RF50870-*M, Flexlife | | |
| PSW .. M**   | PKG 4M-*/S90/S653<br>PKW 4M-*/S90/S653 | PSG 4M-*/S90/S653<br>PSW 4M-*/S90/S653 | AWM TPU Black, 3x24 AWG, 90 °C, 4.2 mm OD, Cable #RF50601-*M, Cut/Abrasion Immune, EMI/RFI Protection | 1. BN<br>2. Drain<br>3. BU<br>4. BK | |

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters.

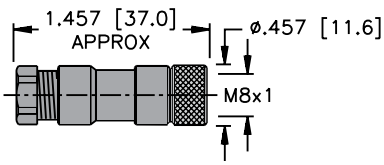
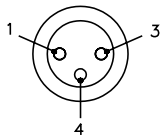
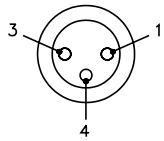
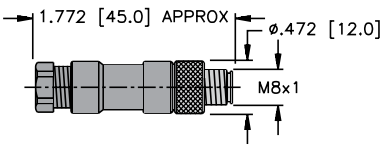
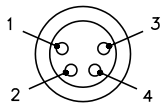
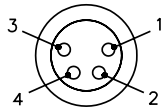
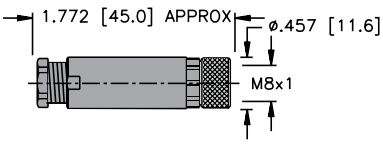
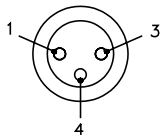
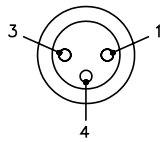
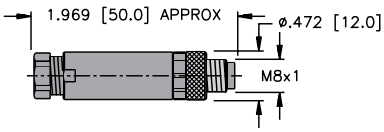
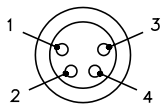
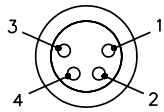
** Standard coupling material is nickel plated brass..”PKG..M”; “PKGV..M” indicates stainless steel.

We reserve the right to make technical alterations without prior notice.

# M8 Picofast Connectivity

**3 and 4-Pin Field Wireable Connectors, Standard**

- IEC IP67 Protection

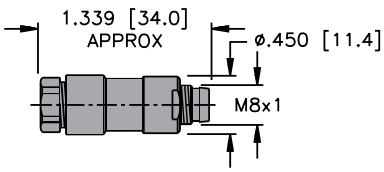
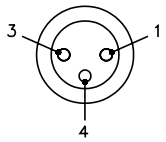
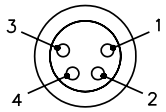
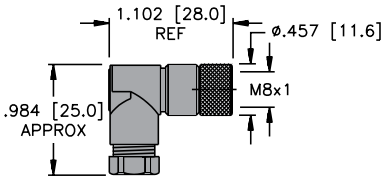
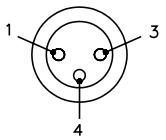
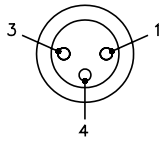
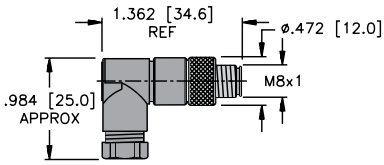
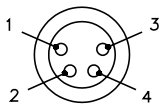
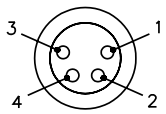
| Housing Style | Female Part Number | Male Part Number | Features | Pinout |
|---|---|---|---|---|
| B 513(4)1-0<br>  | **B 5131-0** | **BS 5131-0** | PBT, Black, accepts 3-5 mm cable diameter, solder terminals, accepts up to 24 AWG conductors, 85 °C, 60 VAC/75 VDC, 4 A, mates with 4-pin threaded cordsets and receptacles | Female<br>  <br>Male<br>  |
| BS 513(4)1-0<br>  | **B 5141-0** | **BS 5141-0** | PBT, Black, accepts 3-5 mm cable diameter, solder terminals, accepts up to 24 AWG conductors, 85 °C, 30 VAC/36 VDC, 4 A, mates with 4-pin threaded cordsets and receptacles | Female<br>  <br>Male<br>  |
| B 513(4)3-0<br>  | **B 5133-0** | **BS 5133-0** | PBT, Black, accepts 3-5 mm cable diameter, screw terminals, accepts up to 22 AWG conductors, 85 °C, 60 VAC/75 VDC, 4 A, mates with 3-pin threaded cordsets and receptacles | Female<br>  <br>Male<br>  |
| BS 513(4)3-0<br>  | **B 5143-0** | **BS 5143-0** | PBT, Black, accepts 3-5 mm cable diameter, screw terminals, accepts up to 22 AWG conductors, 85 °C, 60 VAC/75 VDC, 4 A, mates with 4-pin threaded cordsets and receptacles | Female<br>  <br>Male<br>  |

We reserve the right to make technical alterations without prior notice.

# M8 Picofast Connectivity

## 3 and 4-Pin Field Wireable Connectors, Standard

- IEC IP67 Protection

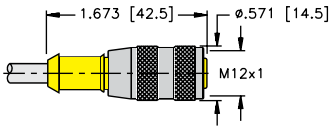
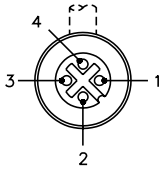
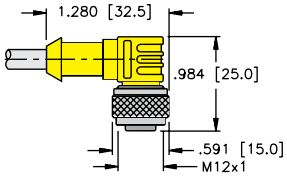
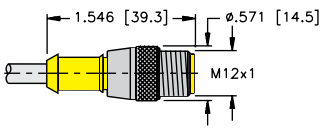
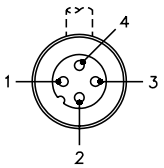
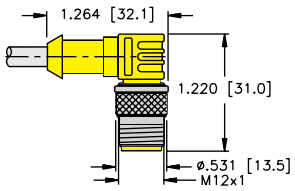
| Housing Style | Female Part Number | Male Part Number | Features | Pinout |
|---|---|---|---|---|
| BS 513(4)2-0<br>  <br> | | BS 5132-0 | PBT, Black, accepts 3-5 mm cable diameter, solder terminals, accepts up to 26 AWG conductors, 85 °C, 60 VAC/75 VDC, 4 A, mates with 3-pin female snap-lock cordsets, receptacles and junction boxes and threaded cordsets | Male<br>  <br> |
| | | BS 5142-0 | PBT, Black, accepts 3-5 mm cable diameter, solder terminals, accepts up to 26 AWG conductors, 85 °C, 60 VAC/75 VDC, 2 A, mates with 3-pin female snap-lock cordsets, receptacles and junction boxes and threaded cordsets | Male<br>  <br> |
| B 523(4)1-0<br>  <br> | B 5231-0 | BS 5231-0 | PBT, Black, Accepts 3-5 mm cable diameter, solder terminals, accepts up to 24 AWG conductors, 85 °C, 60 VAC/75 VDC, 4 A, mates with 3-pin threaded cordsets and receptacles | Female<br>  <br><br>Male<br>  <br> |
| BS 523(4)1-0<br>  <br> | B 5241-0 | BS 5241-0 | PBT, Black, accepts 3-5 mm cable diameter, solder terminals, accepts up to 24 AWG conductors, 85 °C, 30 VAC/36 VDC, 4 A, mates with 4-pin threaded cordsets and receptacles | Female<br>  <br><br>Male<br>  <br> |

We reserve the right to make technical alterations without prior notice.

# M12 Eurofast Connectivity

## 2-Wire Cordsets, Standard Plug Body

- NEMA 1, 3, 4, 6P
- IEC IP68 Protection
- 250 V, 4 A

| Connector Style | Female Part Number | Male Part Number | Features | Pinout | |
|---|---|---|---|---|---|
| RK ..**<br>  <br> | **RK 4.2T-***<br>**WK 4.2T-*** | **RS 4.2T-***<br>**WS 4.2T-*** | ITC/PLTC PVC Grey, 2x20 AWG, 105 °C, 5.1 mm OD, Cable #RF50529-*M, Flexlife® | 1. N/C<br>2. N/C<br>3. BN<br>4. BU | Female<br>  <br> |
| | **RK 4.2T-*/S90**<br>**WK 4.2T-*/S90** | **RS 4.2T-*/S90**<br>**WS 4.2T-*/S90** | AWM TPU Grey, 2x20 AWG, 90 °C, 4.8 mm OD, Cable #RF50772-*M, Cut/Abrasion Immune | | |
| WK ..**<br>  <br> | **RK 4.2T-*/S748**<br>**WK 4.2T-*/S748** | **RS 4.2T-*/S748**<br>**WS 4.2T-*/S748** | ITC/PLTC PVC Yellow, 2x22 AWG, 105 °C, 5.1 mm OD, Cable #RF50650-*M, Flexlife | 1. WH<br>2. N/C<br>3. N/C<br>4. BK | |
| | **RK 4.21T-*/S1511**<br>**WK 4.21T-*/S1511** | **RS 4.21T-*/S1511**<br>**WS 4.21T-*/S1511** | ITC/PLTC PVC Grey, 2x20 AWM PVC, 105 °C, 5.1 mm OD, Cable #RF50529-*M, Flexlife | | |
| RS ..**<br>  <br> | **RK 4.21T-***<br>**WK 4.21T-*** | **RS 4.21T-***<br>**WS 4.21T-*** | ITC/PLTC PVC NAMUR Blue, 2x20 AWG, 105 °C, 5.1 mm OD, Cable #RF51923-*M | 1. BN<br>2. BU<br>3. N/C<br>4. N/C | Male<br>  <br> |
| | **RK 4.21T-*/S90**<br>**WK 4.21T-*/S90** | **RS 4.21T-*/S90**<br>**WS 4.21T-*/S90** | AWM TPU NAMUR Blue, 2x20 AWG, 90 °C, 5.1 mm OD, Cable #RF50657-*M, Cut/Abrasion Immune | | |
| WS ..**<br>  <br> | **RK 4.22T-***<br>**WK 4.22T-*** | **RS 4.22T-***<br>**WS 4.22T-*** | ITC/PLTC PVC Grey, 2x20 AWG, 105 °C, 5.1 mm OD, Cable #RF50529-*M, Flexlife | 1. BN<br>2. N/C<br>3. BU<br>4. N/C | |
| | **RK 4.23T-***<br>**WK 4.23T-*** | **RS 4.23T-***<br>**WS 4.23T-*** | | 1. BN<br>2. N/C<br>3. N/C<br>4. BU | |

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.

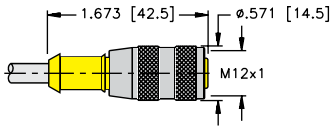
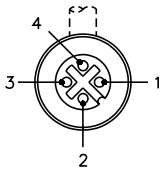
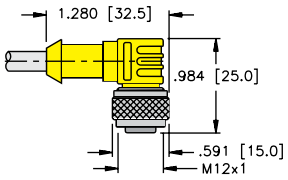
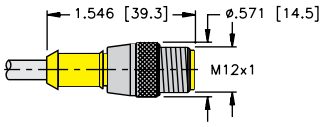
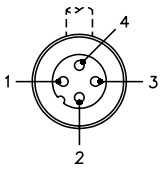
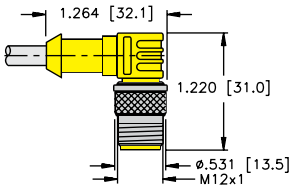
** Standard coupling nut material is nickel plated brass "RK .."; "RKK .." indicates nylon and "RKV .." indicates stainless steel.

We reserve the right to make technical alterations without prior notice.

# M12 Eurofast Connectivity

## 3-Wire Cordsets, Standard Plug Body

- NEMA 1, 3, 4, 6P
- IEC IP68 Protection
- 250 V, 4 A

| Connector Style | Female Part Number | Male Part Number | Features | Pinout | |
|---|---|---|---|---|---|
| RK ..**<br>  <br> | **RK 4T-***<br>**WK 4T-*** | **RS 4T-***<br>**WS 4T-*** | ITC/PLTC PVC Grey, 3x20 AWG, 105 °C, 5.1 mm OD, Cable #RF52081-*M, Flexlife® | 1. BN<br>2. N/C<br>3. BU<br>4. BK | Female<br>  <br> |
| | **RK 4T-*/S90**<br>**WK 4T-*/S90** | **RS 4T-*/S90**<br>**WS 4T-*/S90** | AWM TPU Grey, 3x22 AWG, 90 °C, 4.8 mm OD, Cable #RF52080-*M, Cut/Abrasion Immune | | |
| WK ..**<br>  <br> | **RK 4T-*/S101**<br>**WK 4T-*/S101** | **RS 4T-*/S101**<br>**WS 4T-*/S101** | AWM TPE Grey, 3x22 AWG, 105 °C, 4.8 mm OD, Cable #RF52085-*M, Flexlife-20, High Flex Over 20 Million Cycles | | |
| | **RK 4T-*/S529**<br>**WK 4T-*/S529** | **RS 4T-*/S529**<br>**WS 4T-*/S529** | TPU/Heavy Braid Double Jacket Yellow, 3x22 AWG, 90 °C, 4.8 mm OD, Cable #RF52084-*M, Cut/Abrasion Immune Braided Mechanical Shield | | |
| RS ..**<br>  <br> | **RK 4T-*/S824**<br>**WK 4T-*/S824** | **RS 4T-*/S824**<br>**WS 4T-*/S824** | ITC/PLTC AWM PVC Grey, 3x22 AWG, 105 °C, 5.1 mm OD, Cable #RF52081-*M, Tray Rated, Flexlife | | Male<br>  <br> |
| | **RK 4T-*/S715**<br>**WK 4T-*/S715** | **RS 4T-*/S715**<br>**WS 4T-*/S715** | ITC/PLTC PVC Yellow, 3x22 AWG, 105 °C, 5.1 mm OD, Cable #RF52087-*M, Flexlife | | |
| WS ..**<br>  <br> | **RK 4T-*/S760**<br>**WK 4T-*/S760** | **RS 4T-*/S760**<br>**WS 4T-*/S760** | ITC/PLTC PVC Black, 3x22 AWG, 105 °C, 5.1 mm OD, Cable #RF52083-*M, Flexlife | | |
| | **RK 4T-*/S618**<br>**WK 4T-*/S618** | **RS 4T-*/S618**<br>**WS 4T-*/S618** | ITC/PLTC PVC Grey, 3x22 AWG, Foil/Drain, 105 °C, 5.1 mm OD, Cable #RF52082-*M, RFI/EMI Shielding, Tray Rated | | |

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.

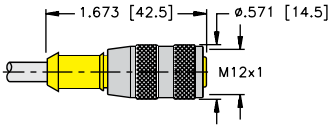
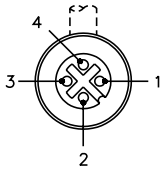
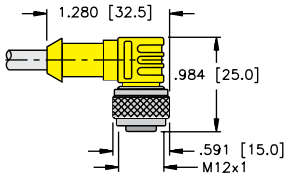
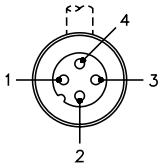
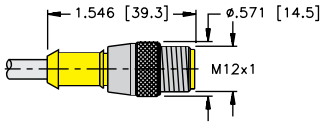
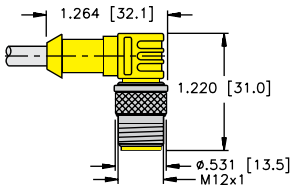
** Standard coupling nut material is nickel plated brass "RK .."; "RKK .." indicates nylon and "RKV .." indicates stainless steel.

We reserve the right to make technical alterations without prior notice.

# M12 Eurofast Connectivity

## 4-Wire Cordsets, Standard Plug Body

- NEMA 1, 3, 4, 6P
- IEC IP68 Protection
- 250 V, 4 A

| Connector Style | Female Part Number | Male Part Number | Features | Pinout | |
|---|---|---|---|---|---|
| RK ..**<br>  <br> | **RK 4.41T-***<br>**WK 4.41T-*** | **RS 4.41T-***<br>**WS 4.41T-*** | ITC/PLTC PVC NAMUR Blue, 4x22 AWG, 105 °C, 5.3 mm OD, Cable #RF50598-*M, Flexlife® | 1. BN<br>2. WH<br>3. BU<br>4. BK | Female<br>  <br> |
| | **RK 4.41T-*/S529**<br>**WK 4.41T-*/S529** | **RS 4.41T-*/S529**<br>**WS 4.41T-*/S529** | TPU/Heavy Braid Double Jacket Yellow, 4x20 AWG, 90 °C, 5.7 mm OD, Cable #RF50526-*M, Cut/Abrasion Immune Braided Mechanical Shield | | |
| | **RK 4.43T-***<br>**WK 4.43T-*** | **RS 4.43T-***<br>**WS 4.43T-*** | ITC/PLTC PVC Yellow, 4x22 AWG, 105 °C, 5.3 mm OD, Cable #RF50530-*M, Flexlife | | |
| WK ..**<br>  <br> | **RK 4.43T-*/S90**<br>**WK 4.43T-*/S90** | **RS 4.43T-*/S90**<br>**WS 4.43T-*/S90** | AWM TPU Yellow, 4x22 AWG, 90 °C, 5.1 mm OD, Cable #RF50613-*M, Cut/Abrasion Immune | | |
| | **RK 4.4T-***<br>**WK 4.4T-*** | **RS 4.4T-***<br>**WS 4.4T-*** | ITC/PLTC PVC Grey, 4x22 AWG, 105 °C, 5.3 mm OD, Cable #RF50516-*M, Flexlife | | |
| | **RK 4.4T-*/S90**<br>**WK 4.4T-*/S90** | **RS 4.4T-*/S90**<br>**WS 4.4T-*/S90** | AWM TPU Grey, 4x22 AWG, 90 °C, 5.1 mm OD, Cable #RF50532-*M, Cut/Abrasion Immune | | Male<br>  <br> |
| RS ..**<br>  <br> | **RK 4.4T-*/S101**<br>**WK 4.4T-*/S101** | **RS 4.4T-*/S101**<br>**WS 4.4T-*/S101** | AWM TPE Grey, 4x22 AWG, 105 °C, 5.1 mm OD, Cable #RF50941-*M, Flexlife-20, High Flex Over 20 Million Cycles | | |
| | **RK 4.4T-*/S824**<br>**WK 4.4T-*/S824** | **RS 4.4T-*/S824**<br>**WS 4.4T-*/S824** | ITC/PLTC PVC Grey, 4x22 AWG, 105 °C, 5.3 mm OD, Cable #RF50698-*M, Tray Rated | | |
| WS ..**<br>  <br> | **RK 4.4T-*/S618**<br>**WK 4.4T-*/S618** | **RS 4.4T-*/S618**<br>**WS 4.4T-*/S618** | ITC/PLTC PVC Grey, 4x22 AWG Foil/Drain, 105 °C, 5.3 mm OD, Cable #RF50577-*M, RFI/EMI Shielding | | |
| | **RK 4.4T-*/S618/S824**<br>**WK 4.4T-*/S618/S824** | **RS 4.4T-*/S618/S824**<br>**WS 4.4T-*/S618/S824** | ITC/PLTC PVC Grey, 4x22 AWG Foil/Drain, 105 °C, 5.3 mm OD, Cable #RF50777-*M, RFI/EMI Shielding, Tray Rated | | |

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.

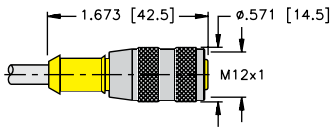
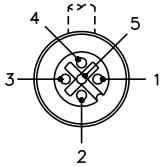
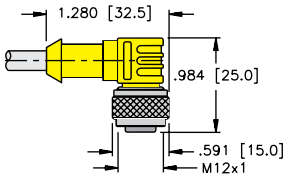
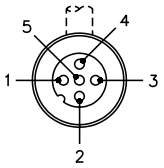
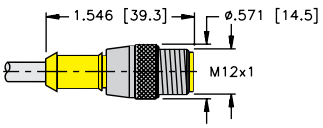
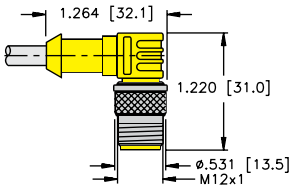
** Standard coupling nut material is nickel plated brass "RK .."; "RKK .." indicates nylon and "RKV .." indicates stainless steel.

We reserve the right to make technical alterations without prior notice.

# M12 Eurofast Connectivity

## 5-Wire Cordsets, Standard Plug Body

- NEMA 1, 3, 4, 6P
- IEC IP68 Protection
- 250 V, 4 A

| Connector Style | Female Part Number | Male Part Number | Features | Pinout | |
|---|---|---|---|---|---|
| RK ..**<br>  <br> | **RK 4.5T-***<br>**WK 4.5T-*** | **RS 4.5T-***<br>**WS 4.5T-*** | ITC/PLTC PVC Grey, 5x22 AWG, 105 °C, 5.7 mm OD, Cable #RF50543-*M, Flexlife® | 1. BN<br>2. WH<br>3. BU<br>4. BK<br>5. GY | **Female**<br>  <br> |
| | **RK 4.5T-*/S90**<br>**WK 4.5T-*/S90** | **RS 4.5T-*/S90**<br>**WS 4.5T-*/S90** | AWM TPU Grey, 5x22 AWG, 90 °C, 5.3 mm OD, Cable #RF50649-*M, Cut/Abrasion Immune | | |
| WK ..**<br>  <br> | **RK 4.5T-*/S101**<br>**WK 4.5T-*/S101** | **RS 4.5T-*/S101**<br>**WS 4.5T-*/S101** | AWM TPE Grey, 5x22 AWG, 105 °C, 5.1 mm OD, Cable #RF50909-*M, Flexlife-20, High Flex Over 20 Million Cycles | | |
| | **RK 4.5T-*/S618**<br>**WK 4.5T-*/S618** | **RS 4.5T-*/S618**<br>**WS 4.5T-*/S618** | ITC/PLTC PVC Grey, 5x22 AWG Foil/Drain, 105 °C, 5.7 mm OD, Cable #RF50609-*M, RFI/EMI Protection | | **Male**<br>  <br> |
| RS ..**<br>  <br> | **RS 4.5T-*/S715**<br>**WS 4.5T-*/S715** | **RS 4.5T-*/S715**<br>**WS 4.5T-*/S715** | ITC/PLTC PVC Yellow, 5x22 AWG, 105 °C, 5.7 mm OD, Cable #RF50684-*M, Flexlife | | |
| | **RK 4.5T-*/S653**<br>**WK 4.5T-*/S653** | **RS 4.5T-*/S653**<br>**WS 4.5T-*/S653** | ITC/PLTC PVC Grey, 4x22 AWG Foil/Drain, 105 °C, 5.3 mm OD, Cable #RF50577-*M, RFI/EMI Shielding | 1. BN<br>2. WH<br>3. BU<br>4. BK<br>5. Drain | |
| WS ..**<br>  <br> | **RK 4.5T-*/S1554**<br>**WK 4.5T-*/S1554** | **RS 4.5T-*/S1554**<br>**WS 4.5T-*/S1554** | ITC/PLTC PVC Black, 5x22 AWG Foil/Drain, 105 °C, 5.7 mm OD, Cable #RF50794-*M, RFI/EMI Shielding | 1. BN<br>2. WH<br>3. BU<br>4. BK<br>5. GY | |

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.

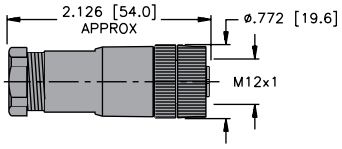
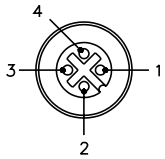
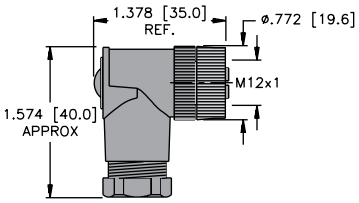
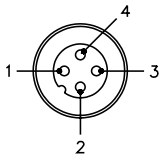
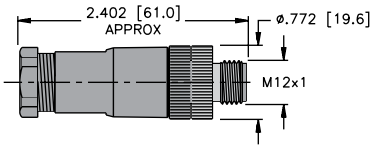
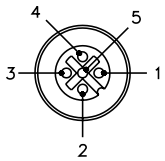
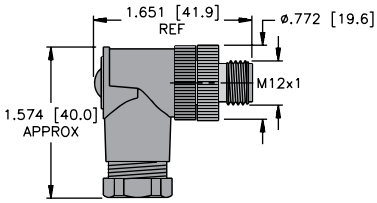
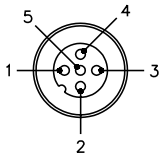
** Standard coupling nut material is nickel plated brass "RK .."; "RKK .." indicates nylon and "RKV .." indicates stainless steel.

We reserve the right to make technical alterations without prior notice.

# M12 Eurofast Connectivity

**4 and 5-Pin Field Wireable Connectors, Standard Key**

- IEC IP67 Protection

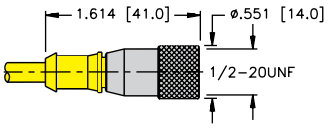
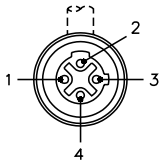
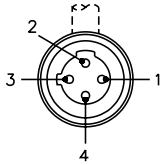
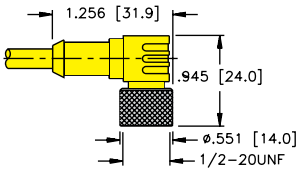
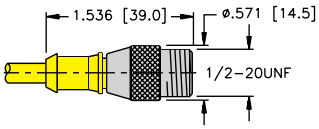
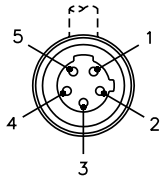
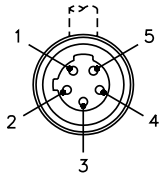
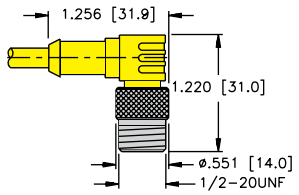
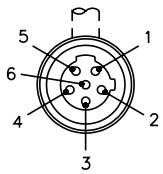
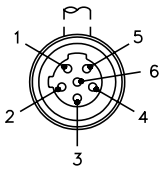
| Housing Style | Female Part Number | Male Part Number | Features | Pinout |
|---|---|---|---|---|
| **B 81..**<br>  <br> | **B 8141-0**<br>**B 8241-0** | **BS 8141-0**<br>**BS 8241-0** | PBT, Black, PG 7 cable gland, accepts 4-6 mm cable diameter, screw terminals, accepts up to 18 AWG conductors, 85 °C, 250 V, 4 A, mates with standard key 4-pin cordsets and receptacles | **Female**<br>  <br> |
| **B 82..**<br>  <br> | **B 8141-0/PG 9**<br>**B 8241-0/PG 9** | **BS 8141-0/PG 9**<br>**BS 8241-0/PG 9** | PBT, Black, PG 9 cable gland, accepts 6-8 mm cable diameter, screw terminals, accepts up to 18 AWG conductors, 85 °C, 250 V, 4 A, mates with standard key 4-pin cordsets and receptacles | **Male**<br>  <br> |
| BS 81..<br>  <br> | **B 8151-0/PG 9**<br>**B 8251-0/PG 9** | **BS 8151-0/PG 9**<br>**BS 8251-0/PG 9** | PBT, Black, PG 9 cable gland, accepts 4-8 mm cable diameter, screw terminals, accepts up to 18 AWG conductors, 85 °C, 60 V, 4 A, mates with standard key 5-pin cordsets and receptacles | **Female**<br>  <br> |
| **BS 82..**<br>  <br> | **BM 8151-0/PG 9** | | PBT, Black, PG 9 cable gland, accepts 6-8 mm cable diameter, screw terminals, accepts up to 18 AWG conductors, metal coupling nut, 85 °C, 60 V, 4 A, mates with standard key 5-pin cordsets and receptacles | **Male**<br>  <br> |

We reserve the right to make technical alterations without prior notice.

# 1/2" Microfast Connectivity

## Reverse Key (B-Code) Cordset Part Number Key

- NEMA 1, 3, 4, 6P
- IEC IP67 Protection
- 250 V, 4 A

| Connector Style | Female Part Number | Male Part Number | Features | Pinout | |
|---|---|---|---|---|---|
| KB ..**   | **KB 4T-***<br>**WKB 4T-*** | **SB 4T-***<br>**WSB 4T-*** | ITC/PLTC PVC Yellow, 4x22 AWG, 105 °C, 5.3 mm OD, Cable #RF50555-*M, Flexlife® | 1. RD/BK<br>2. RD/WH<br>3. RD<br>4. GN | Female   |
| | **KB 4T-*/S90**<br>**WKB 4T-*/S90** | **SB 4T-*/S90**<br>**WSB 4T-*/S90** | AWM TPU Yellow, 4x22 AWG, 90 °C, 4.7 mm OD, Cable #RF50614-*M, Cut/Abrasion Immune | | |
| | **KB 4T-*/S105**<br>**WKB 4T-*/S105** | **SB 4T-*/S105**<br>**WSB 4T-*/S105** | ITC/PLTC PVC Yellow, 4x22 AWG, 105 °C, 6.2 mm OD, Cable #RF50656-*M, Braided Copper Shield | | Male   |
| WKB ..**   | **KB 4T-*/S727**<br>**WKB 4T-*/S727** | **SB 4T-*/S727**<br>**WSB 4T-*/S727** | AWM TPU Grey, 4x22 AWG, 90 °C, 5.1 mm OD, Cable #RF50532-*M, Special Conductor Color Code | 1. BN<br>2. BU<br>3. BK<br>4. WH | |
| SB ..**   | **KB 5T-***<br>**WKB 5T-*** | **SB 5T-***<br>**WSB 5T-*** | ITC/PLTC PVC Yellow, 5x22 AWG, 105 °C, 5.7 mm OD, Cable #RF50556-*M, Flexlife | 1. RD/WH<br>2. RD<br>3. GN<br>4. RD/YE<br>5. RD/BK | Female   |
| | | | | | Male   |
| WSB ..**   | **KB 6T-***<br>**WKB 6T-*** | **SB 6T-***<br>**WSB 6T-*** | ITC/PLTC PVC Yellow, 6x22 AWG, 105 °C, 6.2 mm OD, Cable #RF51003-*M, Flexlife | 1. RD/WH<br>2. RD<br>3. GN<br>4. RD/YE<br>5. RD/BK<br>6. RD/BU | Female   |
| | | | | | Male   |

* Length in meters. Standard cable lengths are 2, 4, 6, 8 and 10 meters. Consult factory for other lengths.

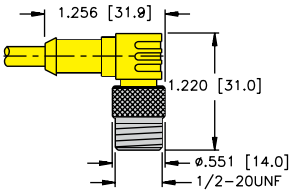
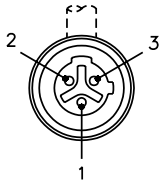
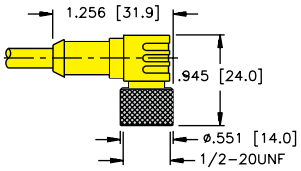
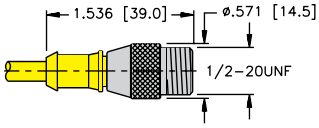
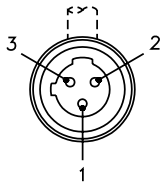
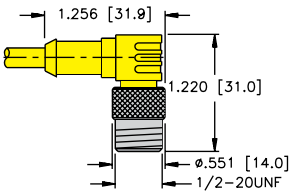
** Standard coupling nut material is nickel plated brass "KB .."; "KBK .." indicates nylon and "KBV .." indicates stainless steel.

We reserve the right to make technical alterations without prior notice.

# 1/2" Microfast Connectivity

## 3-Wire Cordsets, Standard Duty

- NEMA 1, 3, 4, 6P
- IEC IP67 Protection
- 250 V, 4 A

| Connector Style | Female Part Number | Male Part Number | Features | Pinout | |
|---|---|---|---|---|---|
| **WSB ..****   | **KB 3T-***<br>**WKB 3T-*** | **SB 3T-***<br>**WSB 3T-*** | ITC/PLTC PVC Yellow, 3x22 AWG, 105 °C, 5.1 mm OD, Cable #RF50531-*M | 1. GN<br>2. RD/BK<br>3. RD/WH | **Female**   |
| **WKB ..****   | **KB 3T-*/S90**<br>**WKB 3T-*/S90** | **SB 3T-*/S90**<br>**WSB 3T-*/S90** | AWM TPU Yellow, 3x18 AWG, 90 °C, 5.3 mm OD, Cable #RF50547-*M, Cut/Abrasion Immune | | |
| | **KB 3T-*/S105**<br>**WKB 3T-*/S105** | **SB 3T-*/S105**<br>**WSB 3T-*/S105** | ITC/PLTC PVC Yellow, 3x22 AWG,105 °C, 6.2 mm OD, Cable #RF50535-*M, Braided Shield | | |
| **SB ..****   | **KB 3T-*/S749**<br>**WKB 3T-*/S749** | **SB 3T-*/S749**<br>**WSB 3T-*/S749** | ITC/PLTC PVC Yellow, 2x22 AWG, 105 °C, 5.1 mm OD, Cable #RF50650-*M, 3-pin with 2 conductors | 1. N/C<br>2. BK<br>3. WH | **Male**   |
| **WSB ..****   | **KB 3T-*/S1507**<br>**WKB 3T-*/S1507** | **SB 3T-*/S1507**<br>**WSB 3T-*/S1507** | AWM TPE Grey, 3x22 AWG 105 °C, 4.8 mm OD, Cable #RF52085-*M, Flexlife-20, High Flex - Over 20 million cycles | 1. BK<br>2. BN<br>3. BU | |

* Length in meters. Standard cable lengths are 2, 4, 6, 8 and 10 meters. Consult factory for other lengths.

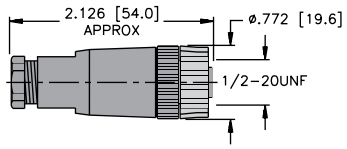
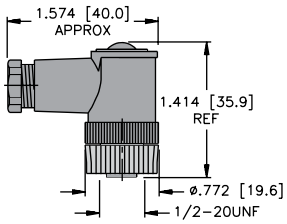
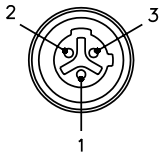
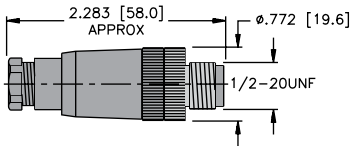
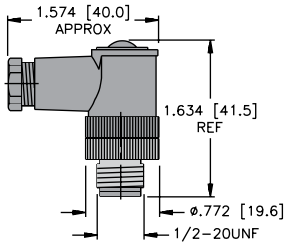
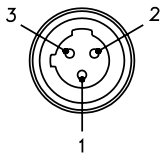
** Standard coupling nut material is nickel plated brass "KB .."; "KBK .." indicates nylon and "KBV .." indicates stainless steel.

We reserve the right to make technical alterations without prior notice.

# 1/2" Microfast Connectivity

## 3-Pin Field Wireable Connectors

- NEMA 1, 3, 4, 6P
- IEC IP67 Protection

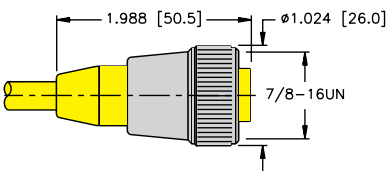
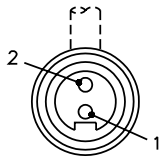
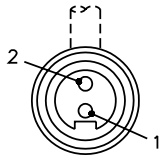
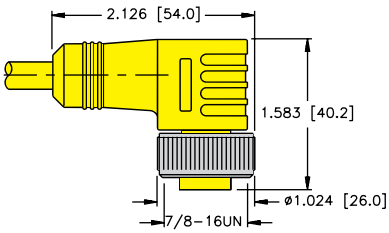
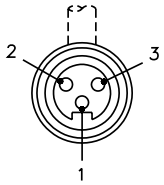
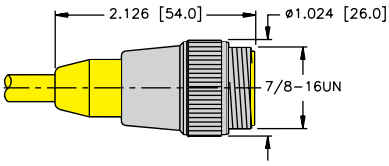
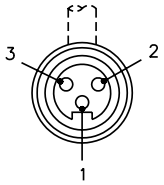
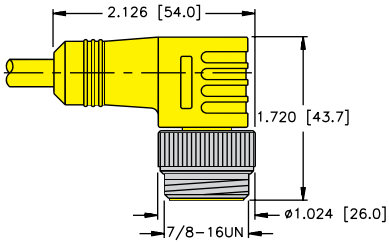
| Housing Style | Female Part Number | Male Part Number | Features | Pinout |
|---|---|---|---|---|
| **MF 3131-0**<br>  <br><br>**MF 3231-0**<br>  <br> | **MF 3131-0** | **MFS 3131-0** | PBT, black, PG 7 cable diameter gland, accepts 4-6 mm cable diameter, screw terminals, accepts up to 18 AWG conductor, 85 °C, 250 V, 4 A, mates with 3-wire cordsets and receptacles | **Female**<br>  <br> |
| **MFS 3131-0**<br>  <br><br>**MFS 3231-0**<br>  <br> | **MF 3231-0** | **MFS 3231-0** | PBT, black, PG 7 cable diameter gland, accepts 4-6 mm cable diameter, screw terminals, accepts up to 18 AWG conductor, 85 °C, 250 V, 4 A, mates with 3-wire cordsets and receptacles | **Male**<br>  <br> |

We reserve the right to make technical alterations without prior notice.

# 7/8" Minifast Connectivity Products

**2 and 3-Wire Cordsets, Standard**

- NEMA 1, 3, 4, 6P
- IEC IP67 Protection
- 9 A

| Connector Style | Female Part Number | Male Part Number | Features | Pinout | |
|---|---|---|---|---|---|
| RKM ..**<br>  <br> | **RKM 20- *M**<br>**WKM 20- *M** | **RSM 20- *M**<br>**WSM 20- *M** | ITC/PLTC PVC Yellow 2x18 AWG, 105 °C, 6.2 mm OD, Cable #RF50511-*M, Flexlife®, 600 V | 1. BN<br>2. BU | Female<br>  <br><br>Male<br>  <br> |
| WKM ..**<br>  <br> | **RKM 30-*M**<br>**WKM 30-*M** | **RSM 30-*M**<br>**WSM 30-*M** | ITC/PLTC PVC Yellow, 3x18 AWG, 105 °C, 6.2 mm OD, Cable #RF50880-*M, Flexlife, 600 V | 1. GN/YE<br>2. BN<br>3. BU | Female<br>  <br> |
| | **RKM 30-*M/S90**<br>**WKM 30-*M/S90** | **RSM 30-*M/S90**<br>**WSM 30-*M/S90** | AWM TPU Yellow, 3x18 AWG , 90 °C, 6.0 mm OD, Cable #RF50545-*M, Cut Abrasion Immune, 600 V | | |
| RSM ..**<br>  <br> | **RKM 30-*M/S101**<br>**WKM 30-*M/S101** | **RSM 30-*M/S101**<br>**WSM 30-*M/S101** | AWM TPE Yellow, 3x18 AWG , 105 °C, 5.7 mm OD, Cable #RF51173-*M, Flexlife-20, high flex over 20 million cycles, 600 V C-track | | |
| | **RKM 311-*M**<br>**WKM 311-*M** | **RSM 311-*M**<br>**WSM 311-*M** | ITC/PLTC PVC Yellow, 3x18 AWG, 105 °C, 6.2 mm OD, Cable #RF50520-*M, Flexlife, 600 V | 1. GN<br>2. RD/BK<br>3. RD/WH | Male<br>  <br> |
| WSM ..**<br>  <br> | **RKM 311-*M/S600**<br>**WKM 311-*M/S600** | **RSM 311-*M/S600**<br>**WSM 311-*M/S600** | SJOOW CPE, Yellow, 3x18 AWG , 105 °C, 8.0 mm OD, Cable #RF50658-*M, Weld Flash Immune, Flame Immune, 300 V | | |

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.

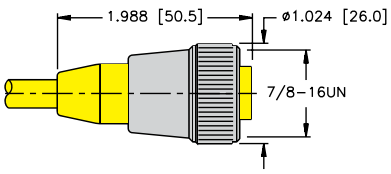
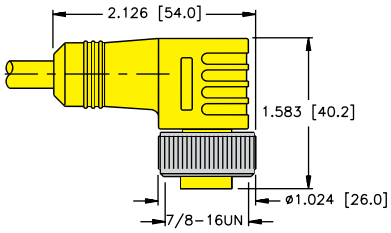
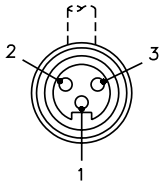
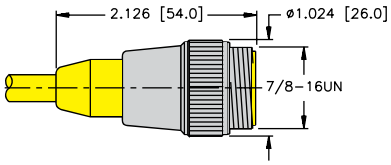
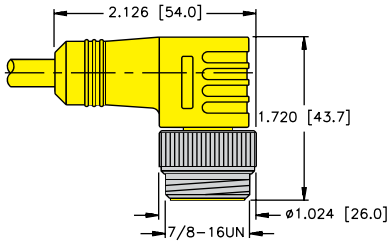
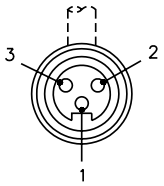
** Standard coupling nut material is nickel plated brass "RKM .."; "RK .." indicates nylon, "RKV .." indicates stainless steel, and "RKVH .." indicates stainless steel hex.

We reserve the right to make technical alterations without prior notice.

# 7/8" Minifast Connectivity Products

## 3-Wire Cordsets, Standard

- NEMA 1, 3, 4, 6P
- IEC IP67 Protection
- 9 A

| Connector Style | Female Part Number | Male Part Number | Features | Pinout | |
|---|---|---|---|---|---|
| RKM ..**<br>  <br><br>WKM ..**<br>  <br> | RKM 31-*M<br>WKM 31-*M | RSM 31-*M<br>WSM 31-*M | ITC/PLTC PVC Yellow, 3x18 AWG, 105 °C, 6.2 mm OD, Cable #RF50513-*M, Flexlife®, 600 V | 1. BK<br>2. BN<br>3. BU | Female<br>  <br> |
| RSM ..**<br>  <br>WSM ..**<br>  <br> | RKM 31-*M/S600<br>WKM 31-*M/S600 | RSM 31-*M/S600<br>WSM 31-*M/S600 | SJOOW CPE Yellow, 3x18 AWG, 105 °C, 8.0 mm OD, Cable #RF50654-*M, Weld Flash Immune, Flame Immune, 300 V | | Male<br>  <br> |

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.

** Standard coupling nut material is nickel plated brass "RKM .."; "RK .." indicates nylon, "RKV .." indicates stainless steel, and "RKVH .." indicates stainless steel hex.

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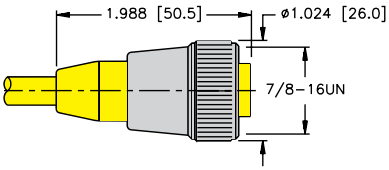
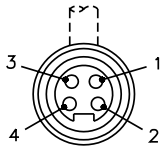
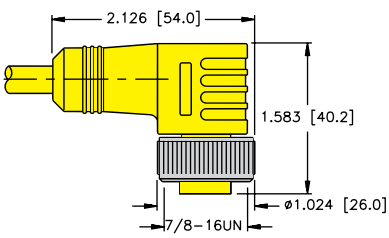
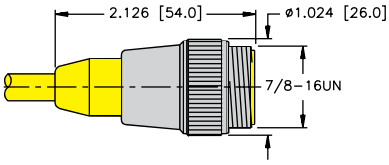
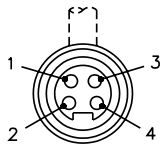
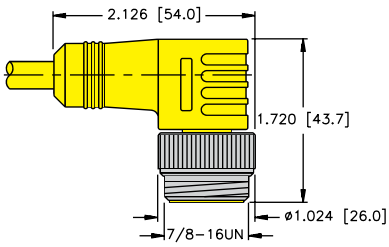
# 7/8" Minifast Connectivity Products

**3 and 4-Wire Cordsets, Standard**

- NEMA 1, 3, 4, 6P
- IEC IP67 Protection
- 9 A

| Connector Style | Female Part Number | Male Part Number | Features | Pinout | |
|---|---|---|---|---|---|
| **RKM ..****   | **RKM 40-*M**<br>**WKM 40-*M** | **RSM 40-*M**<br>**WSM 40-*M** | ITC/PLTC PVC Yellow, 4x18 AWG, 105 °C, 6.7 mm OD, Cable #RF50548-*M, Flexlife®, 600 V | 1. BN<br>2. WH<br>3. BU<br>4. BK | **Female**   |
| **WKM ..****   | **RKM 40-*M/S90**<br>**WKM 40-*M/S90** | **RSM 40-*M/S90**<br>**WSM 40-*M/S90** | AWM TPU Yellow, 4x18 AWG, 90 °C, 7.2 mm OD, Cable #RF50544-*M, Cut/Abrasion Immune, 600 V | | |
| **RSM ..****   | **RKM 40-*M/S101**<br>**WKM 40-*M/S101** | **RSM 40-*M/S101**<br>**WSM 40-*M/S101** | AWM TPE Yellow, 4x18 AWG, 105 °C, 6.2 mm OD, Cable #RF50968-*M, Flexlife-20, High Flex - Over 20 million cycles, 600 V, C-track | | |
| | **RKM 40-*M/S529**<br>**WKM 40-*M/S529** | **RSM 40-*M/S529**<br>**WSM 40-*M/S529** | TPU Yellow, 4x20 AWG, 90 °C, 5.7 mm OD, Cable #RF50526-*M, Cut/Abrasion Immune, Braided Mechanical Shield, 300 V | | **Male**   |
| **WSM ..****   | **RKM 40-*M/S600**<br>**WKM 40-*M/S600** | **RSM 40-*M/S600**<br>**WSM 40-*M/S600** | SJOOW CPE Yellow, 4x18 AWG, 105 °C, 8.5 mm OD, Cable #RF50644-*M, Weld Flash Immune, Flame Immune, 300 V | | |

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.

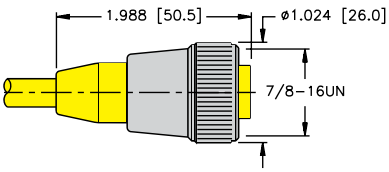
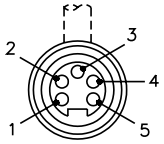
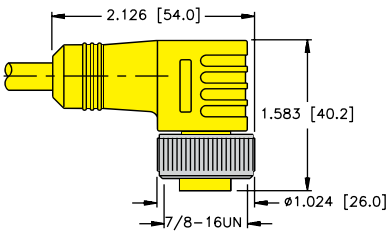
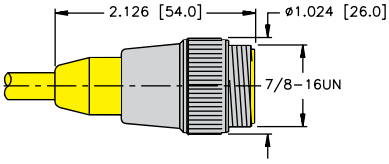
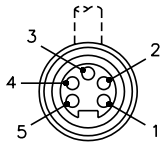
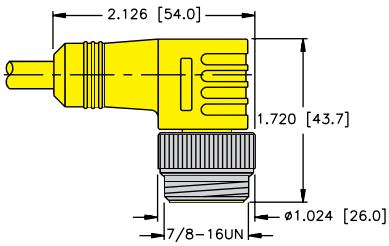
** Standard coupling nut material is nickel plated brass "RKM .."; "RK .." indicates nylon, "RKV .." indicates stainless steel, and "RKVH .." indicates stainless steel hex.

We reserve the right to make technical alterations without prior notice.

# 7/8" Minifast Connectivity Products

## 5-Wire Cordsets, Standard

- NEMA 1, 3, 4, 6P
- IEC IP67 Protection
- 9 A

| Connector Style | Female Part Number | Male Part Number | Features | Pinout | |
|---|---|---|---|---|---|
| **RKM ..****   | **RKM 50-*M**<br>**WKM 50-*M** | **RSM 50-*M**<br>**WSM 50-*M** | ITC/PLTC PVC Yellow, 5x18 AWG, 105 °C, 7.6 mm OD, Cable #RF50549-*M, Flexlife®, 600 V | 1. BK<br>2. BU<br>3. GN/YE<br>4. BN<br>5. WH | **Female**   |
| | **RKM 50-*M/S90**<br>**WKM 50-*M/S90** | **RSM 50-*M/S90**<br>**WSM 50-*M/S90** | AWM TPU Yellow, 5x18 AWG, 90 °C, 7.2 mm OD, Cable #RF50751-*M, Cut/Abrasion Immune, 600 V | | |
| **WKM ..****   | **RKM 50-*M/S101**<br>**WKM 50-*M/S101** | **RSM 50-*M/S101**<br>**WSM 50-*M/S101** | AWM TPE Yellow, 5x18 AWG, 105 °C, 6.7 mm OD, Cable #RF51174-*M, Flexlife-20, high flex over 20 million cycles, 600 V, C-track | | |
| **RSM ..****   | **RKM 50-*M/S1551**<br>**WKM 50-*M/S1551** | **RSM 50-*M/S1551**<br>**WSM 50-*M/S1551** | ITC/PLTC PVC Yellow, 5x18 AWG, 105 °C, 7.6 mm OD, Cable #RF50578-*M, Yellow conductor instead of Green/Yellow, 600 V | 1. BK<br>2. BU<br>3. YE<br>4. BN<br>5. WH | **Male**   |
| | **RKM 511-*M**<br>**WKM 511-*M** | **RSM 511-*M**<br>**WSM 511-*M** | ITC/PLTC PVC Yellow, 5x18 AWG, 105 °C, 7.6 mm OD, Cable #RF50521-*M, Flexlife, 600 V | 1. RD/WH<br>2. RD/BU<br>3. GN<br>4. RD/OG<br>5. RD/BK | |
| **WSM ..****   | **RKM 511-*M/S600**<br>**WKM 511-*M/S600** | **RSM 511-*M/S600**<br>**WSM 511-*M/S600** | SJOOW CPE Yellow, 5x18 AWG, 105 °C, 9.4 mm OD, Cable #RF50659-*M, Weld Flash Immune, Flame Immune, 300 V | | |

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.

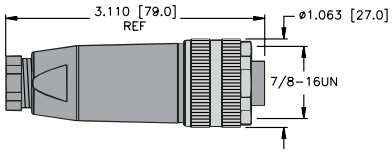
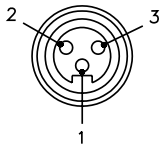
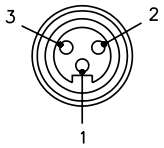
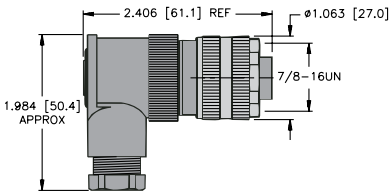
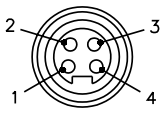
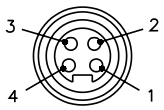
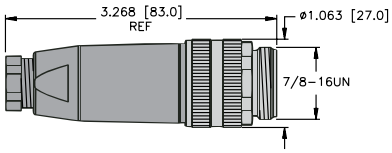
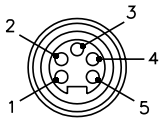
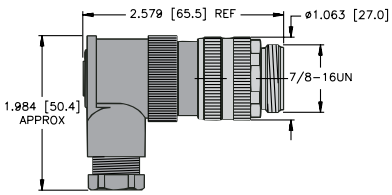
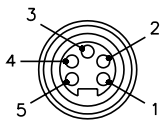
** Standard coupling nut material is nickel plated brass "RKM .."; "RK .." indicates nylon, "RKV .." indicates stainless steel, and "RKVH .." indicates stainless steel hex.

We reserve the right to make technical alterations without prior notice.

# 7/8" Minifast Connectivity Products

**3, 4 and 5-Pin Field Wireable Connectors**

- NEMA 1, 3, 4, 6P
- IEC IP67 Protection

| Housing Style | Female Part Number | Male Part Number | Features | Pinout |
|---|---|---|---|---|
| **B 41 ..**<br>  <br> | **B 4131-0/9**<br>**B 4231-0/9** | **BS 4131-0/9**<br>**BS 4231-0/9** | Glass filled nylon, PG 9 cable gland, accepts 6-8 mm cable diameter screw terminals, accepts up to 16 AWG conductors, 85 °C, 250 V, 12 A, Mates with all 3-pin cordsets and receptacles | **Female**<br>  <br> |
| | **B 4131-0/13.5** | **BS 4131-0/13.5** | Glass filled nylon, PG 13.5 cable gland, accepts 10-12 mm cable diameter screw terminals, accepts up to 16 AWG conductors, 85 °C, 250 V, 12 A, Mates with all 3-pin cordsets and receptacles | **Male**<br>  <br> |
| **B 42 ..**<br>  <br> | **B 4141-0/9**<br>**B 4241-0/9** | **BS 4141-0/9**<br>**BS 4241-0/9** | Glass filled nylon, PG 9 cable gland, accepts 6-8 mm cable diameter screw terminals, accepts up to 16 AWG conductors 85 °C, 250 V, 9 A, Mates with all 4-pin cordsets and receptacles | **Female**<br>  <br> |
| | **B 4141-0/13.5** | **BS 4141-0/13.5** | Glass filled nylon, PG 13.5 cable gland, accepts 10-12 mm cable diameter screw terminals, accepts up to 16 AWG conductors, 85 °C, 250 V, 9 A, Mates with all 4-pin cordsets and receptacles | **Male**<br>  <br> |
| **BS 41 ..**<br>  <br> | **B 4151-0/9**<br>**B 4251-0/9** | **BS 4151-0/9**<br>**BS 4251-0/9** | Glass filled nylon, PG 9 cable gland, accepts 6-8 mm cable diameter, screw terminals, accepts up to 16 AWG conductors, 85 °C, 250 V, 9 A, Mates with all 5-pin cordsets and receptacles | **Female**<br>  <br> |
| **BS 42 ..**<br>  <br> | **B 4151-0/13.5** | **BS 4151-0/13.5** | Glass filled nylon, PG 13.5 cable gland, accepts 10-12 mm cable diameter screw terminals, accepts up to 16 AWG conductors, 85 °C, 250 V, 9 A | **Male**<br>  <br> |
| | **B 4151-0/16** | **BS 4151-0/16** | Glass filled nylon, PG 16 cable gland, accepts 12-14 mm cable diameter screw terminals, accepts up to 16 AWG conductors, 85 °C, 250 V, 9 A | |

We reserve the right to make technical alterations without prior notice.

Notes

# Accessories Selection Guide

| | Die Protector | Whisker Probe | Quick Mount |
|---|---|---|---|
| | | | |
| **Pages** | **I3** | **I3** | **I4** |

| | Cushion Mount | Mounting Clamps | Mounting Brackets |
|---|---|---|---|
| | | | |
| **Pages** | **I4** | **I5** | **I6** |

| | Mounting Clamps | Mounting Brackets | Protective Housing - "Wet Suit" |
|---|---|---|---|
| | | | |
| **Pages** | **I7 - 8** | **I9 - 11** | **I11** |

| | PTFE/Ceramic Caps | Protective Covers | Lockwashers and Locknuts |
|---|---|---|---|
| | | | |
| **Pages** | **I12** | **I13** | **I14** |

We reserve the right to make technical alterations without prior notice.

# Accessories Selection Guide

| | Smart Plugs | Cable Glands |
|---|---|---|
| | | |
| Pages | I15 | I16 |

| | Conduit Adapters | Actuation Magnets |
|---|---|---|
| | | |
| Pages | I17 | I18 |

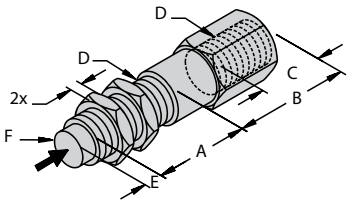
| | Spacer Plates | Threaded and Bolt-on Tank Wells |
|---|---|---|
| | | |
| Pages | I18 | I21 - 22 |

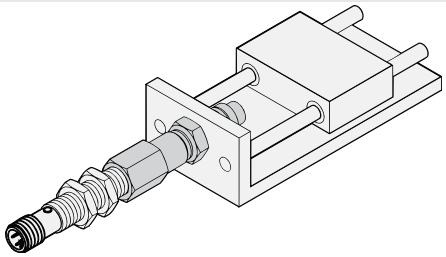
| | Test Box | Limit Value Monitor |
|---|---|---|
| | | |
| Pages | I23 | I23 |

We reserve the right to make technical alterations without prior notice.

# Accessories

## Die Protector



| Part Number | ID Number | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|
| **DP-08-25-08** | **A2521** | 0.98 [25.0] | 1.25 [31.8] | 0.66 [16.7] | M8x1 | 0.17 [4.3] | 0.44 [11.1] |
| **DP-08-50-08** | **A9473** | 1.97 [50.0] | 1.25 [31.8] | 0.66 [16.7] | M8x1 | 0.17 [4.3] | 0.44 [11.1] |
| **DP-12-25-12** | **A2519** | 0.98 [25.0] | 1.25 [31.8] | 0.66 [16.7] | M12x1 | 0.17 [4.3] | 0.62 [15.7] |
| **DP-12-50-12** | **A9169** | 1.97 [50.0] | 1.25 [31.8] | 0.66 [16.7] | M12x1 | 0.17 [4.3] | 0.62 [15.7] |
| **DP-18-25-18** | **A2520** | 0.98 [25.0] | 1.25 [31.8] | 0.66 [16.7] | M18x1 | 0.17 [4.3] | 0.87 [22.1] |
| **DP-18-75-18** | **A9527** | 2.95 [75.0] | 1.25 [31.8] | 0.66 [16.7] | M18x1 | 0.17 [4.3] | 0.87 [22.1] |

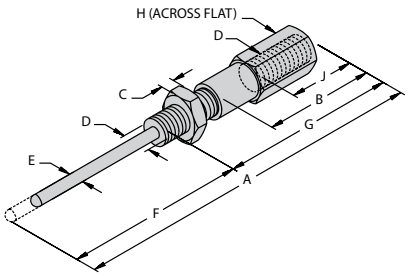
Inches [mm]
Spring rate for plunger actuation: 9 oz

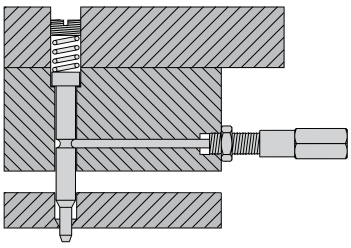
### Recommended Sensors for Die Protector

| Die Protector | DP-08-25-08 | DP-12-25-12 | DP-18-25-18 |
|---|---|---|---|
| **Sensors** | Bi1.5U-EG08-AP6X<br>Bi2-EG08-AP6X | Bi2-G12-AP6X-H1141 | Bi5-G18-AP6X<br>(When not fully engaged) |

**Note:** Works with all shielded NPN, PNP, quick disconnect or potted-in-cable versions of the listed part numbers.

## Whisker Probe



| Part Number | ID Number | A | B | C | D | E | F | G | H | J |
|---|---|---|---|---|---|---|---|---|---|---|
| **WP-08-50-03** | **A2527** | 3.92 [99.6] | 1.25 [31.8] | 0.15 [3.8] | M8x1 | 0.13 [3.2] | 2.00 [50.8] | 1.95 [49.5] | 0.44 [11.1] | 0.86 [21.8] |
| **WP-12-50-03** | **A2528** | 3.92 [99.6] | 1.25 [31.8] | 0.15 [3.8] | M12x1 | 0.13 [3.2] | 2.00 [50.8] | 1.95 [49.5] | 0.44 [11.1] | 0.86 [21.8] |
| **WP-12-50-06** | **A2529** | 3.92 [99.6] | 1.25 [31.8] | 0.15 [3.8] | M12x1 | 0.25 [6.4] | 2.00 [50.8] | 1.95 [49.5] | 0.62 [15.8] | 0.71 [18.0] |
| **WP-12-100-06** | **A9195** | 5.91 [150] | 1.25 [31.8] | 0.15 [3.8] | M12x1 | 0.25 [6.4] | 4.00 [102] | 1.95 [49.5] | 0.62 [15.8] | 0.71 [18.0] |

Inches [mm]

### Recommended Sensors for Whisker Probe

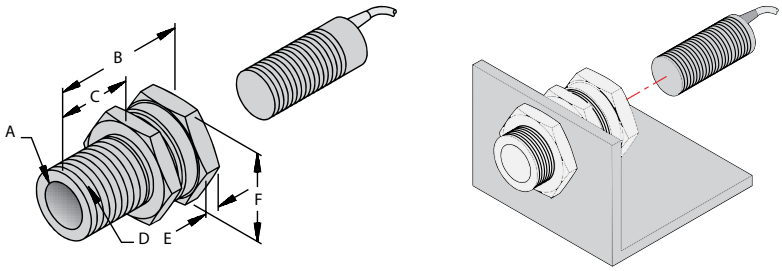
| Whisker Probe | WP-08-50-03 | | WP-12-50-03 | WP-12-50-06 |
|---|---|---|---|---|
| **Sensors** | Bi1-G08-AN6<br>Bi1.5-G08-AP6X | Bi1.5U-EG08-AP6X<br>Bi2-EG08-AP6X | Bi2-G12-AP6X-H1141<br>Bi3U-M12-AP6X-H1141 | Bi2-G12-AP6X-H1141<br>Bi3U-M12-AP6X-H1141 |

**Note:** Works with all shielded NPN, PNP, quick disconnect or potted-in-cable versions of the listed part numbers. Not for use with Uprox3.

We reserve the right to make technical alterations without prior notice.

# Accessories

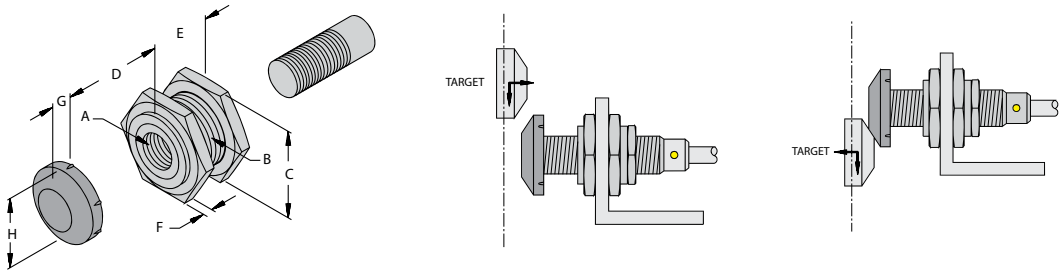
## Quick Mount




| Part Number | ID Number | Features | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|
| QM-08 | A2511 | — | 0.32 [8.18] | 1.28 [32.4] | 0.69 [17.5] | M12x1 | 0.15 [3.85] | 0.67 [16.9] |
| QM-08L | A2512 | Ext. Length | 0.32 [8.18] | 1.90 [48.0] | 1.34 [34.0] | M12x1 | 0.15 [3.85] | 0.67 [16.9] |
| QM-12 | A2513 | — | 0.48 [12.1] | 1.34 [33.7] | 0.77 [19.5] | M16x1 | 0.16 [4.01] | 0.86 [21.8] |
| QM-12L | A2514 | Ext. Length | 0.48 [12.1] | 1.76 [44.8] | 1.18 [30.0] | M16x1 | 0.16 [4.01] | 0.86 [21.8] |
| QM-12L-T | A2542 | Ext. Length, PTFE | 0.48 [12.1] | 1.76 [44.8] | 1.18 [30.0] | M16x1 | 0.16 [4.01] | 0.86 [21.8] |
| QM-18 | A2515 | — | 0.71 [18.1] | 1.52 [38.5] | 0.79 [20.0] | M24x1.5 | 0.19 [4.95] | 1.18 [30.0] |
| QM-18L | A2516 | Ext. Length | 0.71 [18.1] | 2.28 [58.0] | 1.57 [40.0] | M24x1.5 | 0.19 [4.95] | 1.18 [30.0] |
| QM-18L-T | A2543 | Ext. Length, PTFE | 0.71 [18.1] | 2.28 [58.0] | 1.57 [40.0] | M24x1.5 | 0.19 [4.95] | 1.18 [30.0] |
| QM-30 | A2517 | — | 1.19 [30.1] | 1.50 [35.0] | 0.79 [20.0] | M36x1.5 | 0.24 [6.13] | 1.61 [41.0] |
| QM-30L | A2518 | Ext. Length | 1.19 [30.1] | 2.28 [58.0] | 1.57 [40.0] | M36x1.5 | 0.24 [6.13] | 1.61 [41.0] |

Inches [mm]
Material: Nickel plated brass

## Cushion Mount




| Part Number | ID Number | A | B | C | D | E | F | G | H | Cap Part Number | Cap ID Number |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Inside Thread | Outside Thread | Across Flats | Max Allowable Overtravel | | | | | | |
| CM-08 | A2503 | M8x1 | M16x1.5 | 0.88 [22.2] | 0.35 [8.89] | 0.87 [22.1] | 0.16 [3.94] | 0.21 [5.33] | 0 .60 [15.2] | CAP-EN08 | A6100 |
| CM-08N | A2504 | | | | | | | | | CAP-EN08N | A6200 |
| CM-12 | A2505 | M12x1 | M22x1.5 | 1.12 [28.6] | 0.40 [10.0] | 0.87 [22.1] | 0.16 [4.06] | 0.245 [6.22] | 0 .90 [22.9] | CAP-EN12 | A6300 |
| CM-12N | A2506 | | | | | | | | | CAP-EN12N | A6300-1 |
| CM-18 | A2507 | M18x1 | M30x1.5 | 1.41 [35.8] | 0.49 [12.4] | 1.17 [29.7] | 0.20 [5.10] | 0.33 [8.38] | 1.18 [30.0] | CAP-EN18 | A6400 |
| CM-18N | A2508 | | | | | | | | | CAP-EN18N | A6400-1 |
| CM-30 | A2509 | M30x1.5 | M47x1.5 | 2.01 [51.0] | 0.57 [14.5] | 1.47 [37.3] | 0.20 [5.10] | 0 .30 [7.62] | 1.72 [43.7] | CAP-EN30 | A 9567 |
| CM-30N | A2510 | | | | | | | | | — | — |

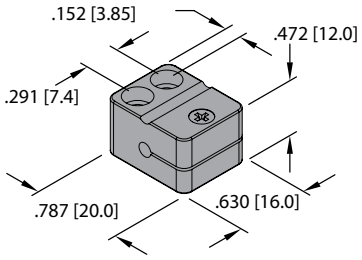
Inches [mm]
Material: Anodized aluminum
Cap: Plastic
Stainless Versions available (CM-*NSS)

We reserve the right to make technical alterations without prior notice.

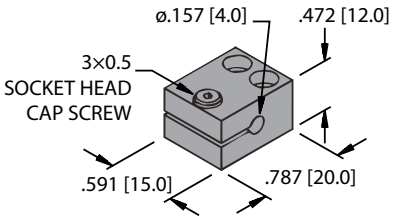
# Accessories

## Mounting Clamps

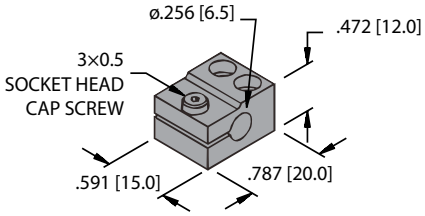
**MBS 30**



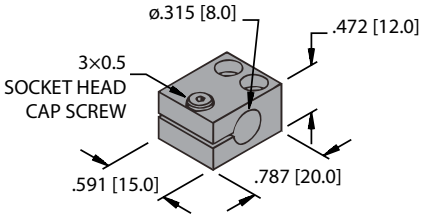

**MBS 40**




**MBS 65**



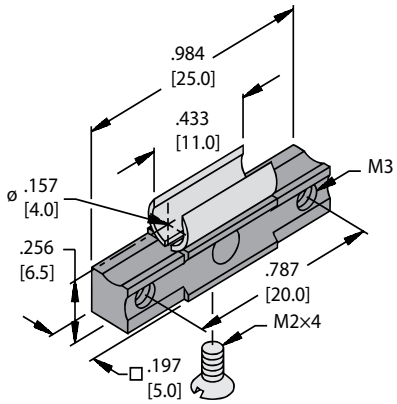

**MBS 80**



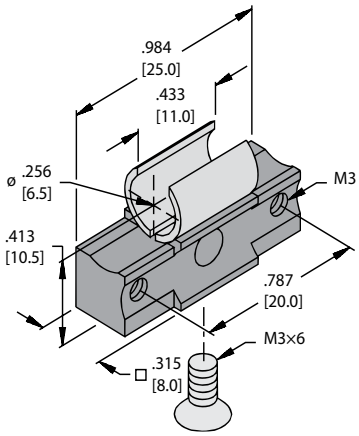

| Part Number | ID Number | Barrel Diameter |
|---|---|---|
| **MBS30** | **6948000** | 3.0 mm |
| **MBS40** | **69477** | 4.0 mm |
| **MBS65** | **69478** | 6.5 mm |
| **MBS80** | **69479** | 8.0 mm |

Inches [mm]
Material: Aluminum
Finish: Black anodized
*For use with smooth barrel Picoprox® sensors

**BS 540**




**BS 865**



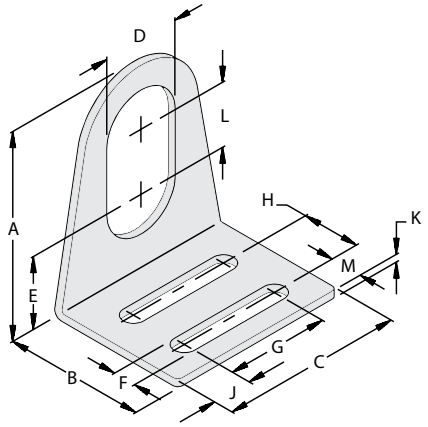

| Part Number | ID Number | Barrel Diameter |
|---|---|---|
| **BS540** | **69475** | 4.0 mm |
| **BS865** | **69476** | 6.5 mm |

Inches [mm]
Block Material: Aluminum
Sleeve Material: Steel
*For use with smooth barrel Picoprox sensors

We reserve the right to make technical alterations without prior notice.

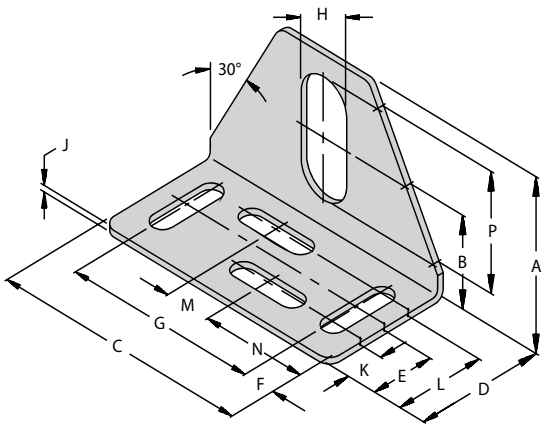
# Accessories

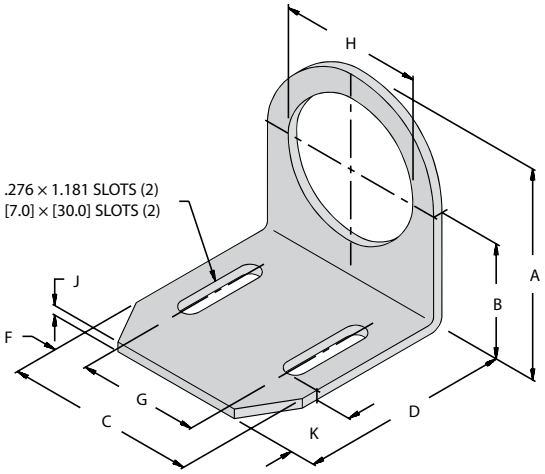
## Mounting Brackets




| Part Number | ID Number | Barrel Diameter | A | B | C | D | E | F | G | H | J | K | L | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MBSS-08** | **A2522** | 8 mm | 1.00 [25.4] | 1.13 [28.7] | 1.25 [31.8] | 0.34 [8.74] | 0.31 [7.92] | 0.22 [5.54] | 0.63 [15.9] | 0.47 [11.9] | 0.31 [7.92] | 0.070 [1.78] | 0.37 [9.53] | 0.28 [7.14] |
| **MBSS-12** | **A2523** | 12 mm | 1.50 [38.1] | 1.37 [34.8] | 1.50 [38.1] | 0.50 [12.7] | 0.55 [13.9] | 0.22 [5.54] | 0.75 [19.1] | 0.56 [14.3] | 0.37 [9.53] | 0.070 [1.78] | 0.50 [12.7] | 0.31 [7.92] |
| **MBSS-18** | **A2524** | 18 mm | 2.00 [50.8] | 1.37 [34.8] | 1.75 [44.5] | 0.75 [19.1] | 0.22 [19.1] | 0.22 [5.54] | 1.00 [25.4] | 0.56 [14.3] | 0.37 [9.53] | 0.070 [1.78] | 0.62 [15.9] | 0.31 [7.92] |
| **MBSS-30** | **A2525** | 30 mm | 2.50 [63.5] | 1.75 [44.5] | 2.25 [57.2] | 1.18 [30.5] | 0.91 [23.0] | 0.22 [5.54] | 1.37 [34.8] | 0.81 [20.6] | 0.44 [11.2] | 0.085 [2.16] | 0.75 [19.1] | 0.41 [10.3] |
| **MBSS-47** | **A2526** | 47 mm | 3.50 [88.9] | 2.00 [50.8] | 2.50 [63.5] | 1.87 [47.5] | 1.50 [38.1] | 0.22 [5.54] | 1.50 [38.1] | 1.00 [25.4] | 0.50 [12.7] | 0.120 [3.05] | 0.75 [19.1] | 0.50 [12.7] |

Inches [mm]
Material: 304 stainless steel



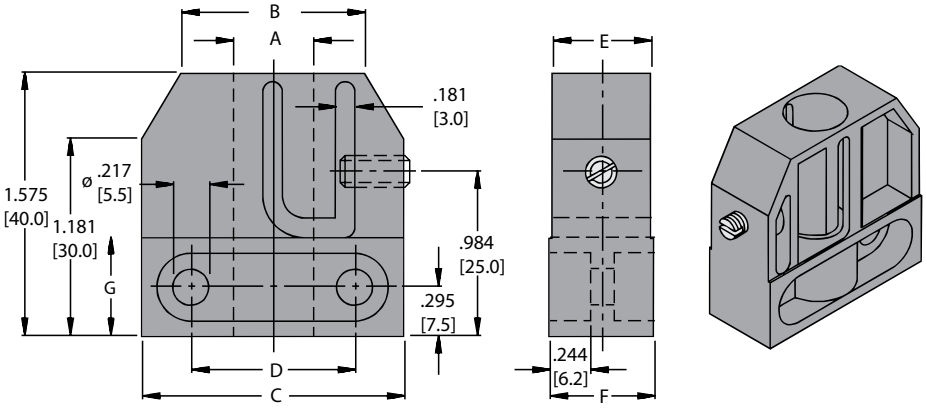

| Part Number | ID Number | Barrel Diameter | A | B | C | D | E | F | G | H | J | K | L | M | N | P |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MB-8** | **A3130-1** | 8 mm | 1.26 [32.0] | 0.66 [16.7] | 2.00 [50.8] | 1.00 [25.4] | 0.45 [11.5] | 0.30 [7.5] | 1.41 [35.8] | 0.33 [8.4] | 0.06 [1.5] | 0.24 [6.0] | 0.67 [17.0] | 0.35 [8.8] | 0.83 [21.0] | .84 [21.4] |
| **MB-12** | **A3130** | 12 mm | 1.63 [41.5] | 0.87 [22.15] | 2.50 [63.5] | 1.25 [31.8] | 0.61 [15.5] | 0.31 [7.9] | 1.88 [47.8] | 0.50 [12.7] | 0.06 [1.5] | 0.35 [9.0] | 0.87 [22.0] | 0.45 [11.5] | 1.02 [26.0] | 1.13 [28.7] |
| **MB-18** | **A3135** | 18 mm | 1.63 [41.5] | 0.79 [20.0] | 2.50 [63.5] | 1.25 [31.8] | 0.61 [15.5] | 0.31 [7.9] | 1.88 [47.8] | 0.75 [19.1] | 0.06 [1.5] | 0.35 [9.0] | 0.87 [22.0] | 0.45 [11.5] | 1.04 [26.3] | 1.15 [29.1] |
| **MB-30** | **A3140** | 30 mm | 2.62 [66.5] | 1.32 [33.5] | 4.25 [108.0] | 1.75 [44.5] | 0.88 [22.4] | 0.37 [9.5] | 3.50 [88.9] | 1.19 [30.2] | 0.07 [1.8] | 0.63 [16.0] | 1.14 [29.0] | 1.18 [30.0] | 1.54 [39.0] | 2.06 [52.2] |
| **MB-47** | **69452** | 47 mm | 2.74 [69.5] | 1.48 [37.5] | 2.52 [64.0] | 252 [64.0] | — | 0.47 [12.0] | 1.58 [40.0] | 1.87 [47.5] | 0.12 [3.00] | 0.63 [16.0] | — | — | — | — |

Inches [mm]
Material: Cold roll steel
Finish: Galvanized

We reserve the right to make technical alterations without prior notice.

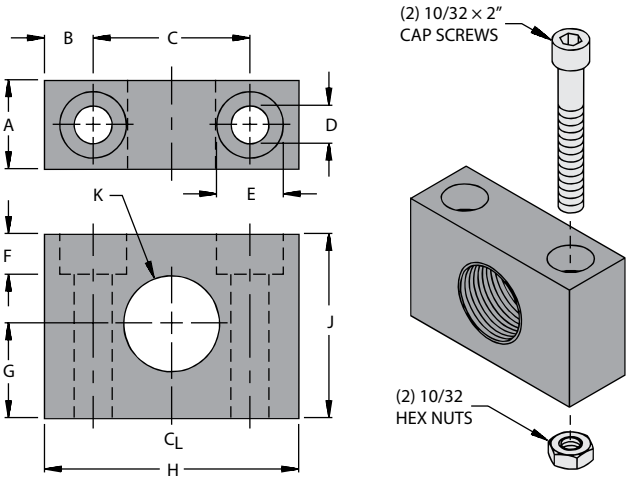
# Accessories

## Mounting Clamps




| Part Number | ID Number | Barrel Diameter | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|---|---|
| **BS-12** | **M6947000** | 12 mm | 0.48 [12.2] | 1.10 [28.0] | 1.57 [40.0] | 0.98 [25.0] | 0.59 [15.0] | 0.63 [16.0] | 0.59 [15.0] |
| **BS-18** | **M6947100** | 18 mm | 0.72 [18.2] | 1.30 [33.0] | 1.77 [45.0] | 1.18 [30.0] | 0.83 [21.0] | 0.87 [22.0] | 0.59 [15.0] |

Inches [mm]
Material: PA 66-GF
*For use with 12 and 18 mm threaded barrel sensors




| Part Number | ID Number | Barrel Diameter | A | B | C | D | E | F | G | H | J | K |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MB-S12** | **A3150** | 12 mm | 0.44 [11.2] | 0.24 [6.2] | 0.77 [19.6] | 0.20 [5.0] | 0.34 [8.7] | 0.20 [5.0] | 0.45 [11.4] | 1.26 [32.0] | 0.91 [23.0] | M12x1 |
| **MB-S18** | **A3155** | 18 mm | 0.63 [16.0] | 0.30 [7.6] | 1.20 [30.5] | 0.22 [5.5] | 0.38 [9.6] | 0.25 [6.4] | 0.57 [14.5] | 1.80 [45.8] | 1.15 [29.3] | M18x1 |

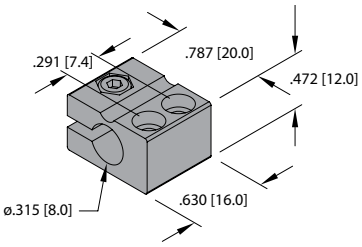
Inches [mm]
Material: Delrin
*For use with 12 and 18 mm threaded barrel sensors. Mounting hardware included.

We reserve the right to make technical alterations without prior notice.

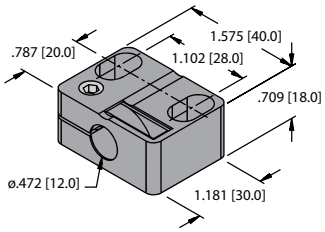
# Accessories

## Mounting Clamps

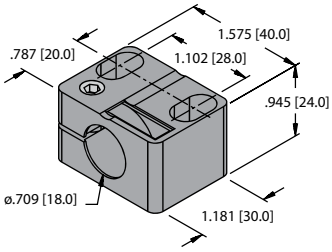
**BST-08B**



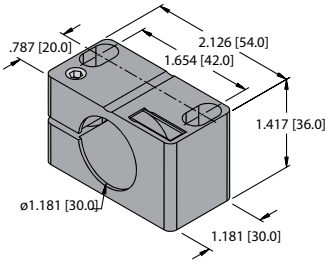

**BST-12B/12N**




**BST-18B/18N**

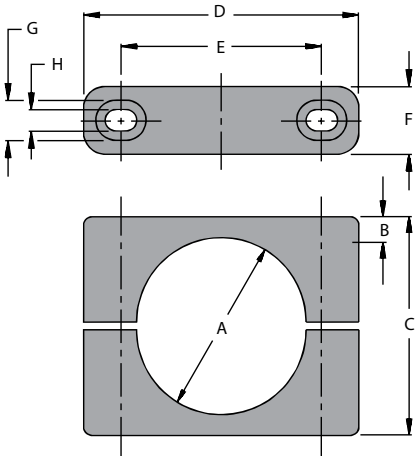



**BST-30B/30N**

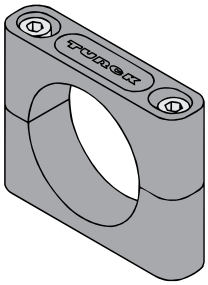



| Part Number | ID Number | Barrel Diameter |
|---|---|---|
| **BST-08B** | **6947210** | 8 mm |
| **BST-12B** | **6947212** | 12 mm |
| **BST-12N** | **6945200** | 12 mm |
| **BS-18B** | **6947214** | 18 mm |
| **BST-18N** | **6947215** | 18 mm |
| **BST-30B** | **6947216** | 30 mm |
| **BST-30N** | **6947217** | 30 mm |

Inches [mm]
B Version comes with dead stop for flush mounted sensors
Material: PA 66-6F




SCREWS INCLUDED:
BS-11: (2) M4 × 22 —SLOTTED HEAD
BS-20: (2) M5 × 30 —CAP SCREWS
BS-40: (2) M5 × 50 —CAP SCREWS



| Part Number | ID Number | Barrel Diameter | A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|---|---|
| **BS-11** | **A3075** | 11 mm | 0.43 [11.0] | 0.20 [5.0] | 0.79 [20.0] | 1.26 [32.0] | 0.79 [0.0] | 0.47 [12.0] | 0.32 [8.2] | 0.17 [4.3] |
| **BS-20** | **69464** | 20 mm | 0.79 [20.0] | 0.24 [6.0] | 1.18 [30.0] | 1.81 [46.0] | 1.22 [31.0] | 0.59 [15.0] | 0.37 [9.5] | 0.21 [5.3] |
| **BS-40** | **69466** | 40 mm | 1.57 [40.0] | 0.24 [6.0] | 1.97 [50.0] | 2.56 [65.0] | 1.87 [47.5] | 0.63 [16.0] | 0.37 [9.5] | 0.21 [5.3] |

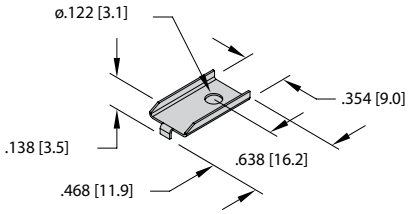
Inches [mm]
Bracket Material: PBT
Screw Bracket: Galvanized zinc
*For use with 11, 20, and 40 mm smooth plastic barrel sensors

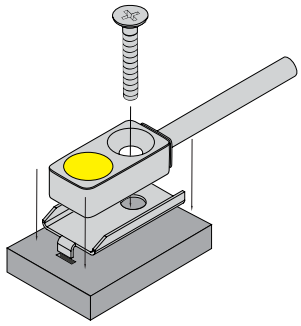
We reserve the right to make technical alterations without prior notice.

# Accessories

## Mounting Brackets

**MW-Q4.7/5.5**

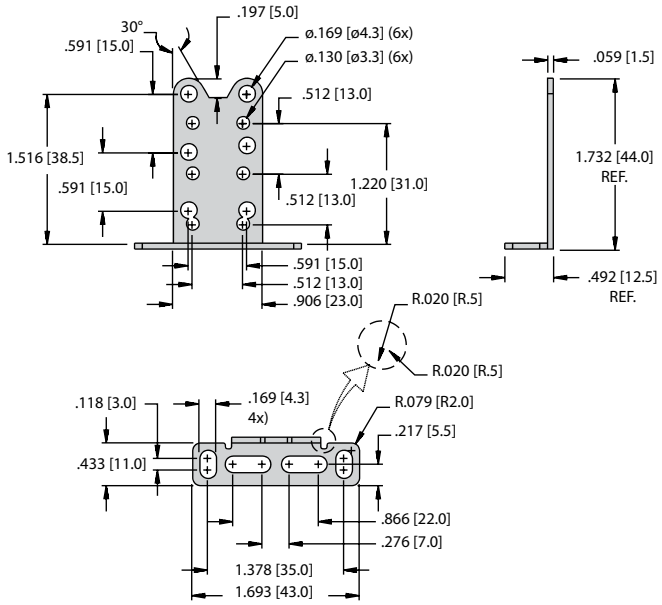


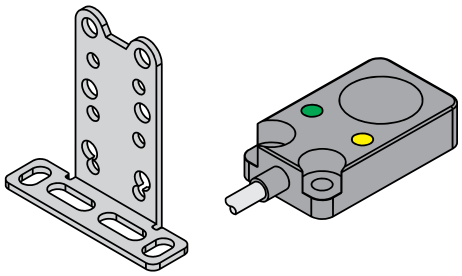



| Part Number | ID Number |
|---|---|
| MW-Q4.7/5.5 | 6945013 |

Inches [mm]
Material: Stainless steel
*For surface mounting of Q4.7 or Q5.5 sensors

**MB-Q08/Q10**

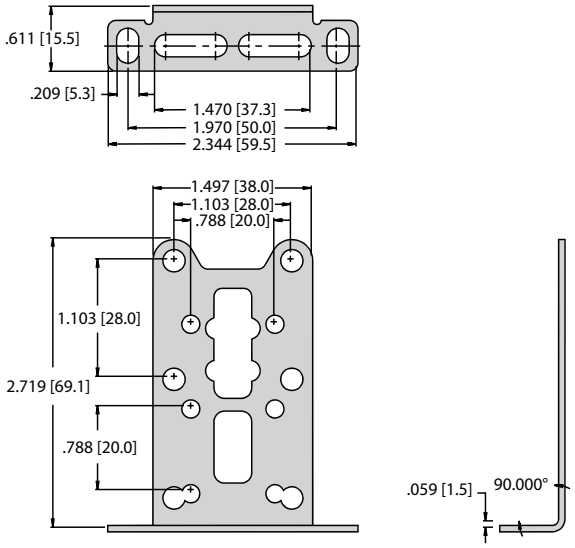


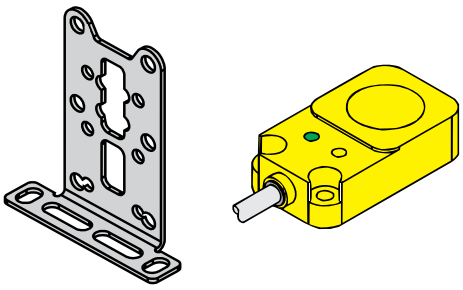



| Part Number | ID Number |
|---|---|
| MB-Q08/Q10 | A3563 |

Inches [mm]
Material: Stainless steel
*For use with Q08 or Q10 sensors

**MB-Q14/20**



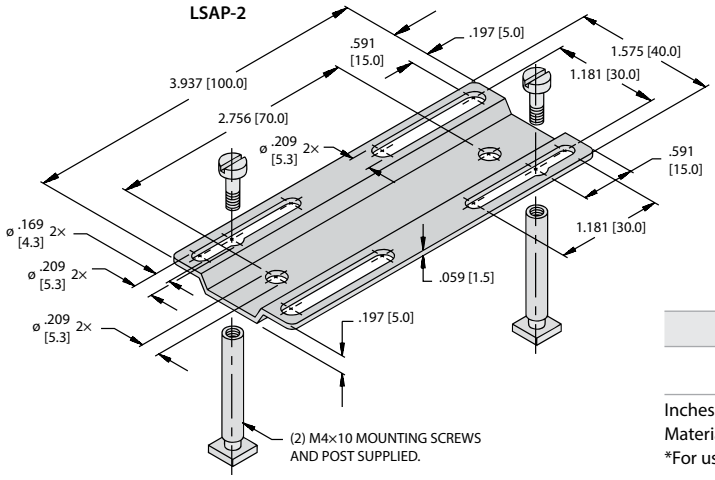
| Part Number | ID Number |
|---|---|
| MB-Q14/20 | A3147 |

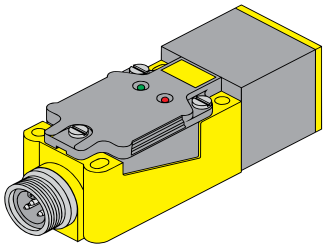
Inches [mm]
Material: Stainless steel
*For use with Q14 or Q20 sensors

We reserve the right to make technical alterations without prior notice.

# Accessories

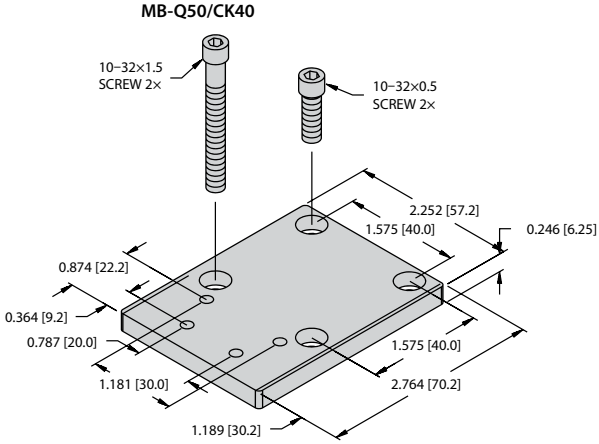
## Mounting Brackets

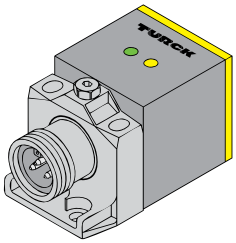


| Part Number | ID Number |
|---|---|
| LSAP-2 | M6942900 |

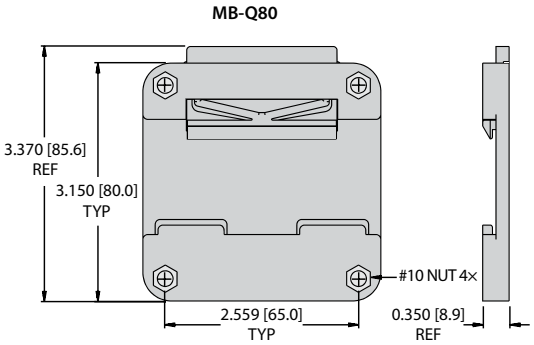
Inches [mm]
Material: Stainless steel
*For use with CP40

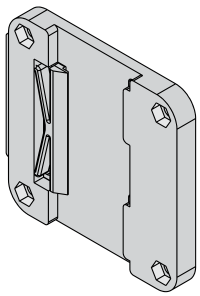


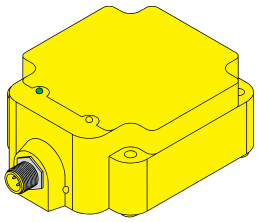



| Part Number | ID Number |
|---|---|
| MB-Q50/CK40 | A3148 |

Inches [mm]
Material: Stainless steel
*For use with Q50 or CK40 sensors





| Part Number | ID Number |
|---|---|
| MB-Q80 | A3144 |

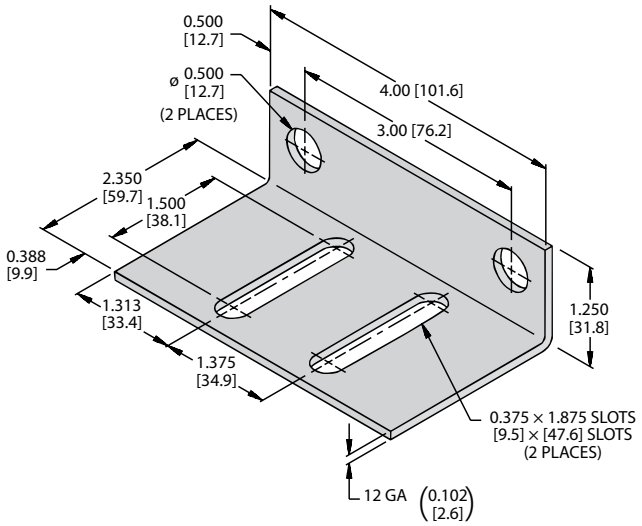
Inches [mm]
Bracket Material: Plastic
Insert Material: Stainless steel
*For use with Q80 sensors

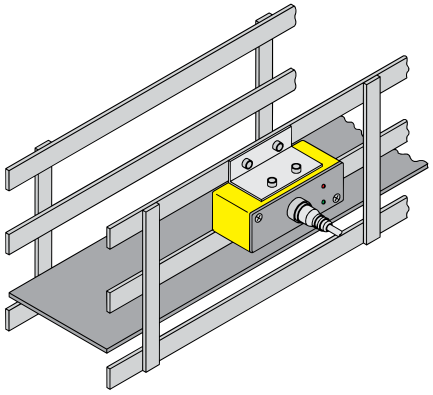
We reserve the right to make technical alterations without prior notice.

# Accessories

## Mounting Brackets

**MB-Q130**



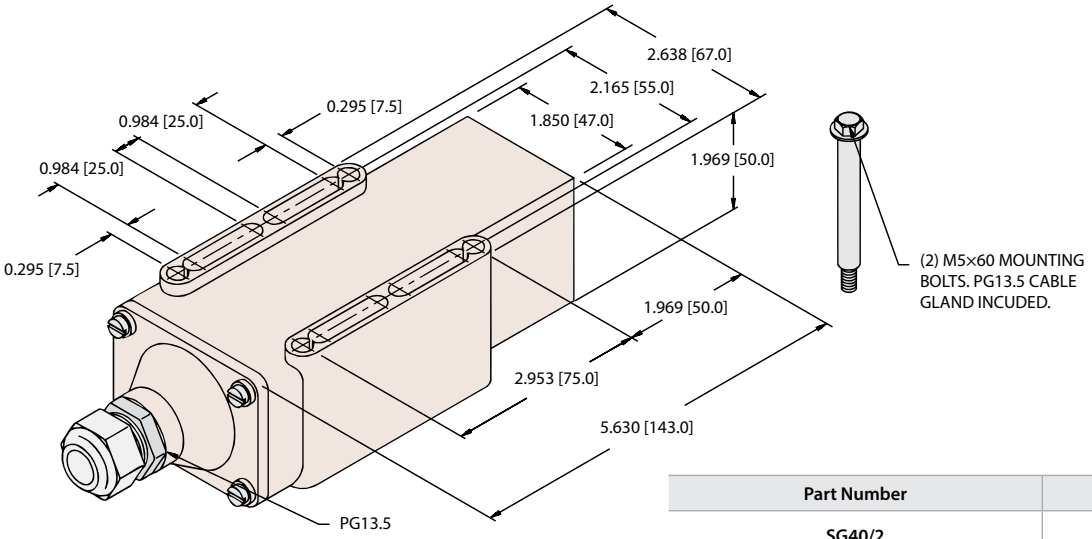



| Part Number | ID Number |
|---|---|
| **MB-Q130** | **A3145** |

Inches [mm]
Material: Stainless steel
*For use with Q130 sensors

## Protective Housing "Wet Suit"

**SG40/2**



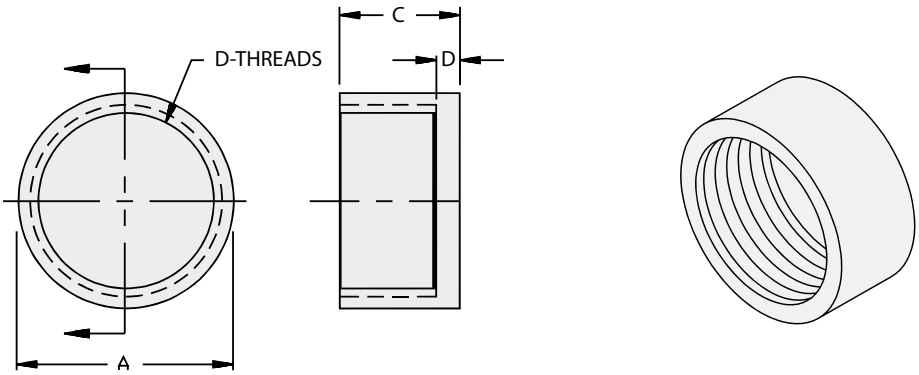

| Part Number | ID Number |
|---|---|
| **SG40/2** | **69497** |

Inches [mm]
Material: Plastic, Ultem
*Recommended cable diameters: 5 - 12 mm.
For use with CP40 sensors. For extreme protection class IP68 temperatures from –30 to 170 °C (338°F), and long term submersion up to 5 meters. Especially resistant to UV-radiation and ozone.

We reserve the right to make technical alterations without prior notice.

# Accessories

## PTFE / Ceramic Caps




| Part Number | ID Number | Barrel Diameter | Material | A | B | C | D |
|---|---|---|---|---|---|---|---|
| CAP 08-PTFE | A3055-1 | 8 mm Embeddable | PTFE | 0.375 [9.5] | 0.03 [0.7] | 0.437 [11.1] | M8x1 |
| CAP 08-DER | A9326 | 8 mm Embeddable | Delrin | 0.375 [9.53] | 0.03 [0.76] | 0.437 [11.1] | M8x1 |
| CAP 12-PTFE | M6966200 | 12 mm Embeddable | PTFE | 0.63 [16.0] | 0.03 [0.7] | 0.63 [16.0] | M12x1 |
| CAP 12-CER | A2530 | 12 mm Embeddable | Ceramic | 0.58 [14.7] | 0.035 [.89] | 0.35 [8.90]] | M12x1 |
| CAP 12-DER | A9321 | 12 mm Embeddable | Delrin | 0.58 [14.7] | 0.035 [.89] | 0.35 [8.90] | M12x1 |
| CAP 12N-CER | A9129 | 12 mm Non-embeddable | Ceramic | 0.58 [14.7] | 0.035 [.89] | 0.60 [15.2] | M12x1 |
| CAP 12N-DER | A9322 | 12 mm Non-embeddable | Delrin | 0.58 [14.7] | 0.035 [.89] | 0.60 [15.2] | M12x1 |
| CAP 18-PTFE | A3055 | 18 mm Embeddable | PTFE | 0.87 [22.0] | 0.04 [1.0] | 0.35 [9.0] | M18x1 |
| CAP 18N-PTFE | A3056 | 18 mm Non-embeddable | PTFE | 0.87 [22.0] | 0.04 [1.0] | 0.79 [20.0] | M18x1 |
| CAP 18-CER | A2531 | 18 mm Embeddable | Ceramic | 0.95 [24.1] | 0.045 [1.14] | 0.35 [8.90] | M18x1 |
| CAP 18-DER | A9323 | 18 mm Embeddable | Delrin | 0.95 [24.1] | 0.045 [1.14] | 0.35 [8.90] | M18x1 |
| CAP 18N-CER | A3056-4 | 18 mm Non-embeddable | Ceramic | 0.95 [24.1] | 0.045 [1.14] | 0 .70 17.8 | M18x1 |
| CAP 18N-DER | A9324 | 18 mm Non-embeddable | Delrin | 0.95 [24.1] | 0.045 [1.14] | 0 .70 17.8 | M18x1 |
| CAP 30-PTFE | A3057 | 30 mm Embeddable | PTFE | 1.34 [34.0] | 0.05 [1.2] | 0.35 [9.0] | M30x1.5 |
| CAP 30N-PTFE | A3058 | 30 mm Non-embeddable | PTFE | 1.34 [34.0] | 0.05 [1.2] | 1.14 [29.0] | M30x1.5 |
| CAP 30-CER | A2532 | 30 mm Embeddable | Ceramic | 1.50 [38.1] | 0.08 [2.03] | 0 .39 [9.90] | M30x1.5 |
| CAP 30-DER | A9325 | 30 mm Embeddable | Delrin | 1.50 [38.1] | 0.08 [2.03] | 0.39 [9.90] | M30x1.5 |
| CAP 30N-DER | A9320 | 30 mm Non-embeddable | Delrin | 1.50 [38.1] | 0.08 [2.03] | 1.00 [25.4] | M30x1.5 |
| CAP 47-PTFE | A3060 | 47 mm Embeddable | PTFE | 2.20 [55.8] | 0.06 [1.6] | 0.38 [9.7] | PG 36 |

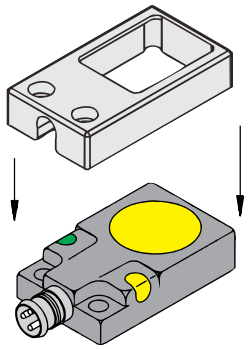
Inches [mm]

We reserve the right to make technical alterations without prior notice.

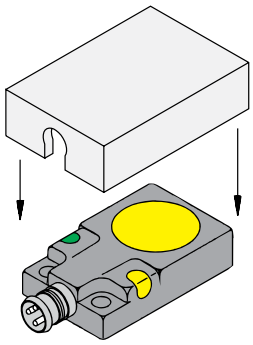
# Accessories

## Protective Covers

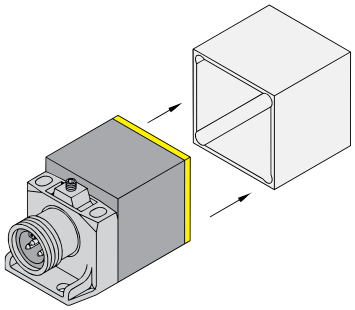
1



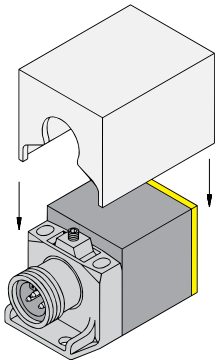
2



3



4



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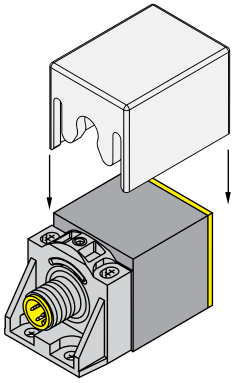

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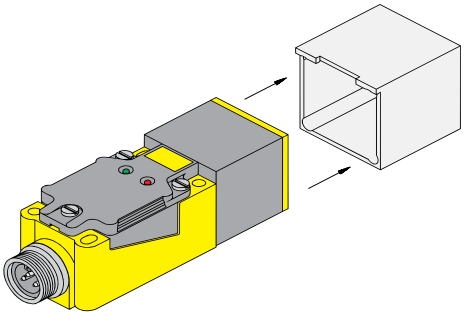

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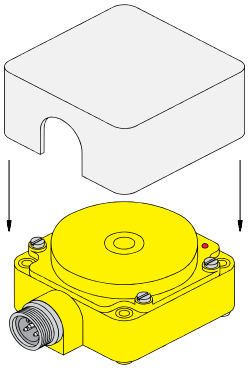
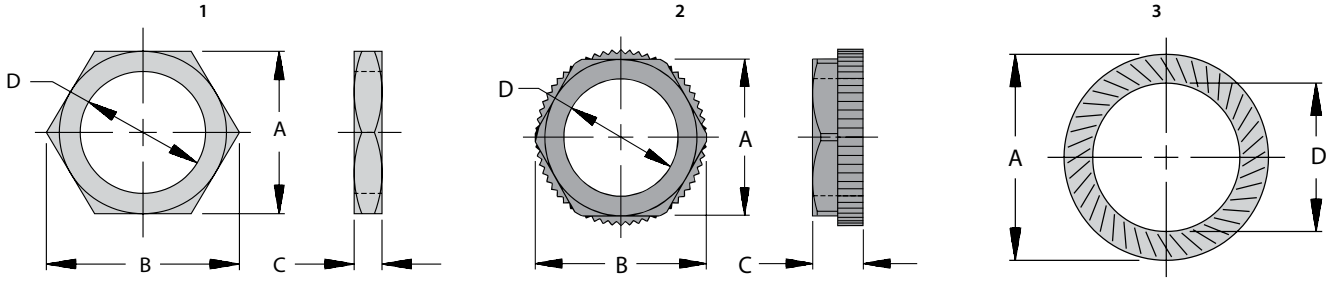


| Part Number | ID Number | Material | For Use With Sensor Housing | Drawing Image |
|---|---|---|---|---|
| **MBS-Q08TS** | **A9492** | Nickel Plated Steel | Q08 | 1 |
| **T-Q08-T-MCC** | **A5155** | PTFE | Q08 | 2 |
| **T-Q14-T-MCC** | **A5154** | PTFE | Q14 | 2 |
| **T-Q20-T-MCC** | **A5156** | PTFE | Q20 | 2 |
| **T-CK40-T-FC** | **A5202** | PTFE | CK40 | 3 |
| **T-CK40-D-FC** | **A5160** | Delrin | CK40 | **3** |
| **T-CK40-T-MCC** | **A5201** | PTFE | CK40 | **4** |
| **T-CK40-T-MCB** | **A9126** | PTFE | CK40 | **5** |
| **T-CP40-T-C** | **A5204** | PTFE | CP40 | **6** |
| **T-CP80-T** | **A5207** | PTFE | CP80 | **7** |

We reserve the right to make technical alterations without prior notice.

# Accessories

## Locknuts and Washers

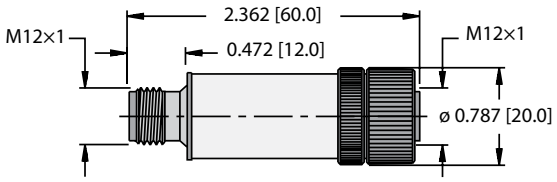



| Part Number | ID Number | Barrel Diameter | Materials | A | B | C | D | Dimension Drawing |
|---|---|---|---|---|---|---|---|---|
| **Locknut-M05** | **A3119** | 5 mm | SS | 0.28 [7.0] | 0.32 [8.0] | 0.10 [2.5] | M5x0.5 | 1 |
| **Locknut-SS08** | **A3123-08** | 8 mm | SS | 0.51 [13.0] | 0.58 [14.7] | 0.16 [4.0] | M8x1 | 1 |
| **Locknut-M8X1PTFE** | **A9696** | 8 mm | PTFE | 0.51 [13.0] | 0.58 [14.7] | 0.16 [4.0] | M8x1 | 1 |
| **Locknut-M12** | **A3122** | 12 mm | CPB | 0.67 [17.0] | 0.76 [19.4] | 0.16 [4.0] | M12x1 | 1 |
| **Locknut-MT12** | **A3109** | 12 mm | PTFE | 0.67 [17.0] | 0.76 [19.4] | 0.16 [4.0] | M12x1 | 1 |
| **Locknut-SS12** | **A3123** | 12 mm | SS | 0.67 [17.0] | 0.76 [19.4] | 0.16 [4.0] | M12x1 | 1 |
| **Locknut-P12** | **A3446** | 12 mm | PA | 0.67 [17.0] | 0.75 [19.0] | 0.32 [8.0] | M12x1 | 2 |
| **Locknut-M18** | **A3125** | 18 mm | CPB | 0.94 [24.0] | 1.08 [27.4] | 0.16 [4.0] | M18x1 | 1 |
| **Locknut-MT18** | **A3108** | 18 mm | PTFE | 0.94 [24.0] | 1.08 [27.4] | 0.16 [4.0] | M18x1 | 1 |
| **Locknut-SS18** | **A3123-0** | 18 mm | SS | 0.94 [24.0] | 1.08 [27.4] | 0.16 [4.0] | M18x1 | 1 |
| **Locknut-P18** | **A3448** | 18 mm | PA | 0.94 [24.0] | 1.06 [27.0] | 0.32 [8.0] | M18x1 | 2 |
| **Locknut-M30** | **A3126** | 30 mm | CPB | 1.42 [36.0] | 1.63 [41.4] | 0.20 [5.0] | M30x1.5 | 1 |
| **Locknut-MT30** | **A3107** | 30 mm | PTFE | 1.42 [36.0] | 1.63 [41.4] | 0.20 [5.0] | M30x1.5 | 1 |
| **Locknut-SS30** | **A3123-1** | 30 mm | SS | 1.42 [36.0] | 1.63 [41.4] | 0.20 [5.0] | M30x1.5 | 1 |
| **Locknut-P30** | **A3450** | 30 mm | PA | 1.42 [36.0] | 1.58 [40.1] | 0.39 [10.0] | M30x1.5 | 2 |
| **Locknut-PG36** | **A3440** | 47 mm | CPB | 2.01 [51.1] | 2.20 [56.0] | 0.20 [5.0] | PG36 | 1 |
| **LW-05** | **A100066** | 5 mm | SS | 0.39 [10] | N/A | N/A | 0.21 [5.3] | 3 |
| **LW-08** | **A3124** | 8 mm | SS | 0.55 [14] | N/A | N/A | 0.32 [8.2] | 3 |
| **LW-12** | **A3127** | 12 mm | SS | 0.70 [17.8] | N/A | N/A | 0.52 [13.2] | 3 |
| **LW-18** | **A3128** | 18 mm | SS | 1.06 [26.8] | N/A | N/A | 0.76 [19.3] | 3 |
| **LW-30** | **A3129** | 30 mm | SS | 1.76 [44.8] | N/A | N/A | 1.26 [32.0] | 3 |

Inches [mm]
*For use with threaded barrel sensors

We reserve the right to make technical alterations without prior notice.

## Smart Plugs

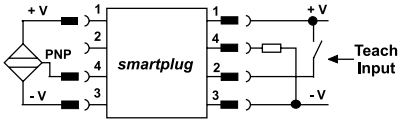
| Housing Style | Dimension Drawing |
|---|---|
| | A  |



Add function to existing installations. Solve control problems quickly in the field. Simple plug-in installation - uses industry standard M12×1 4-pin connectors (Eurofast). Programmed through "teach" input - Pin 2. LED aids programming.

### Wiring Diagrams

1





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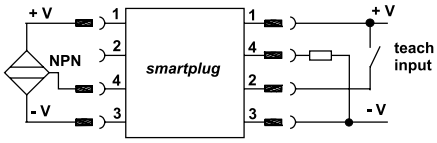




### Technical Data

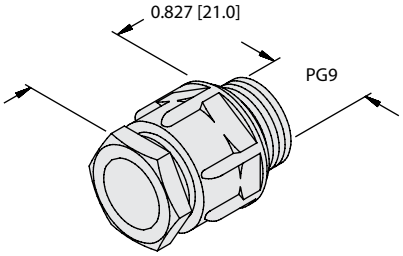
| | | | |
|---|---|---|---|
| Operating Voltage: | 10 - 30 VDC | Ambient Temperature Range: | 0 to 60 °C (32 to 140 °F) |
| Own Current Consumption: | < 10 mA | Display: | Red LED |
| Input Resistance: | > 10 kΩ | Housing Material: | Plastic PBTP/PA |
| Max. Input Frequency: | 10 kHz | Protection Standard: | IP 67 |
| Min. Response Time: | 0.1 ms | Connection Input: | 4-pin socket M12×1 |
| Max. Output Current: | 400 mA, Short-circuit proof | Connection Output: | 4-pin connector M12×1 |

| Part Number | ID Number | Teachable Function | Dimension Drawing | Wiring Diagram |
|---|---|---|---|---|
| **SPC1-AP6X** | **A0620** | Programmable pulse or interval counter. Adjustable N.O./N.C. Inverter | A | 1 |
| **SPC1-AN6X** | **A0600** | Programmable pulse or interval counter. Adjustable N.O./N.C. Inverter | A | 2 |
| **SPF1-AP6X** | **A0622** | Programmable over or under speed monitor. | A | 1 |
| **SPF1-AN6X** | **A0602** | Programmable over or under speed monitor. | A | 2 |
| **SPN1-AP6-ARN6X** | **A0624** | Converts a PNP input signal to an NPN output. Adjustable N.O./N.C. Inverter. | A | 1 |
| **SPN1-AN6-ARP6X** | **A0604** | Converts a NPN input signal to an PNP output. Adjustable N.O./N.C. Inverter. | A | 2 |
| **SPT1-AP6X** | **A0626** | Programmable timer for on-delay or off-delay between 1 and 65000 ms. | A | 1 |
| **SPT1-AN6X** | **A0606** | Programmable timer for on-delay or off-delay between 1 and 65000 ms. | A | 2 |

We reserve the right to make technical alterations without prior notice.

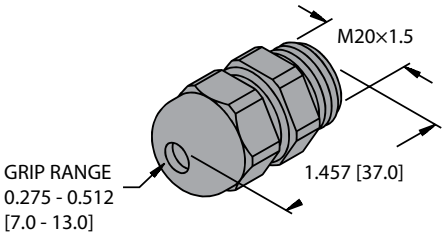
# Accessories

## Cable Glands



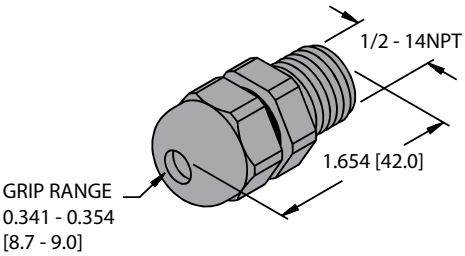

| Part Number | ID Number |
|---|---|
| **Cable Gland PG 9** | **A3054** |

Inches [mm]
Material: Polyamide plastic
Recommended Cable Style: 18 and 20 AWG
*For use with integral terminal chamber style sensors



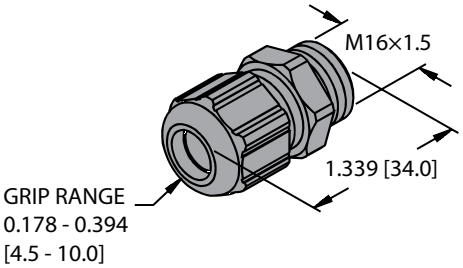

| Part Number | ID Number |
|---|---|
| **Cable Gland M20** | **A0936** |

Inches [mm]
Material: Polyamide plastic
*For use with integral terminal chamber style sensors




| Part Number | ID Number |
|---|---|
| **Cable Gland 1/2 - 14NPT** | **A3480** |

Inches [mm]
Material: Polyamide plastic
Recommended Cable Style: 18 and 20 AWG
*For use with integral terminal chamber style sensors



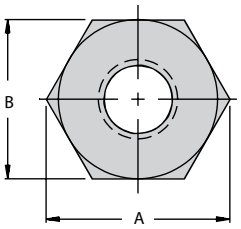

| Part Number | ID Number |
|---|---|
| **Cable Gland M16X1.5** | **A9348** |

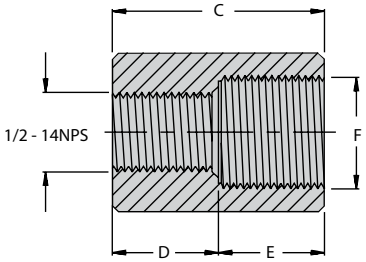
Inches [mm]
Material: Polyamide plastic
Recommended Cable Style: 18-24 AWG
*For use with integral terminal chamber style sensors

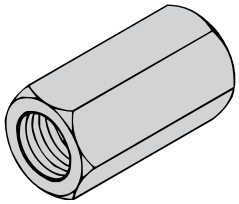
We reserve the right to make technical alterations without prior notice.

# Accessories

## Conduit Adapters

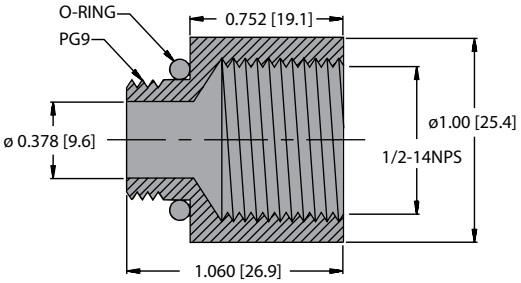


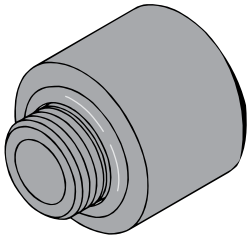



| Part Number | ID Number | Barrel Diameter | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|
| **TMF 12-G** | **A3310** | **12 mm** | 1.15 [29.2] | 1.00 [25.4] | 1.97 [50.0] | 0.50 [12.7] | 0.56 [14.2] | M12x1 |
| **TMF 18-G** | **A3320** | **18 mm** | 1.15 [29.2] | 1.00 [25.4] | 1.00 [25.4] | 0.50 [12.7] | 0.50 [12.7] | M18x1 |
| **TMF 30-G** | **A3345** | **30 mm** | 1.73 [44.0] | 1.50 [38.1] | 1.00 [25.4] | 0.60 [15.2] | 0.40 [10.2] | M30x1.5 |
| **TMF 47-G** | **A3360** | **47 mm** | 2.30 [58.4] | 2.00 [50.8] | 1.75 [44.5] | 1.05 [26.7] | 0.70 [17.8] | PG36 |
| *For use with G and P threaded barrel sensors | | | | | | | | |
| **TMF 18-MS** | **A3330** | **18 mm** | 1.15 [29.2] | 1.00 [25.4] | 2.00 [50.8] | 1.50 [38.1] | 0.50 [12.7] | M18x1 |
| **TMF 30-MS** | **A3355** | **30 mm** | 1.73 [44.0] | 1.50 [38.1] | 2.00 [50.8] | 0.60 [15.2] | 1.40 [35.6] | M30x1.5 |

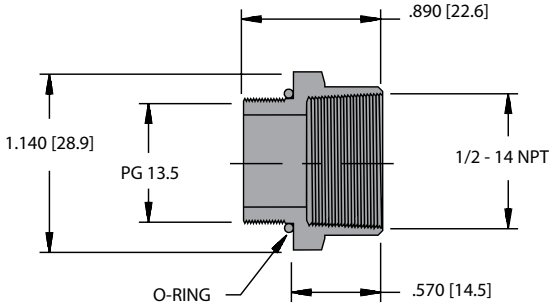
Inches [mm]
*For use with M and S threaded barrel sensors
Material: Aluminum

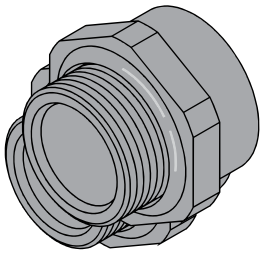


| Part Number | ID Number |
|---|---|
| **TMF 09-14** | **A3290** |

Inches [mm]
Material: Derlin
*For use with terminal chamber style sensors



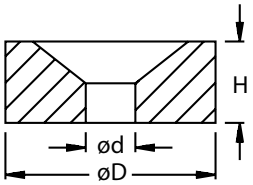
| Part Number | ID Number |
|---|---|
| **TMF 13.5-14** | **A4500** |
| **TMF 13.5-14/SS** | **A9639** |

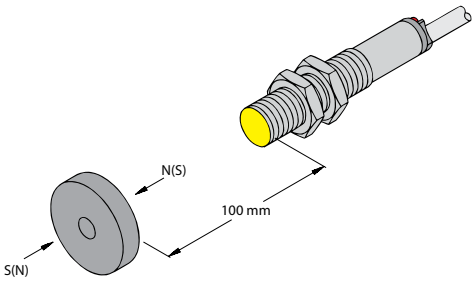
Inches [mm]
Material: Nickel plated brass
SS =Stainless steel
*For use with integral terminal chamber style sensors

We reserve the right to make technical alterations without prior notice.

# Accessories

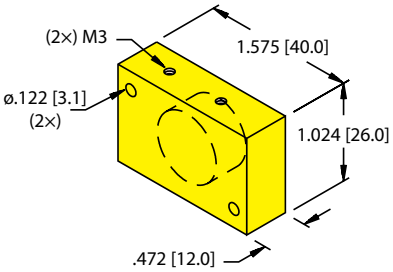
## Actuation Magnets




| Part Number | ID Number | Diameter-D | Height-H | Drilling for mounting-d | Sensing Range To BIM-M12 | Sensing Range To BIM-EG08 |
|---|---|---|---|---|---|---|
| **DMR15-6-3** | **6900216** | 15 | 6 | 3 | 36 | 32 |
| **DMR20-10-4** | **6900214** | 20 | 10 | 4 | 59 | 50 |
| **DMR31-15-5** | **6900215** | 31 | 15 | 5 | 90 | 78 |

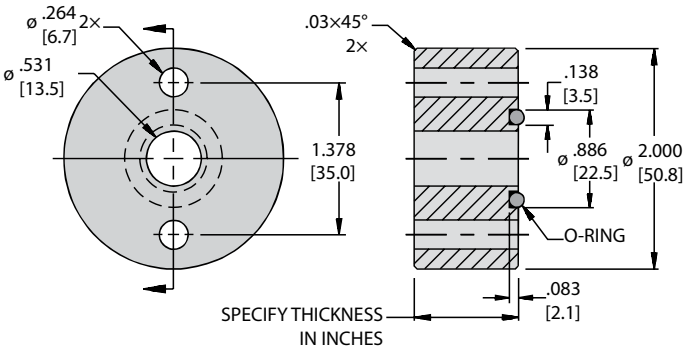
Inches [mm]
Material: Barium ferrite (Oxyd 300)




| Part Number | ID Number |
|---|---|
| **DM-Q12** | **6900367** |

Inches [mm]
Material: Plastic

## Spacer Plates

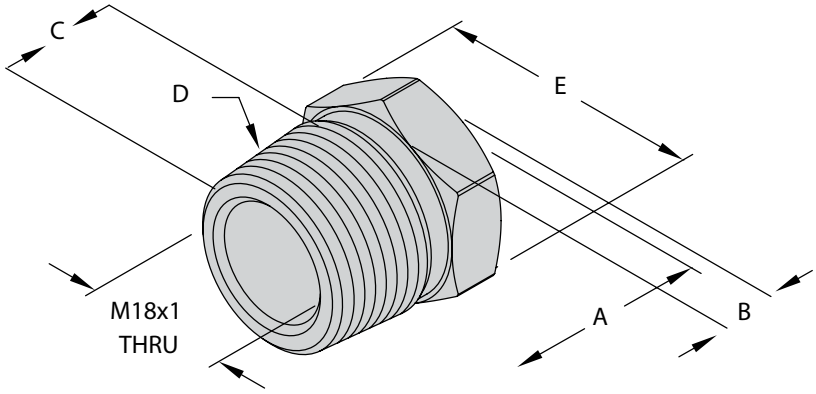



| Part Number |
|---|
| **SP–_.___ [1] –C** |

Inches [mm]
Material: Aluminum
*[1] Add desired thickness in inches.
Minimum thickness: 0.125", in .005 increments.
For use with cylinder position sensors, CRS Series.

We reserve the right to make technical alterations without prior notice.

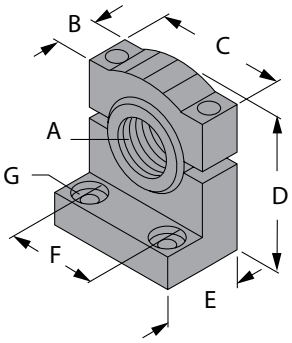
## Tank Adapter




| Part Number | ID Number | Barrel Diameter | A | B | C | D | E |
|---|---|---|---|---|---|---|---|
| **FSU-SS-M18-N3/4** | **A9983** | 18 mm | 1.0625 [27.05] | 0.32 [8.00] | 0.750 [19.05] | 3/4 - 14 NPT | 1-1/16" HEX |

Inches [mm]
Material: Stainless steel

## Gimble Bracket For Ultrasonic Sensors




| Part Number | ID Number | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|---|
| **TMB18SF** | **7700396** | M18×1 | 0.46 [11.71] | 2.31 [50.8] | 1.70 [43.2] | 1.00 [25.4] | 1.42 [36.1] | ø5 |
| **TMB30SC** | **7700400** | M30×1.5 | 0.50 [12.7] | 2.62 [66.5] | 2.31 [58.7] | 1.14 [29.0] | 2.00 [50.8] | ø7 |

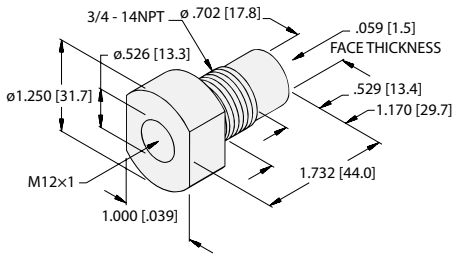
Inches [mm]
Material: Polyester

We reserve the right to make technical alterations without prior notice.

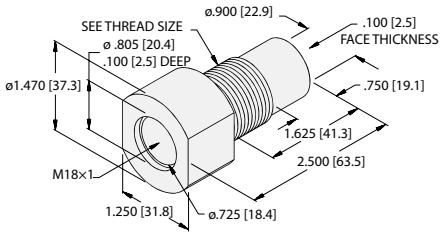
# Accessories

## Threaded Tank Wells

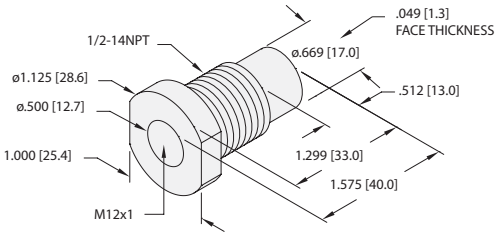
**TWD-12S**




**TWT-18**
**TWD-18**



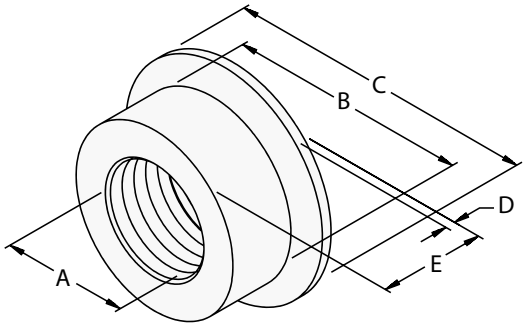

**TWN-12S-1/2NPT**



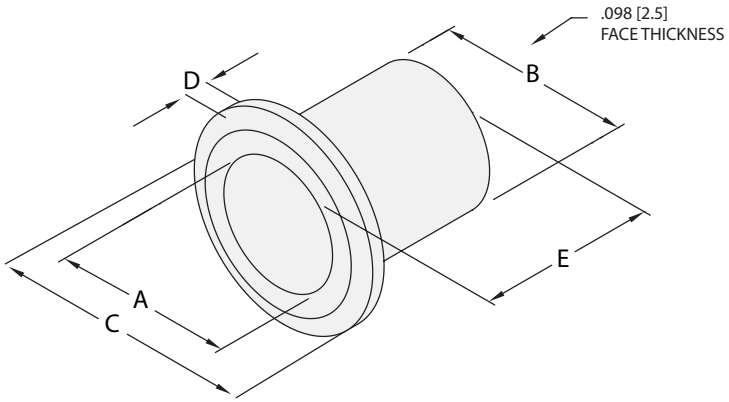

| Part Number | ID Number | Material | Thread Size | Drill Size | C |
|---|---|---|---|---|---|
| **TWD-12S** | **A5051** | Delrin | 3/4 - 14 NPT | 59/64 | 12 mm threaded capacitive sensors for liquid level sensing |
| **TWN-12S-1/2 NPT** | **A900028** | Nylon | 1/2 - 14NPT | 23/32 | 12 mm threaded capacitive sensors for liquid level sensing |
| **TWD-18S** | **A5055** | Delrin | 3/4 - 14 NPT | 59/64 | 18 mm threaded capacitive sensors for liquid level sensing |
| **TWT-18S** | **A5050** | PTFE | 3/4 - 14 NPT | 59/64 | 18 mm threaded capacitive sensors for liquid level sensing |
| **TWD-18S-1** | **A5057** | Delrin | 1 - 11 1/2NPT | 1 - 5/32 | 18 mm threaded capacitive sensors for liquid level sensing |
| **TWT-18S-1** | **A5056** | PTFE | 1 - 11 1/2NPT | 1 - 5/32 | 18 mm threaded capacitive sensors for liquid level sensing |

Inches [mm]

**TWTS-30**




**TWT-30TRi**



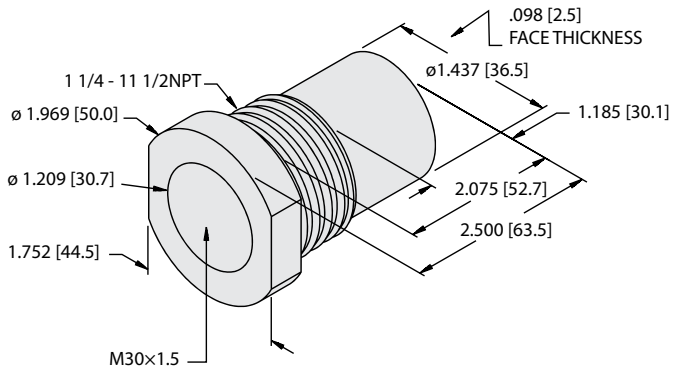

| Part Number | ID Number | A | B | C | D | E |
|---|---|---|---|---|---|---|
| **TWTS-1.5-30** | **A5077** | M30×1.5 | 1.500 [38.1] | 1.984 [50.4] | 0.11 [2.80] | 1.000 [25.4] |
| **TWTS-2-30** | **A5076** | M30×2.0 | 2.008 [51.0] | 2.520 [64.0] | 0.11 [2.80] | 1.000 [25.4] |
| **TWT-30TRI** | **A5061** | M30×1.5 | 1.339 [34.0] | 1.984 [50.4] | 0.187 [4.7] | 1.722 [43.7] |

Inches [mm]

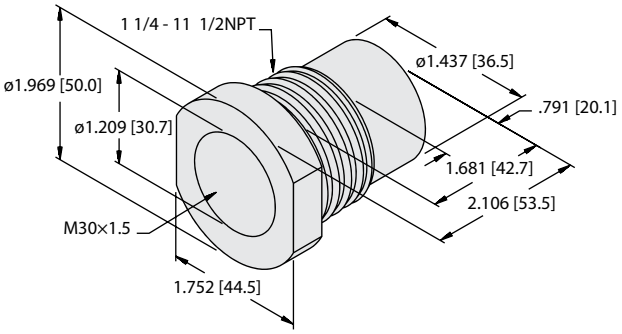
We reserve the right to make technical alterations without prior notice.

## Threaded Tank Wells

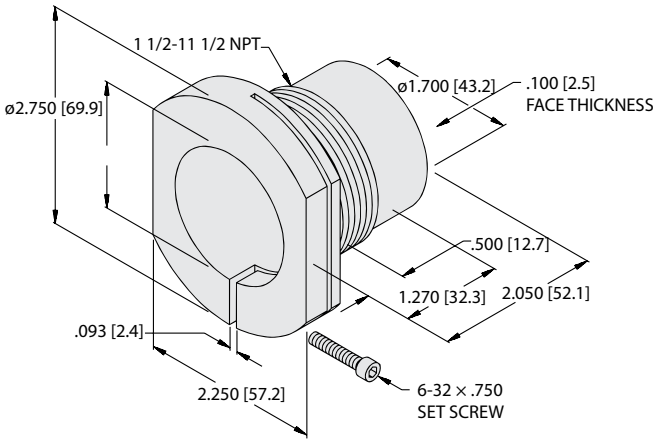
**TWD-30S**
**TWT-30S**




**TWD-30S-SHORT**
**TWT-30S-SHORT**




**TWD-40S**
**TWT-40S**



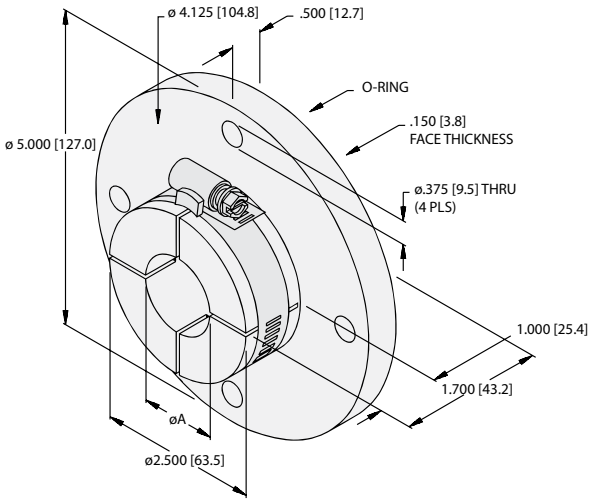

| Part Number | ID Number | Barrel Diameter | Thread Size | Drill Size | Application |
|---|---|---|---|---|---|
| **TWD-30S** | **A5065** | Delrin | 1 1/4 - 11 1/2NPT | 1 - 1/2 | 30 mm threaded capacitive sensors for liquid level sensing |
| **TWT-30S** | **A5060** | PTFE | 1 1/4- 11 1/2NPT | 1 - 1/2 | 30 mm threaded capacitive sensors for liquid level sensing |
| **TWD-30S-SHORT** | **A5063** | Delrin | 1 1/4 - 11 1/2NPT | 1 - 1/2 | 30 mm threaded capacitive sensors for liquid level sensing |
| **TWT-30S-SHORT** | **A5062** | PTFE | 1 1/4 - 11 1/2NPT | 1 - 1/2 | 30 mm threaded capacitive sensors for liquid level sensing |
| **TWD-40S** | **A5075** | Delrin | 1 1/4 - 11 1/2NPT | 1 - 47/64 | 40 mm smooth capacitive sensors for liquid level sensing |
| **TWT-40S** | **A5070** | PTFE | 1 1/4 - 11 1/2NPT | 1 - 47/64 | 40 mm smooth capacitive sensors for liquid level sensing |

Inches [mm]

We reserve the right to make technical alterations without prior notice.

# Accessories

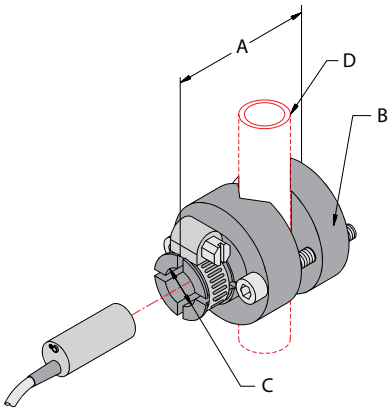
## Bolt-on Tank Wells

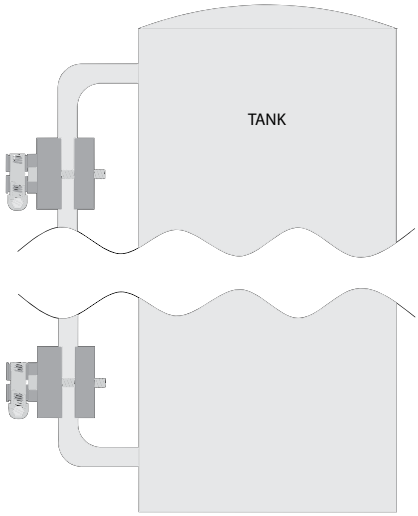



| Part Number | ID Number | A |
|---|---|---|
| TWU-30B | A5005 | 1.181 [30.0] |
| TWU-40B | A5000 | 1.575 [40.0] |

Inches [mm]
Material: UHMW/PE
Pressure Rating: 80 PSI
*For use with 30 and 40 mm barrel sensors

## Bolt-on Site Bracket




| Part Number | ID Number | A | B | C | D |
|---|---|---|---|---|---|
| | | | | (Non/or Threaded) | Across Flats |
| TSG-12 | A2500 | 1.75 [44.5] | 1.25 [31.8] | 12 mm | 0.37-0.81 [9.40-20.6] |
| TSG-18 | A2501 | 1.90 [48.3] | 1.48 [37.5] | 18 mm | 0.63-1.12 [16.0-28.4] |
| TSG-30 | A2502 | 3.45 [87.6] | 2.00 [50.8] | 30 mm | 1.00-1.75 [25.4-44.5] |

Inches [mm]

We reserve the right to make technical alterations without prior notice.

# Accessories

## Test Box

**TB3-CP80**

**TB4 V.2**

**TX1-Q20L60**

**USB-2-IOL-0002**

| Part Number | ID Number | Description |
|---|---|---|
| TB3-CP80 | 6967112 | DC powered test box allows you to quickly test 2, 3, 4 wire DC sensors or Namur output sensors, includes batteries. |
| TB4 V.2 | 6967113 | Analog test box for sensors with analog or switching outputs, includes batteries. |
| TX1-Q20L60 | 6967114 | Teach adapter for inductive encoders, linear position, angle, ultrasonic and capacitive sensors. |
| USB-2-IOL-0002 | 6825482 | IO Link master with integrated USB interface for parameterization of IO Link compliant linear position sensors via PC. |

## Limit Value Monitor

**Functional Description:**
The limit value monitors IM43-13-SR and IM43-14-SRi are single-channel devices and alternately monitor measuring current of 0/4-20 mA or measuring voltages of 0/2-10 V. The three limit values are set via the front panel teach button. In addition, a voltage of approx. 18 V (at 35 mA max.) is provided, which can be used to power transmitters or sensors. The output mode is jumper programmable at terminals 5-8.

| PIN | Terminal Function |
|---|---|
| 1 | (+) 18 VDC Sensor Supply |
| 2 | (+) Current Input |
| 3 | (+) Voltage Input |
| 4 | (-) 0 V Sensor Common |
| 5 | (-) Common for 0/4 mA Minimum Selection |
| 9 | Input for 0/4 mA Minimum Selection |
| 12 | Relay Output 1 |
| 13 | Relay Output 1 |
| 14 | Relay Output 2 |
| 15 | Relay Output 2 |
| 11 | SRi - 0/4-20 mA Output |
| 16 | SRi - 0/4-20 mA Output |
| 17 | Relay Output 3 |
| 18 | Relay Output 2 |
| 19 | 20-250 VUC Supply Power |
| 20 | 20-250 VUC Supply Power |

We reserve the right to make technical alterations without prior notice.

Notes

Notes

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## Important Safety Warning

Turck sensors and peripheral devices DO NOT include the self-checking redundant circuitry required to permit their use in personnel safety applications. A device failure or malfunction can result in either an energized or a de-energized output condition.

Never use these products as sensing devices for personnel protection. Their use as safety devices may create unsafe conditions that could lead to serious bodily injury or death.

## Proximity Sensing Compared to Conventional Methods

Turck proximity sensors are designed using solid state technology and contain no moving parts to wear out, as is common in mechanical switches. They require no physical contact for actuation, no cams or linkages, have no contacts to bounce or arc and are completely encapsulated, making them impervious to most liquids, chemicals and corrosive agents. In addition, Turck has a line of sensors that can be used in hazardous explosive environments without any special enclosures.
See Hazardous Area Locations in Section A.

**If any of the following conditions exists, a Proximity Sensor should be used:**

- The object being detected is too small, too lightweight, or too soft to operate a mechanical switch.
- Rapid response and high switching rates are required, as in counting or ejection control applications.
- Object has to be sensed through non-metallic barriers such as glass, plastic, or paper carton.
- Harsh environments demand improved sealing properties, preventing proper operation of mechanical switches.
- Long life and reliable service are required.
- Fast electronic control system requires bounce-free input signal.

## Common Industries for Proximity Sensors

- Mining and Metallurgy
- Foundries
- Automatic Assembly and Robotics
- Conveyor Systems in Airports and Factories
- Chemical Plants and Oil Refineries
- Semiconductor Equipment
- Sheet Metal Fabrication
- Automotive and Appliance Plants
- Electroplating Installations
- Can Plants, Food Processing and Breweries
- Shipyards, Docks, and Off-shore Drilling Rigs
- PC-board Handling Machinery

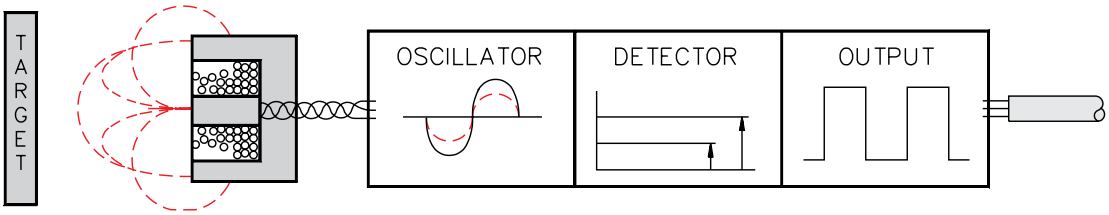
## Typical Applications

- Parts Detection
- Parts Counting
- Positioning
- Motion and Speed Control
- Bottle Cap or Can Lid Detection
- Punch Press Feed and Ejection Control
- Broken or Damaged Tool Detection
- Void or Jam Control
- Feed Control
- Indexing
- Inter-lock Control
- Liquid Level Control
- Leak Detection
- Machine Programming
- Valve Position Indication
- Missing Parts Control
- Parts Diverting
- Coin Counting and Sorting
- Edge Guide Control
- Robotics and Conveyors

We reserve the right to make technical alterations without prior notice.

## Operating Principle Ferrite Core

Figure 1



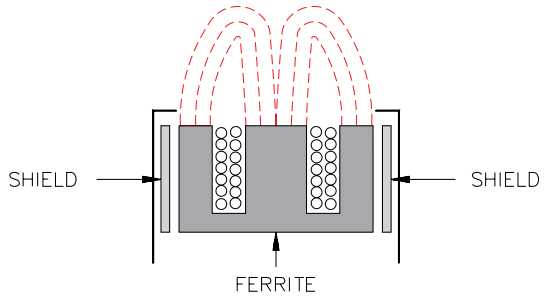

An inductive proximity sensor consists of a coil and ferrite core arrangement, an oscillator and detector circuit, and a solid-state output (**Figure 1**). The oscillator creates a high frequency field radiating from the coil in front of the sensor, centered around the axis of the coil. The ferrite core bundles and directs the electro-magnetic field to the front.

When a metal object enters the high-frequency field, eddy currents are induced on the surface of the target. This results in a loss of energy in the oscillator circuit and, consequently, a smaller amplitude of oscillation. The detector circuit recognizes a specific change in amplitude and generates a signal which will turn the solid-state output "ON" or "OFF". When the metal object leaves the sensing area, the oscillator regenerates, allowing the sensor to return to its normal state.

## Mounting

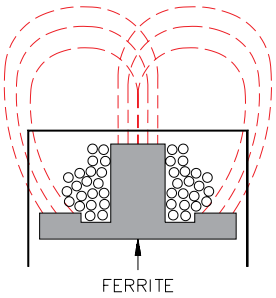
Turck inductive proximity sensors are available with either a shielded coil, designated by "Bi" in the part number, or a unshielded coil, designated by "Ni" in the part number. Embeddable (shielded) sensors may be safely flush-mounted in ferrous metal. Nonembeddable (unshielded) sensors require a metal free area around the sensing face. Due to the possible interference of the electromagnetic fields generated by the oscillators, minimum spacing is required between adjacent or opposing sensors. See mounting characteristics at the front of each section.

It is good engineering practice to mount sensors horizontally or with the sensing face looking down. Avoid mounting sensors with the sensing face looking up wherever possible, especially if metal filings or chips are present.




Embeddable (Shielded Sensor)

Embeddable construction includes a metal band that surrounds the ferrite core and coil arrangement. This helps to "bundle" or direct the electromagnetic field to the front of the sensor, allowing the sensor to be mounted fully surrounded by metal (flush mounting).




Nonembeddable (Nonshielded Sensor)

Nonembeddable sensors do not have this metal band; therefore, they have a longer operating distance and are side sensitive.

We reserve the right to make technical alterations without prior notice.

## Operating Distance (Sensing Range) Considerations

The operating distance (S) of inductive proximity sensors is basically a function of the diameter of the sensing coil. The maximum operating distance is achieved with the use of a standard or larger target. The rated operating distance (Sn) for each model is given in the manual. When using a proximity sensor the target should be within the assured range (Sa).

## Standard Target

A square piece of mild steel having a thickness of 1 mm (0.04 in) is used as a standard target to determine the following operating tolerances. The length and width of the square is equal to either the diameter of the circle inscribed on the active surface of the sensing face or three times the rated operating distance Sn, whichever is greater.

## Operating Distance = S

The operating distance is the distance at which the target approaching the sensing face along the reference axis causes the output signal to change.

## Rated Operating Distance = Sn

The rated operating distance is a conventional quantity used to designate the nominal operating distance. It does not take into account either manufacturing tolerances or variations due to external conditions such as voltage and temperature.

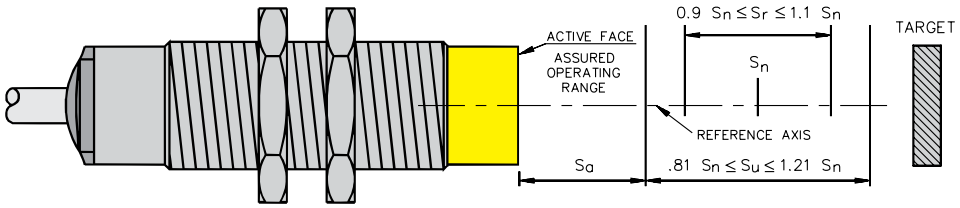
## Effective Operating Distance = Sr 0.9 Sn ≤ Sr ≤ 1.1 Sn

The effective operating distance is the operating distance of an individual proximity sensor at constant rated voltage and 23°C (73°F). It allows for manufacturing tolerances.

## Usable Operating Distance = Su 0.81 Sn ≤ Su ≤ 1.21 Sn

The usable operating distance is the operating distance of an individual proximity sensor measured over the operating temperature range at 85% to 110% of its rated voltage. It allows for external conditions and for manufacturing tolerances.

## Assured Operating Range = Sa 0 ≤ Sa ≤ 0.81 Sn




The assured operating range is between 0 and 81% of the rated operating distance. It is the range within which the correct operation of the proximity sensor under specified voltage and temperature ranges is guaranteed.

We reserve the right to make technical alterations without prior notice.

# Technical Reference | Inductive

## Operating Distance (Sensing Range) Considerations

Turck standard inductive sensors use a single coil wound around a ferrite core. This coil induces eddy currents on the metal target, which results in energy loss in the oscillator circuit, enabling the detection of metal objects. The energy loss is greatly depended on the magnetic properties of the metal target. Ferrous and nonferrous metals affect the sensor differently, resulting in a different operating distance to different metals.

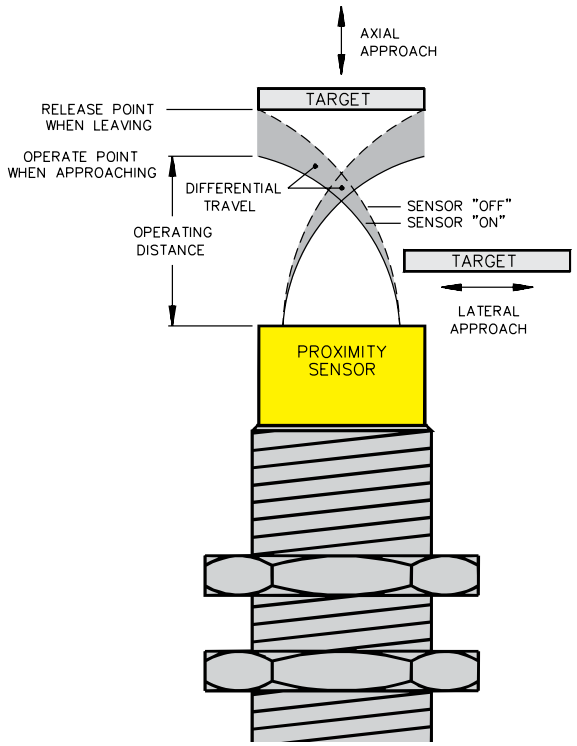
These correction factors apply to standard inductive sensors when a nonferrous target is being detected. The correction factors are nominal values. Deviations may be due to variations in oscillator frequency, alloy composition, purity and target geometry.

| | |
|---|---|
| Aluminum foil | 1.00 |
| Stainless steel | 0.60 to 1.00 |
| Mercury | 0.65 to 0.85 |
| Lead | 0.50 to 0.75 |
| Brass | 0.35 to 0.50 |
| Aluminum (massive) | 0.35 to 0.50 |
| Copper | 0.25 to 0.45 |

- Correction factors do not apply to Turck Uprox ® sensors. These sensors detect all metals at the same range.
- Turck also manufactures "nonferrous only" sensors. These sensors will selectively detect nonferrous targets at the rated operating distance. They will not detect ferrous targets; however, ferrous targets positioned between them and a nonferrous target may mask the nonferrous target. The rated operating distance of these sensors is not subject to the correction factors that apply to standard inductive sensors.

## Differential Travel (Hysteresis)

Figure 2




### Actuation Mode

Inductive sensors can be actuated in an axial or lateral approach (**Figure 2**). It is important to maintain an air gap between the target and the sensing face to prevent physically damaging the sensors.

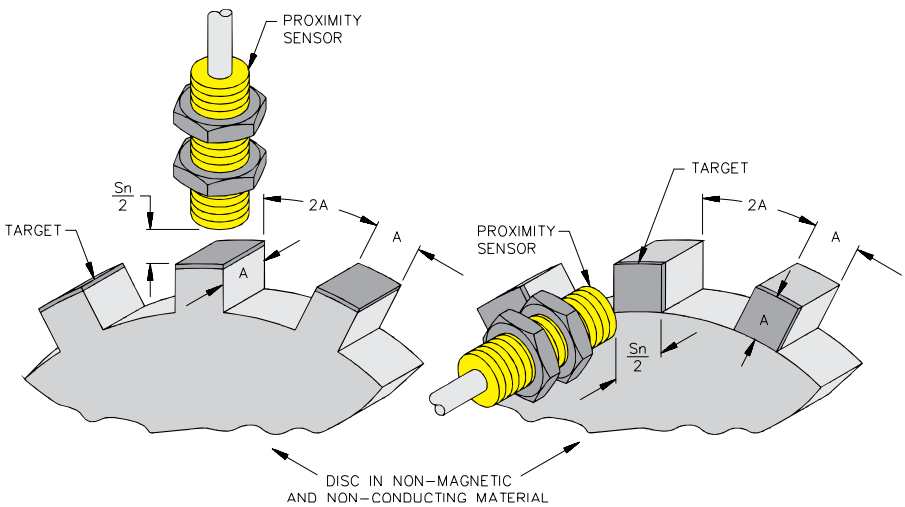
The difference between the "operate" and "release" points is called differential travel (See shaded area in Figure 7). It is factory set at less than 15% of the effective operating distance.

Differential travel is needed to keep proximity sensors from "chattering" when subjected to shock and vibration, slow moving targets, or minor disturbances such as electrical noise and temperature drift.

We reserve the right to make technical alterations without prior notice.

## Maximum Switching Frequency

Figure 3




When using inductive sensors in high speed application, the maximum rated switching frequency is only guaranteed when using optimal target dimensions and sensor spacing. The minimum recommended parameters to use are shown in **Figure 3**. Using smaller targets, target spacing or increasing the sensor to target air gap may result in a reduction of the actual achievable maximum switching frequency. See page J4 for determining dimension "A" of a standard target.

## Weld Field Immunity

Many critical applications for proximity sensors involve their use in welding environments. AC and DC resistance welders used in assembly equipment and other construction machines often require in excess of 20 kA to perform their weld function. Magnetic fields generated by these currents can cause false outputs in standard sensors.

Turck has pioneered the design and development of inductive proximity sensors that not only survive such environments, but remain fully operative in them.

The limit of the weld field immunity depends on the kind of field (AC or DC), the housing size of the sensor and its location in the field. For example, in an AC or DC weld field, the "/S34" inductive sensors can be positioned one inch from a 20 kA current carrying bus.

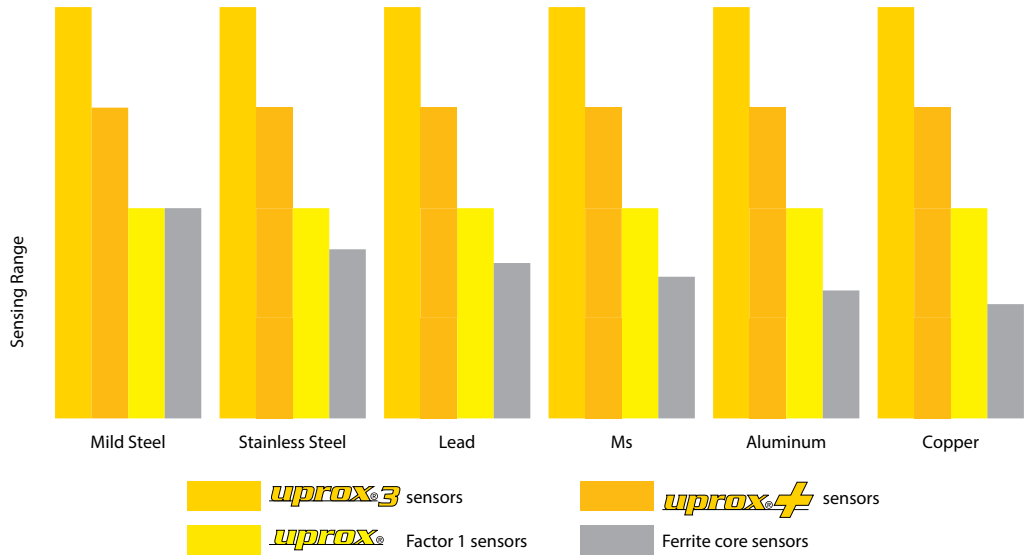
**Reference Values for Magnetic Induction:**

| I [kA] | 12.5 mm | 25 mm | 50 mm | 100 mm |
|---|---|---|---|---|
| **5** | 80 mT | 40 mT | 20 mT | 10 mT |
| **10** | 160 mT | 80 mT | 40 mT | 20 mT |
| **20** | 320 mT | 160 mT | 80 mT | 40 mT |
| **50** | 800 mT | 400 mT | 200 mT | 100 mT |
| **100** | 1600 mT | 800 mT | 400 mT | 200 mT |

Gauss = 10 x mT

We reserve the right to make technical alterations without prior notice.

## Operating Principle Uprox®

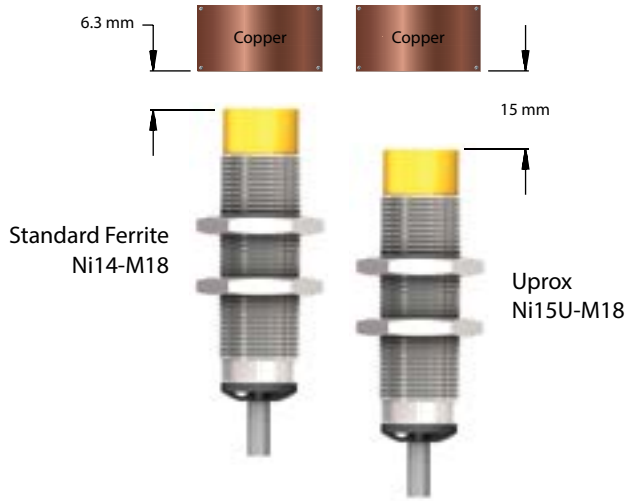



Operating distances comparison of Uprox sensors and standard inductive sensors.

Turck Uprox is a patented next generation development of inductive sensors that uses a multi-coil system. Active coil(s) induces eddy currents on the metal target and passive coil(s) are affected by these eddy currents. Ferrous and nonferrous metals have the same effect on the two coils. Therefore, all metals, including galvanized metals, have the same rated operating distance.

## Uprox Advantage

Figure 4



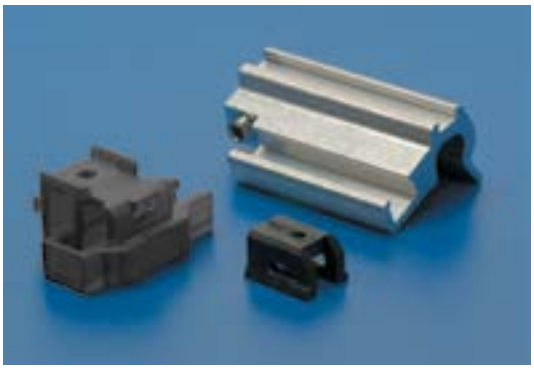

- No Correction Factor - Same rated operating distance for all metals.
- Extended Operating Distance - Up to 400% greater than standard inductive sensors when using non-ferrous targets (**Figure 4**).
- Weld Field Immunity - Uprox is unaffected by strong electromagnetic AC or DC fields because of its unique patented design.
- High Switching Frequencies - Up to 10 times faster than standard inductive sensors.
- Extended Temperature Range - Uprox+ can withstand temperatures up to 85 °C (+185 °F) with a ±15% temperature drift.
- Select Uprox3 sensors are IO-Link compatible.

We reserve the right to make technical alterations without prior notice.

## Cylinder Position Sensors – Magneto-Resistive

Turck Magneto-resistive cylinder position sensors are used for the detection of magnet equipped pistons on pneumatic and other types of cylinders. These non-contact sensors are able to determine the position of the cylinder piston without diminishing the integrity of the cylinder itself. This allows the sensors to operate without intruding upon the cylinder, keeping the system completely intact.

Turck has taken the approach of using only two sensor styles along with various adapter brackets to fit each individual cylinder's requirements. The "**UNT**" and "**UNR**" housings were designed to fit into specific grooves found in extruded profile type cylinders as stand alone devices without the need for any additional brackets. The UNT style was made to fit into a 5.2 mm "T" groove and the UNR was made for use in a 4.0 mm round groove, neither requiring additional hardware for mounting. Both of these designs allow the sensor to be dropped in from above anywhere along the span of the cylinder.



Cylinder brackets allow Turck sensors to mount on most cylinder styles including round, tie-rod, extruded profile groove, and dovetail versions.

**Where Can I Use a Magneto-Resistive Sensor?**

- Material handling
- Automated assembly
- Stamping
- Conveying
- Sorting
- Product positioning
- Industrial robots

We reserve the right to make technical alterations without prior notice.

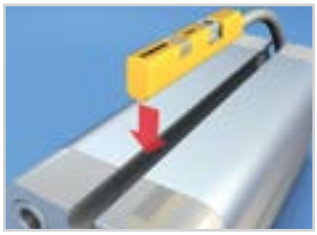
# Technical Reference | Magnetic

## Cylinder Position Sensors – Magneto-Resistive (continue)

Turck translated this "drop in from the top" approach when designing the adapter brackets as well. By eliminating the need to slide the sensor in from the end of the cylinder it reduces installation time, alleviates the need for the cylinder to be disassembled, and allows for installation right on the floor without interrupting the operation of the cylinder. These sensors are manufactured using a plastic overmolding technology, which allows us to completely seal sensors into smaller packages without compromising on durability. Smaller sensors that are compact with very low profiles also reduce the chance of damage when mounted to the outside of the cylinder.

## Turck Magneto-Resistive Sensor Advantage

**Reliable Mounting**
The sensor is mounted in the cylinder's groove and tightened with a screw. Located near the cable outlet, the screw helps make sure the sensor doesn't move during vibration or if the cable is pulled.



**Visible LED**
A bright LED indicates the current switching status, and is visible from any position.

**Compact Housing Style**
UNT models measure only 28 mm, while UNR models measure only 18 mm, making them the most compact sensors available on the market. Since the active sensing face is located at the end of the sensor, the piston can be detected up to the end, even on compact short stroke cylinders.

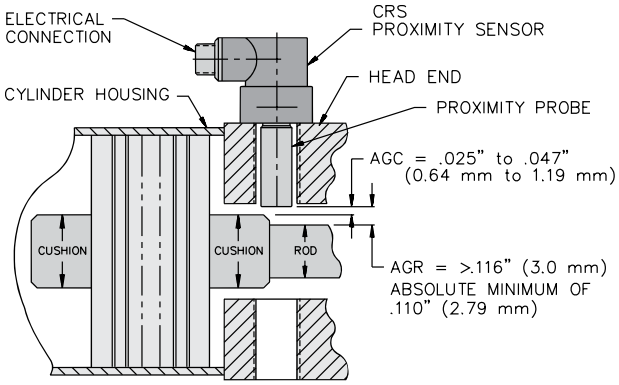
**Standards**
Magneto-resistive technology enables the sensor to detect the exact position of the magnet, while avoiding multiple switching points. It also exceeds IEC standards EN60947-5-2 and EN61000-4-6, making it immune to high levels of EMC.

## Cylinder Position Sensors – CRS Inductive

Turck's CRS sensors are designed to be mounted into the head end or cap end of hydraulic and pneumatic cylinders. They operate at 1,500 psi and mechanically withstand 3,000 psi of continuous pressure.

**AGC - Air Gap Cushion**
This dimension is recommended to allow for mechanical tolerances and wear.

**AGR - Air Gap Rod**
The rod-to-cushion step must be large enough to allow the sensor to turn off when the piston leaves. If the step is too small, the sensor will lock-on due to the hysteresis of the sensor.

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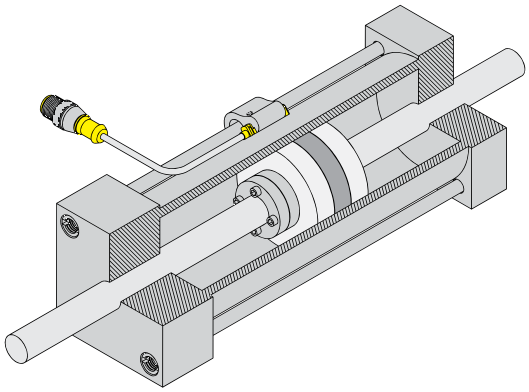
## Permaprox Inductive Magnet Operated Sensors

Turck's Permaprox cylinder sensors are used for detection of magnet equipped pistons on pneumatic cylinders through a non-magnetic cylinder wall. A patented electronic magnetic circuit involving new state-of-the-art materials forms the basis of operation for these sensors.

The characteristics of this innovative technology have distinct advantages over Hall effect switches and reed devices. Specific sensors no longer have to be matched to specific magnet strengths. Other features include extremely high repeatability and the elimination of multiple actuation points.



## Actuation Area/Differential Travel

Figure 5

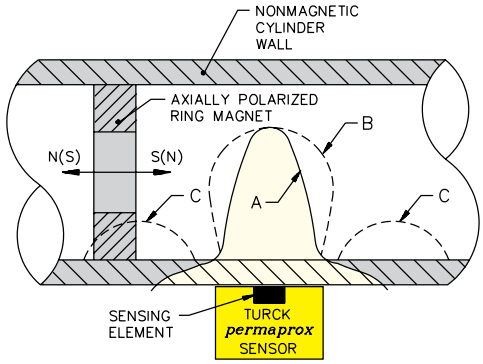



Figure 6

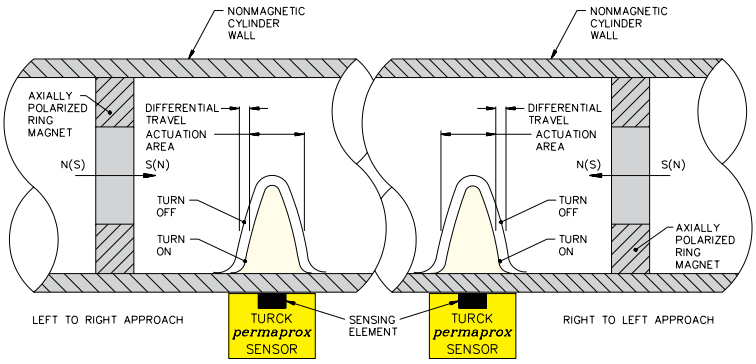



**Figure 5 curve definitions:**
A) Typical actuation area of Permaprox sensors
B) Typical primary actuation area for reed switches
C) Typical secondary actuation area for reed switches

The Permaprox sensors, unlike most magnet operated sensors, respond to only one component of magnetic induction, namely the component parallel to the cylinder. **Figure 5** shows the typical actuation area of a Permaprox sensor compared to that of reed switches. It is a common problem for reed switches to have more than one actuation area. Since these switches operate on a narrow range of magnetic field strengths, mismatching often causes multiple switching points. The Permaprox sensors, however, reliably operate over a range of 20-350 gauss (2-35 mT).

The actuation area will depend on the width and field strength of the magnet. As shown in **Figure 6**, the actuation point will differ depending on the direction of piston travel. These points are not the same, but are very repeatable.

## Permaprox Weld Field Immunity

All Turck Permaprox sensors with the "S34" suffix in the part number are resistant to AC weld fields. If the field is pulsing, as with AC resistance welders, the sensor locks the output in its last known stable state. When the pulsing field subsides, the sensor updates its output accordingly. The sensors are not immune to constant magnetic fields, such as permanent magnets or DC resistance welders, and will change state.

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# Technical Reference | Capacitive

Capacitive sensors utilize a non-contact sensing technology that detects a wide variety of materials. When equipped with a sensitivity adjustment users can tune out certain materials such as glass or plastic, making this type of sensor a common choice for point level applications. Typical applications include but are not limited to:

- Liquid Level Control for both flammable and non-flammable materials.
- Package Inspection for product content and/or fill level.
- Wire-Break Detection for wire sizes down to .003".
- Plastic Pellet Detection in a hopper for injection molding processes.
- Grain or Food Products Level Detection; intrinsically safe models available.
- Small Metal Parts Detection; greater sensing range than comparable Inductive Sensors.

## Operating Principle

Figure 7

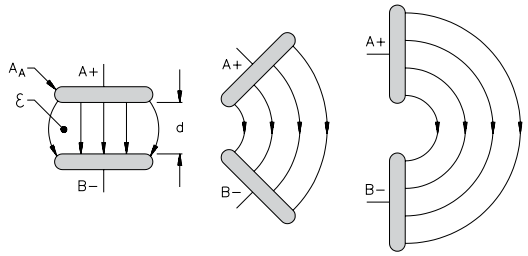
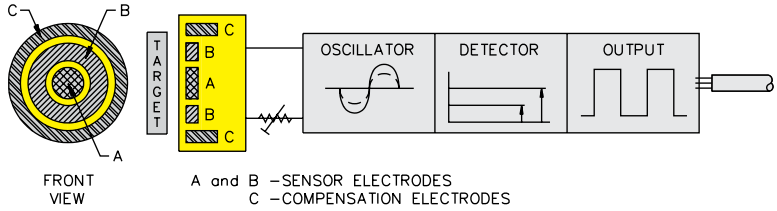



Figure 8




The active element is formed by two metallic electrodes positioned much like an "opened" capacitor (**Figure 7**).

Electrodes A and B are placed in a feedback loop of a high frequency oscillator. When no target is present, the sensor's capacitance is low, therefore the oscillation amplitude is small. When a target approaches the face of the sensor, it increases the capacitance. This increase in capacitance results in an increased amplitude of oscillation.

The amplitude of oscillation is measured by an evaluating circuit that generates a signal to turn on or off the output (**Figure 8**).

We reserve the right to make technical alterations without prior notice.

## Operating Principle

Capacitance is a function of the surface area of either electrodes (A or B), the distance between the electrodes (d), and the dielectric constant of the material (ε) between the electrodes.

$$C = \frac{\varepsilon \times A}{d}$$

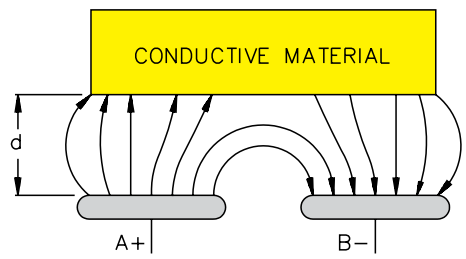
C = capacitance of sensor

A = surface area of either electrode

d = distance between two electrodes

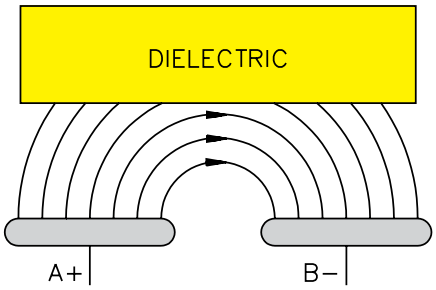
ε = dielectric constant of material between the electrodes

Figure 9




When a Conductive Target enters the sensor's field, it forms a counter electrode to the active face of the sensor, thus decreasing the distance between the electrodes (d) and increasing their average surface area (**Figure 9**). The capacitance with a metal target present is always greater than the capacitance of the circuit in the absence of the target. Reduction factors for different metals are not a consideration when using capacitive sensors.

Figure 10




When a Non-Conductive Target enters the sensor's field, it acts as an electrical insulator between electrodes A and B (**Figure 10**). The dielectric constant of the material (ε) is a measure of its insulation properties. All liquids and solids have a greater dielectric constant than air (εair = 1). Therefore, the capacitance with a non-metallic target present is always greater than the capacitance of the circuit in the absence of the target.

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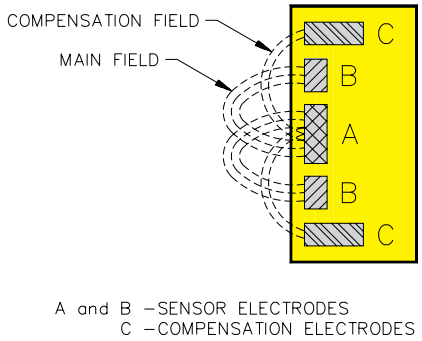
## Temperature and Environmental Conditions

Figure 11



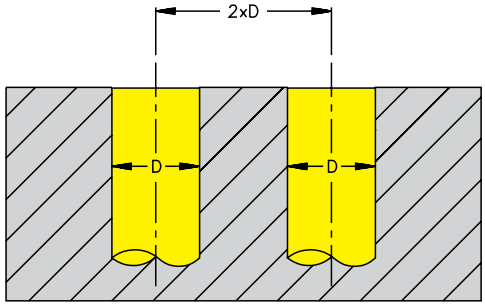

**Compensation Electrode**
In practice, sensors can be affected by water droplets, humidity, dust, etc., causing false outputs. To combat this effect each Turck sensor incorporates a compensating electrode (C) which forms part of a negative feedback circuit (**Figure 11**).

When contaminants are on the sensor face, they affect the sensor's main field, as well as its compensation field. The negative feedback circuit detects the increase in both fields, and can filter out the effects of the contaminants.

When a large target comes into the sensor's main field, the compensation field is not affected, thus the negative feedback circuit can distinguish a difference between the two fields, and the sensor generates an output.

## Mounting

Figure 12




**Compensation Electrode**
Most capacitive sensors manufactured by Turck are embeddable, which ensures that the electric field is only effective in front of the active face. They are suitable for flush mounting at the factory setting in any material (conductive and nonconductive).

When sensors are flush mounted, the effect on the operating distance is minimal and can be overcome by adjustment of the potentiometer. Minimum separation distances must be observed to avoid the possibility of interference between the two sensors' fields (**Figure 12**).

We reserve the right to make technical alterations without prior notice.

## BCF Series – Noise Immunity

Capacitive sensors were originally designed for use in level detection applications in areas that were generally far away from other electrical equipment. As factory automation has become more prevalent throughout industrial markets, these capacitive sensors have gravitated into new environments where electrical noise levels are greatly increased. Electrical noise can be produced by various sources including variable frequency drives, electromechanical motors and standard walkie-talkie devices. These "noisy" environments can have adverse effects on sensing devices causing them to operate improperly and unreliably.

Turck recognizes this and has developed a new circuit for its capacitive sensors. These new "BCF" sensors incorporate a unique filter principle, making them immune to most industrial noise. This principle involves a fixed oscillator frequency combined with a rectifier filter providing superior noise immunity over the competition.

Turck's fixed oscillator allows the sensor to maintain a constant frequency regardless of sensitivity adjustment. This fixed frequency is high enough to ignore most of the "standard" noise levels seen on plant floors. Electrical noise is mostly symmetrical which makes it easier to identify and separate from the sensor's input signal. The Turck rectifier filter is able to block this noise allowing only the "useful" input signal, which is in phase with the oscillator frequency, to pass.

These two innovative electrical techniques give Turck the best defense against industrial noise. The list of specifications and test results below demonstrates how Turck meets or exceeds all of the rigid standards established by CE. In fact, the criteria set forth by CE is so stringent that most capacitive sensors offered on the market today cannot pass any or all of these testing requirements. If you have a capacitive sensor application located in a "noisy" environment choose the new "BCF" sensors from Turck to ensure your process operates smoothly.

We reserve the right to make technical alterations without prior notice.

| Test Type | | CE "Product" Standard | CE "Generic" Standard | Turck "BCF" Noise Immune Capacitive Sensors |
|---|---|---|---|---|
| **Immunity to Electrostatic Discharge (ESD)** | IEC 1000-4-2<br>EN 61000-4-2 | 4 kV Direct<br>Contact<br>8 kV Airborne | 4 kV Direct<br>Contact<br>8 kV Airborne | 8 kV Direct<br>Contact<br>30 kV Airborne |
| **Immunity to Radiated Electromagnetic Fields.<br>Radio Frequency Interference (RFI)** | IEC 1000-4-3<br>EN 61000-4-3 | 3 V/M<br>80-1000 MHz | 10 V/M<br>80-1000 MHz | 15 V/M<br>80-1000 MHz |
| **Immunity to Electrical Fast Transients<br>(Burst-High Voltage)** | IEC 1000-4-4<br>EN 61000-4-4 | 2000 V | 2000 V | 3000 V |
| **Immunity to Conducted R.F. Voltage<br>(Line Coupled Noise)** | IEC 1000-4-6<br>EN 61000-4-6 | Undefined | 10 V<br>150 kHZ-80 MHz | >10 V<br>150 kHZ-230 MHz |
| **Immunity to Surges<br>(Lightning Strike)** | IEC 255-5 | 1 kV, 500Ω DC | Undefined | 1 kV, 500Ω DC<br>5 kV, 500Ω AC |

## BCC Series-Plastic Pellets, ESD, and Metal Containers

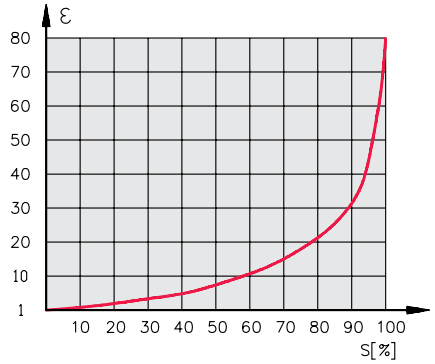
The BCC series capacitive sensor is specifically designed to provide accurate level detection in the plastic industry. Applications involving plastic pellets often generate high levels of static electricity which can discharge and lead to sensor failure. The BCC series of sensors feature excellent EMC and ESD immunity, allowing them to reliably detect the level of plastic pellets in a hopper while withstanding environmental interference.

These sensors can also be mounted directly into a metal tank without a reduction in range, a common side-effect for standard capacitive sensors. The BCC incorporates a unique laterally mounted shield that protects the sensors from being influenced by the metal tank. This allows the sensor to detect even low-dielectric materials when the sensor is flush mounted in metal.

## Sensing Range vs. Dielectric Constant

When sensing non-conductive targets, the larger the dielectric constant of a material, the greater the achievable operating distance (**Figure 13**). Adjusting the potentiometer affects the total curve; for example, if the potentiometer is adjusted for less sensitivity, it will have less operating distance to all materials. In general terms, the larger the dielectric constant of a material, the greater the achievable operating distance. When detecting organic materials the sensing distance will depend largely on the water content (**ε**water = 88).
It should be noted that a large increase in sensitivity will cause the sensor to become nonembeddable, and may result in an unstable switching point that can be influenced by environmental changes such as temperature, humidity, dust, etc. At adjustments of S > Sn, the differential travel (hysteresis) can also increase.

Figure 13




RELATION OF OPERATING DISTANCE TO DIELECTRIC CONSTANT

## Sensitivity Adjustment

**Capacitive sensors can be adjusted in order to sense a target consistently.**

- Physical adjustment - moving the sensor towards or away from the target is the preferred method of adjusting sensitivity when the sensor is not in direct contact with the target. This allows materials to be moved into or out of range while leaving the sensor at the factory setting or after re-calibration to the nominal operating distance Sn.
- Adjustment of the potentiometer - turning the potentiometer in a clockwise direction increases the sensitivity of the sensor. The potentiometer is factory-set for an operating distance of 0.7 to 0.8 Sn to a grounded standard target (Figure 14). It should be adjusted in increments of no greater than a quarter-turn (**Figure 15**). Increasing the sensitivity results in a greater operating distance to both conductive and non-conductive targets.
- Teachable sensors allow users to teach tank-full and tank-empty conditions using the built in buttons or a teach adapter. The programming process and built in logic ensure the sensor is optimized to reliably detect the desired object.
- IO-Link- sensors equipped with IO-Link feature advanced options including the ability to program the sensors with an IO-Link master. The flexibility provided by IO-Link allows users to adjust sensor settings as their processes change.

Figure 14

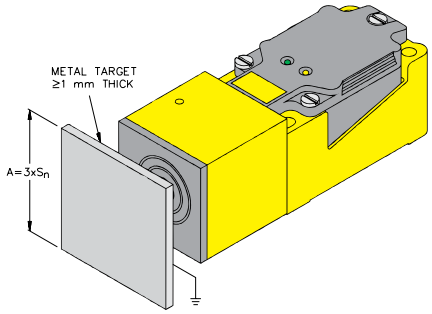
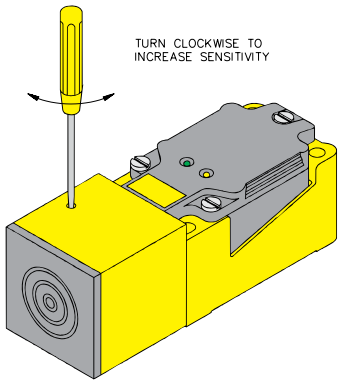



Figure 15




We reserve the right to make technical alterations without prior notice.

## Example Application 1 - Adjustment

**Problem:**
Can a BC20-K40SR-FZ3X2 be used to sense the presence of ammonia from behind a .125" glass panel?

**Solution:**
The dielectric constants for these materials can be found on pages 17 and 18.

Dielectric (εr) of ammonia: 20
Dielectric (εr) of glass: 10

From Figure 7, εr = 20 corresponds to 80% Sn; εr = 10 corresponds to 60% Sn.

| | | | |
|---|---|---|---|
| Since Sn = | 20 mm for a BC20: | S for ammonia = | 16 mm |
| | | S for glass = | 12 mm |

The difference is 4 mm. The glass thickness = .125", or 3.1 mm. This application will work with a 0.9 mm margin. This means that by adjusting the potentiometer there should be a reasonable distinction between the glass and the ammonia as seen by the sensor.

**To set up the sensor for this application, the sensing face of the sensor should be flush against the sight glass.**

- With no ammonia present (if possible) turn the potentiometer clockwise until the sensor turns on. If the sensor is already on, skip step one.
- Next, turn the potentiometer counter clockwise until the sensor turns off.
- Now add the ammonia so that it covers the glass panel.
- Once again, turn the potentiometer counter clockwise, counting the number of turns until the sensor turns off.*
- Divide the number of turns by two and turn the potentiometer back clockwise that amount. Using this process will allow for a margin of error in either direction. If this application had called for something other than ammonia, like molasses, that tends to leave buildup behind, step 1 above should be performed with the buildup present (if possible).

*If sensor does not turn off after 10 full turns, turn back the potentiometer clockwise between three to five turns. Minor adjustments may need to be made to achieve desired setting.

## Example Application 2 - Mounting

**Problem:**
A metal tank containing a water-based solution has a 1" outside diameter sight glass. What sensor and bracket could be used for monitoring the liquid level?

**Solution:**
The QF 5.5 flat style can used on non-conductive tubing up to 1.0 inch in diameter with the standard mounting straps provided with the sensor (**Figure 16**). Other mounting straps for larger diameters are available upon request (consult factory).

Figure 16

We reserve the right to make technical alterations without prior notice.

# Technical Reference | Capacitive

## Dielectric Constants of Industrial Products

| Material Dielectric | Constant |
|---|---|
| ABS resin, pellet | 1.5 - 2.5 |
| Acetic acid | 4.1 |
| Acetone | 19.5 |
| Acetyl bromide | 16.5 |
| Acrylic resin | 2.7 - 4.5 |
| Air | 1.0 |
| Alcohol, industrial | 16 - 31 |
| Alcohol, isopropyl | 18.3 |
| Ammonia | 15 - 25 |
| Aniline | 5.5 - 7.8 |
| Aqueous solutions | 50 - 80 |
| Asbestos | 3.0 |
| Ash (fly) | 1.7 |
| Bakelite | 3.6 |
| Barley powder | 3.0 - 4.0 |
| Benzene | 2.3 |
| Benzyl acetate | 5 |
| Butane | 1.4 |
| Cable sealing compound | 2.5 |
| Calcium carbonate | 9.1 |
| Carbon dioxide | 1.6 |
| Carbon tetrachloride | 2.2 |
| Celluloid | 3.0 |
| Cellulose | 3.2 - 7.5 |
| Cement | 1.5 - 2.1 |
| Cement powder | 5 - 10 |
| Cereal | 3 - 5 |
| Charcoal | 1.2 - 1.8 |
| Chlorine, liquid | 2.0 |
| Coke | 1.1 - 2.2 |
| Corn | 5 - 10 |
| Ebonite | 2.7 - 2.9 |

| Material Dielectric | Constant |
|---|---|
| Epoxy resin | 2.5 - 6 |
| Ethanol | 24 |
| Ethyl bromide | 4.9 |
| Ethylene chloride | 10.5 |
| Ethylene dichloride | 11.0 |
| Ethylene glycol | 38.7 |
| Ethylene oxide | 14.0 |
| Ferrous oxide | 14.2 |
| Fired ash | 1.5 |
| Flour | 2.5 - 3.0 |
| Formic acid | 59.0 |
| Freon® R22 & 502, liquid | 6.1 |
| Gasoline | 2.2 |
| Glass | 3.1 - 10 |
| Glass, raw material | 2.0 - 2.5 |
| Glycerine | 47 |
| Hexane | 1.9 |
| Hydrochloric acid | 4.6 |
| Hydrogen cyanide | 95.4 |
| Hydrogen peroxide | 84.2 |
| Ice, -5C | 2.85 |
| Ice, -18C | 3.16 |
| Isobutylamine | 4.5 |
| Lime, shell | 1.2 |
| Marble | 8.0 - 8.5 |
| Melamine resin | 4.7 - 10.2 |
| Methane, liquid | 1.7 |
| Methanol | 33.6 |
| Mica, white | 4.5 - 9.6 |
| Milk, powdered | 3.5 - 4 |
| Nitrobenzene | 36 |
| Neoprene | 6 - 9 |

We reserve the right to make technical alterations without prior notice.

## Dielectric Constants of Industrial Products

| Material | Dielectric Constant |
|---|---|
| Nylon | 4 - 5 |
| Oil, for transformer | 2.2 - 2.4 |
| Oil, paraffin | 2.2 - 4.8 |
| Oil, peanut | 3.0 |
| Oil, petroleum | 2.1 |
| Oil, soybean | 2.9 - 3.5 |
| Oil, turpentine | 2.2 |
| Paint | 5 - 8 |
| Paraffin | 1.9 - 2.5 |
| Paper | 1.6 - 2.6 |
| Paper, hard | 4.5 |
| Paper, oil saturated | 4.0 |
| Perspex | 3.2 - 3.5 |
| Petroleum | 2.0 - 2.2 |
| Phenol | 9.9 - 15 |
| Phenol resin | 4.9 |
| Polyacetal (Delrin®) | 3.6 |
| Polyamide (nylon) | 2.5 |
| Polycarbonate | 2.9 |
| Polyester resin | 2.8 - 8.1 |
| Polyethylene | 2.3 |
| Polypropylene | 2.0 - 2.3 |
| Polystyrene | 3.0 |
| Polyvinyl chloride resin | 2.8 - 3.1 |
| Porcelain | 4.4 - 7 |
| Press board | 2 - 5 |
| Propane, liquid | 1.6 |
| Propylene, liquid | 11.9 |
| Quartz glass | 3.7 |
| Rice, dry | 3.5 |

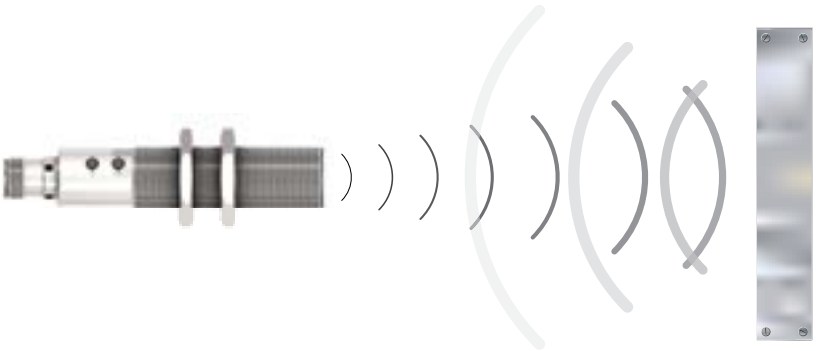
| Material | Dielectric Constant |
|---|---|
| Rubber | 2.5 - 35 |
| Salt | 6.0 |
| Sand | 3 - 5 |
| Shellac | 2.0 - 3.8 |
| Silicon dioxide | 4.5 |
| Silicone rubber | 3.2 - 9.8 |
| Silicone varnish | 2.8 - 3.3 |
| Soybean | 2.8 |
| Styrene resin | 2.3 - 3.4 |
| Sugar | 3.0 |
| Sugar, granulated | 1.5 - 2.2 |
| Sulfur | 3.4 |
| Sulfuric acid | 84 |
| PTFE®, PCTFE | 2.3 - 2.8 |
| PTFE | 2.0 |
| Toluene | 2.3 |
| Trichloroethylene | 3.4 |
| Urea resin | 6.2 - 9.5 |
| Urethane | 3.2 |
| Vaseline | 2.2 - 2.9 |
| Vinyl chloride | 2.8 |
| Water | 48 - 88 |
| Wax | 2.4 - 6.5 |
| Wood, dry | 2 - 7 |
| Wood, pressed board | 2.0 - 2.6 |
| Wood, wet | 10 - 30 |
| Xylene | 2.4 |
| Zinc oxide | 1.7 |
| Zirconium oxide | 12.5 |
| Zirconium silicate | 5.0 |

We reserve the right to make technical alterations without prior notice.

# Technical Reference | Ultrasonic

Ultrasonic sensors use reflected sound waves as a means to detect objects at a greater distance than traditional inductive and capacitive sensors. With ranges of several meters and wide sensing cones, these sensors provide a unique solution to challenging applications.

## Operating Principle



Ultrasonic sensors emit one or several ultrasonic pulses that are broadcasted in the air at the speed of sound. A part of the ultrasonic wave is reflected back to the sensor by the target. The sensor measures the total time of flight from the sensor to the object and back to the sensor. The distance to the object is then calculated with the following formula:

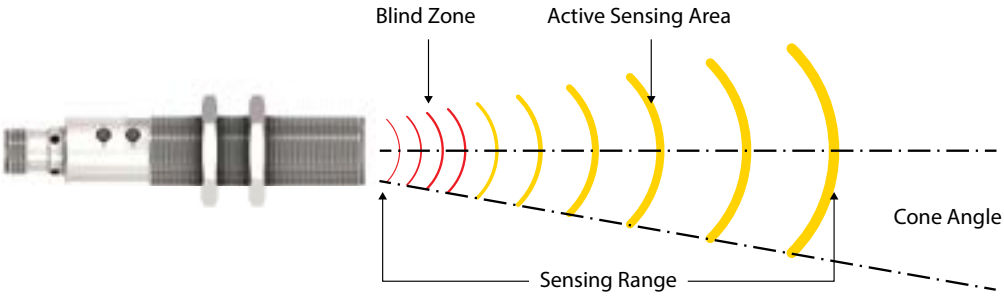
$$D = c \times t / 2$$

D = Distance from the sensor to the object
c = Speed of sound in air
t = Time of flight for the ultrasonic pulse

To improve accuracy and reliability, the ultrasonic sensor averages the measurement of several sound pulses before the output is updated.

We reserve the right to make technical alterations without prior notice.

## Ultrasonic Terminology




**Some key terms to understand when looking for an ultrasonic sensor.**

- Blind zone: the blind zone is the area in front of the sensor where targets cannot be detected.
- Sensing range: the coverage of the device is the sensing range, or the maximum distance the sensor can read the sonic wave.
- Active sensing area: is the area where the set points or analog values can be established.
- Cone angle: the cone angle defines the coverage area of the sensor. This will have to be taken into account when placing the sensor in the application. If the cone is disrupted errors or miscommunication can occur.

## Changes in Temperature

The ultrasonic velocity depends on the composition and the temperature in which the sound is transmitted. In most ultrasonic-applications, the composition of the atmosphere is stable whereas the temperature may often fluctuate. Fluctuations in air temperature affect the speed of sound, which in turn has an effect on the total time for the echo measured by the sensors. Our sensor are temperature compensated and will adjust the range automatically to minimize errors.

The speed of sound in air varies with the temperature according to the following approximation formula:
$Cm/s = 20 \times \sqrt{273 + TC}$

Cm/s = Speed of sound in meters per second
TC = Temperature in °C

## Atmosphere Conditions

It is always recommended to set up the ultrasonic sensors desired switch points and/or analog range in the environment that it will be used. Ultrasonic sensors will work in dust, rain and snow but if the conditions are too substantial it may reduce the sensors range or inhibit the sensor to read the target.

Turck ultrasonic sensors feature a flush face that allows dirt and water to be wicked away with the vibrating motion of the sensing element.

We reserve the right to make technical alterations without prior notice.

## Modes of Operation

- Diffused mode: standard operation mode were the sensor is emitting sound waves and listening for the reflection and sensing if it is within the selected output zone. This mode can also have an analog output to give a linear measurement.
- Retro: reflective mode-sensor is set up with a reflector and sensing anything that crosses between the sensor and reflector. This is also known as break-beam, which is good for objects with an irregular shape or poor sound-reflecting qualities.
- Opposed mode: enlarges the range of an ultrasonic application. This mode utilizes two sensors of the same type. One sensor sends the signal and the other receives the signal allowing for the sensing range to double.
- Enable mode: allows the sensor to be powered but the piezo element does not fire unless a voltage is applied to pin 5. This allows for the sensor to reduce startup time and only be sensing for a target during a known condition. Enable mode also allows the sensor to be active during predetermined times or under a known condition.

Diffused Mode

Retro-Reflective Mode

Opposed Mode

## Synchronization and Multiplexing Mode

- Synchronization mode: any number of ultrasonic sensors of the same type can be operated simultaneously without mutual feedback. The sensors will act as one.
- Multiplexing mode: enables up to nine ultrasonic sensors of the same type to be operated at fixed intervals one after the other without mutual feedback. In order to ensure proper functioning of the multiplexing mode, all connected sensors must have the same type code. In multiplexing mode the addresses must be assigned via PACTware.

We reserve the right to make technical alterations without prior notice.

## Teaching the Ultrasonic Sensor

Ultrasonic sensors can be taught via a teach wire, programming button, or IO-Link, depending on the model.

**Programming changes that can be done through the teach wires/buttons are below**

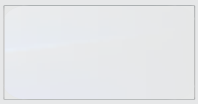
- Discrete output condition, normally open/ normally closed
- Window or hysteresis mode
- Sensing range
- Analog output type, current or voltage
- Retro-reflective mode

**Programming changes that can be done through IO-Link**

- Changing mode of operation
- Discrete output type and condition, NPN/PNP, normally open/ normally closed
- Analog output type, current or voltage
- Teach button/wire lock
- Window or hysteresis mode
- Sensing range
- Analog output type, current or voltage

## Targets

Good ultrasonic targets have a hard smooth surface such as metals, glass, stone, or wood, as well as liquids that are aligned appropriately to the sensor. These targets reliably reflect sonic waves regardless of color or transparency. Cloth, sand, foam or grains absorb some of the sonic energy resulting in limited range or unstable operation. It should be noted that some materials can be detected using retro-reflective mode.

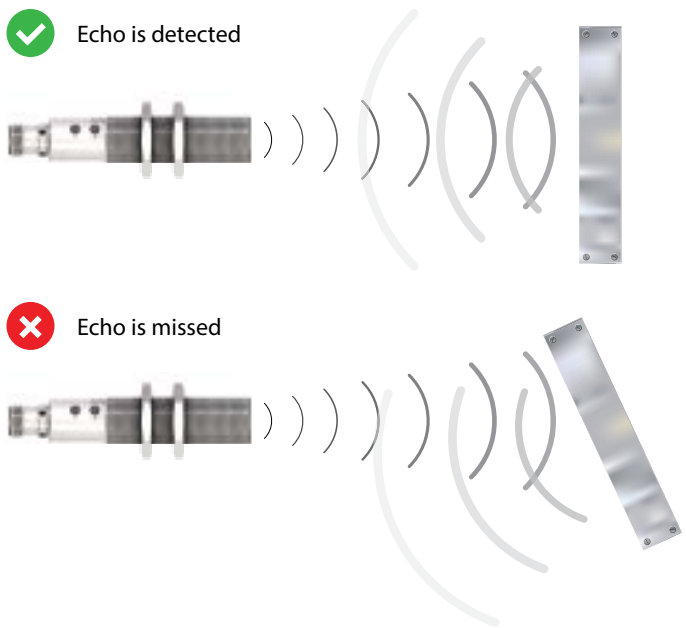
| Material | ✓ |
|---|---|
| Cardboard | |
| Glass |  |
| Smooth Wood | |
| Metal | |

| Material | ✗ |
|---|---|
| Carpet | |
| Foam | |
| Textiles | |

We reserve the right to make technical alterations without prior notice.

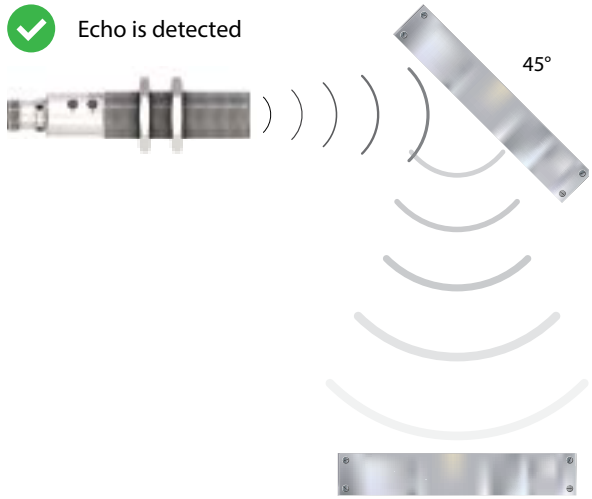
## Application Considerations

### Target Orientation



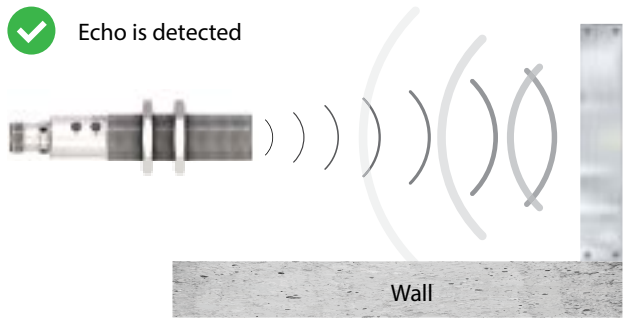

The orientation of a target is important. If the flat surface is at an angle the senor will not receive the reflected sound.

### Reflector




A reflector at a 45° angle can be used to redirect the signal or allow flexible mounting of the sensor.

### Obstructions




When mounting an ultrasonic sensor the cone angle has to be taken into consideration. Physical obstructions within the cone angle can cause unstable sensor operation. This is common when mounting the sensor too close to the side of a tank, inside of a tube/stilling well, or mounting close to a wall.

### Level Applications

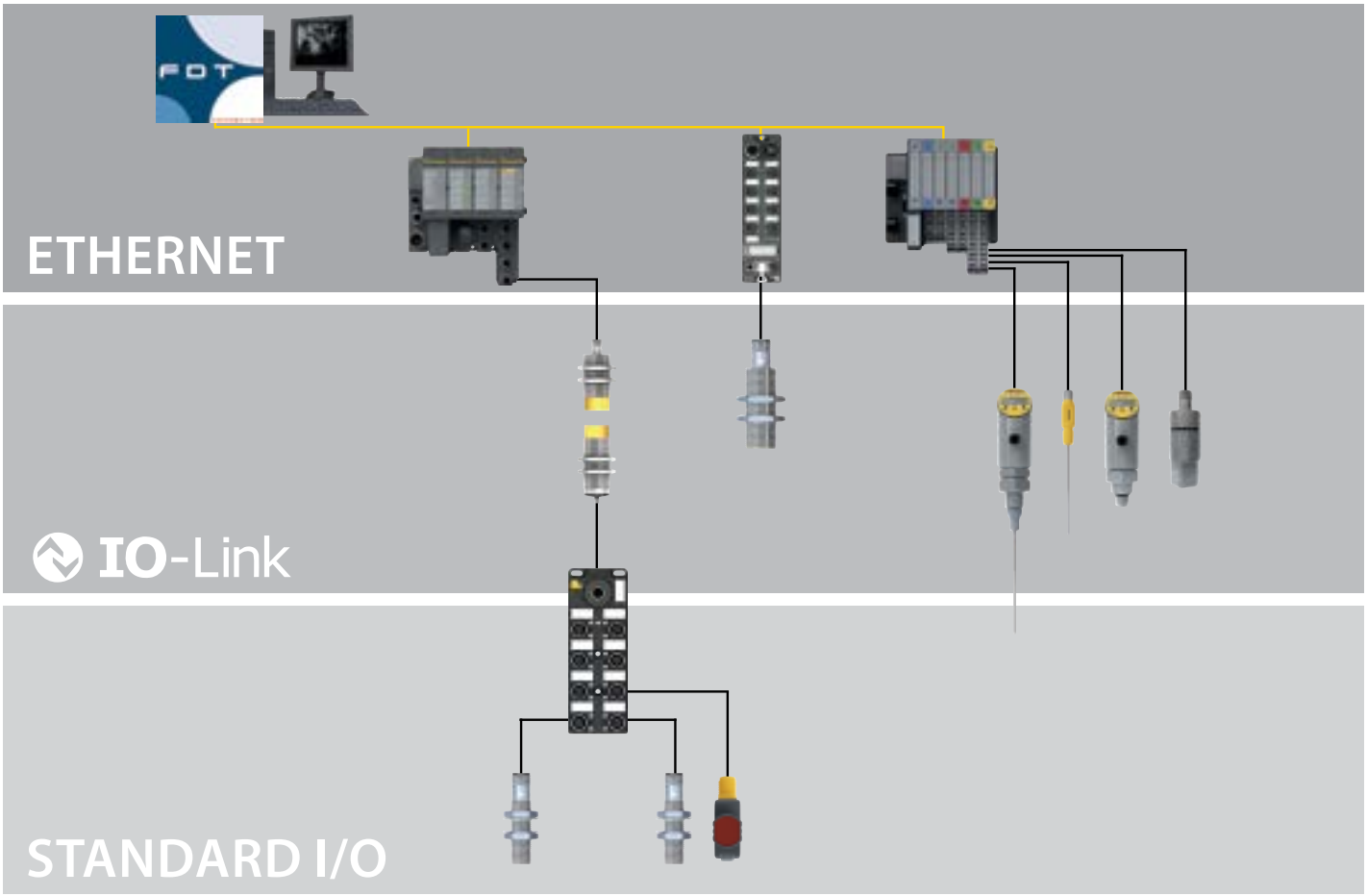
Ultrasonic sensors can be used to monitor the level of both dry materials and liquids. By positioning the sensor above the materials, users can then program switch points or an analog output that corresponds to the actual level.

**Variables that negatively affect sensor performance**

- Foam: foaming media tends to absorb the acoustic signal
- Surface Turbulence: agitation, mixing, and other processes that cause excessive liquid turbulence can cause intermittent signal return problems
- Pressure: pressurized containers should be avoided as they change the sensor characteristics

We reserve the right to make technical alterations without prior notice.

## IO-Link: Simple, Seamless, Efficient




Today, most sensors and actuators are already equipped with microprocessors that are used to control indication, parameterization, and store configuration data. The next step is to overcome the bottleneck of the binary standard interface and make additional functions centrally accessible for the automation system.

For this reason, many well known manufacturers from the field of automation have come together and developed a fieldbus-independent communication interface for sensors and actuators known as IO-Link. Compatibility with existing technologies was the primary objective during development in order to guarantee investment protection.

**What is IO-Link?**
IO-Link is based on a point-to-point connection between the sensor/actuator and an interface module. Previously, the binary connection was only designed for transferring switching information, but IO-Link now allows two bytes to be transferred normally in a 2 ms cycle via a combined switching status and data channel. Other information can be exchanged in addition to the process values, such as parameters or diagnostics messages. This enables communication with sensors and actuators down to the "last meter" to be established for universal communication.

**Standard Wiring**
IO-Link does not require any special wiring. The sensors and actuators can continue to be connected using the proven, unshielded and attractively priced industrial three core cables. The operating modes available for selection are the standard switch mode and the communication mode.

**Benefits**
IO-Link users benefit from reduced machine costs, efficient processes and improved machine availability. Turck provides one of the most comprehensive IO-Link portfolios worldwide, from a variety of sensors, cables and active IO-Link junction boxes to interfaces for various industrial fieldbus protocols, including Turck Multiprotocol Ethernet products.

We reserve the right to make technical alterations without prior notice.

# Technical Reference | IO-Link

**Engineering Tool Integration**
Standardized interfaces (DTM/IODD) implement seamless integration into engineering tools. Furthermore, integration into standalone tools such as Asset management or configuration tools is also made available. Connection into enterprise level tools is accomplished using standard Ethernet mechanisms.

**Device Identification**
Integrated device identification ensures that the correct device has been installed in the case of component replacements. As each device contains detailed information regarding the manufacturer, component replacement can be safely handled automatically.

**Wiring**
IO-Link uses the same standard unshielded 3-core cables with standardized pinning as conventional I/O. This eliminates problems with complex devices which have no pinning standards and often multipole connectors.

**Ethernet/Fieldbus Connection**
IO-Link allows connection to most major fieldbuses, as well as Industrial Ethernet. Turck offers solutions for the full range, including master modules for its modular and block I/O systems featuring Multiprotocol Ethernet, which work seamlessly with PROFINET, EtherNet/IP and Modbus TCP in a single device.

**Sensor Mounting**
All IO-Link devices allow parameter changes and diagnostic evaluation within the engineering system or separate tools. Devices can now be mounted in the machine where they make sense for the application, not in inconvenient areas that disrupt work flow in order to allow access to display or switches.

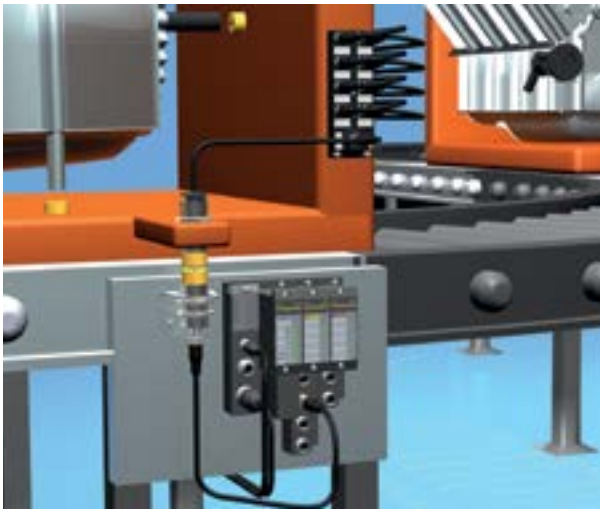
**I/O Hubs**
Allow the integration of standard 24 VDC devices into automation systems via IO-Link with Turck I/O hubs. Variants for inputs, outputs and a version with configurable digital I/O are currently available.

We reserve the right to make technical alterations without prior notice.

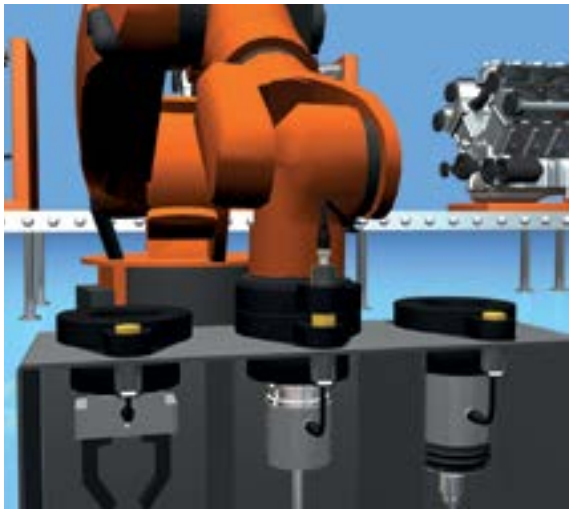
**Efficient Processes**
- Extensive parameterization options for just in time parameter changes to devices
- Efficient processes requiring different parameter sets for switching thresholds, gain, sensitivity and so forth due to differing production conditions
- Faster tool change operations

**Improved Machine Availability**
- Comprehensive status information and diagnostic capabilities in the plant lead to drastically reduced machine downtime
- Enhanced information enables cost saving mechanisms such as predictive maintenance or asset management to be easily implemented
- Device replacement without manual intervention to parameterize the new unit alleviates the need for qualified personnel

## Turck: Your Value Added IO-Link Solution Partner



Skid application in an automotive plant



Robotic tool changer application

Many manufacturers offer IO-Link products, which can make it difficult to find the most suitable partner for your needs. Turck offers a wide variety of IO-Link solutions – from sensors through programmable fieldbus and Ethernet gateways – but also provides a deep application knowledge, as the following example shows.

**Tool Changer**
Many applications require that parts of a machine are changed to accommodate different phases in the production cycle. This necessitates providing manifold connections between the main (fixed) part of a machine and the exchangeable part. The two elements of the machine must then be linked mechanically and electrically to provide power, pneumatics and I/O signals to enable data exchange within the machine.

The electrical connections require large multi-pin connectors and multicore cables to achieve this end. This complexity has a price: the connections regularly cause problems and are expensive to buy and maintain. The fact that the connections also require a high degree of accuracy regarding the mechanical alignment between machine components further increases machine costs. Another difficulty with this arrangement involves distinguishing between several variants of an exchangeable part. If this is necessary, further I/Os are required, both in the I/O system and on the machine. This not only increases costs, but also the complexity and sizing of the connectors between machine parts.

**Value Added IO-Link Solution**
Turck inductive couplers are capable of transferring both data and power over an air gap to resolve the previously mentioned problems. The contactless couplers eliminate the need for other mechanical connectors or costly slip rings, which are liable to wear. Additionally, all Turck IO-Link devices are capable of allocating a so-called "Application Specific Tag" (part of the IO-Link specification), which fulfills the requirement of identifying changeable parts without incurring additional costs. Furthermore, this built-in mechanism allows the use of alphanumeric information, making it likely that existing identification codes can be reused.

**Reduced Machine Costs**
- Reduced inventory due to intelligent multi-purpose devices
- Only one I/O module and one inexpensive standard cable required
- Reduced I/O footprint possible
- Displays and switches no longer required on devices
- Reduced engineering and assembly costs and automatic documentation of device parameters during the engineering phase

We reserve the right to make technical alterations without prior notice.

# Technical Reference | DC Wiring

## DC Outputs

Two-, three-, or four-wire proximity sensors contain a transistor oscillator and a snap-action amplifier. This provides exceedingly high accuracy to a set switching point, even with very slowly approaching targets. Switching characteristics are unaffected by supply voltage fluctuations within the specified limits.

The sensors can drive electromechanical relays, counters, solenoids, or electronic modules, and interface directly with logic systems or programmable controllers without additional interface circuitry. They are available with either NPN output transistors (current sinking) or PNP output transistors (current sourcing).

Load current ratings vary from 100 to 200 mA depending on physical size. Standard voltage range is 10-30 VDC with certain types available for 10-65 VDC. All models incorporate wire-break, transient and reverse polarity protection. Power-On false pulse suppression is also standard.

## Wire-Break Protection

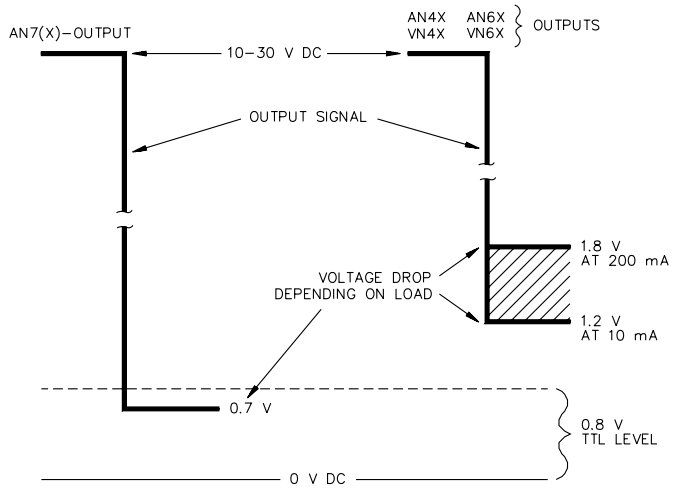
If the supply wire for a Turck DC sensor was damaged or broken the output will stay in the off state.

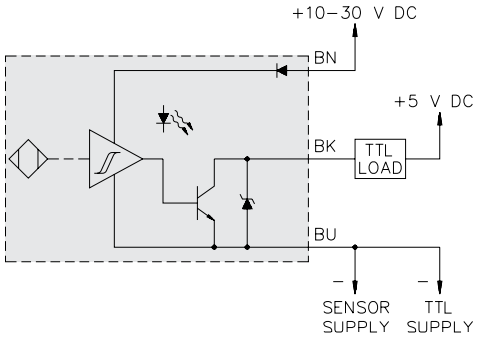
## Short-Circuit and Overload Protection

Turck DC sensors with a Voltage Range designation of "4", "6" or "8" in the part number are short-circuit and overload protected (automatic reset). These sensors incorporate a specially designed circuit which continuously monitors the ON state output current for a short-circuit or overload condition. If either of these fault conditions occurs, the output is turned OFF and pulse tested until the fault is removed. This added protection causes a ≤1.8 V drop across the output in the normal ON state. This may be a problem when interfacing with some logic low inputs (see TTL compatibility).

## TTL Compatibility

Certain inputs require a 5 VDC signal level to operate correctly. Typically, these types of inputs are described as TTL Level inputs and will only work correctly with a TTL compatible sensor. In order to meet TTL Signal requirements, the output of these sensors will have a voltage drop of ≤0.7 V (0.3 V typical). Do not use voltage ranges "4" and "6" when TTL compatibility is required. Contact the factory for a list of part numbers with this specification.



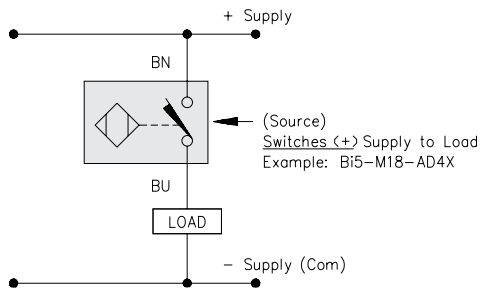

Wiring Diagram

Voltage drop is measured from output wire black (BK) to ground wire blue (BU).

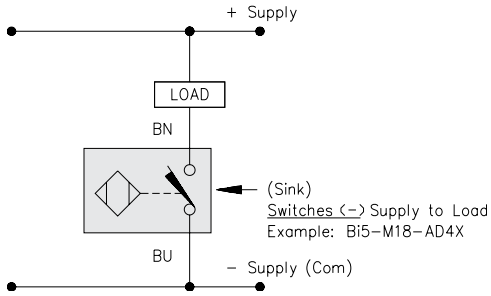
We reserve the right to make technical alterations without prior notice.

## DC Sourcing and Sinking

### 2-Wire DC



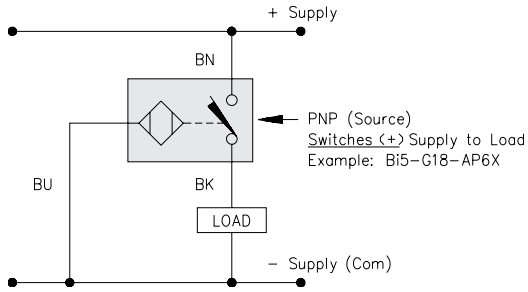

Source (PNP)



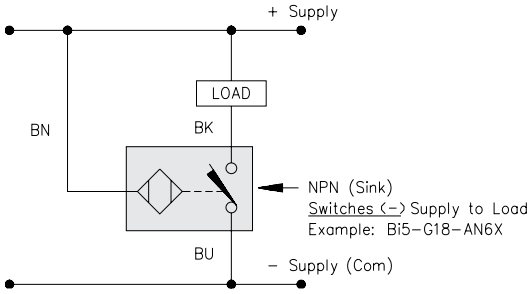

Sink (NPN)

**Note:**
Turck 2-wire DC sensors with an "AD" designation are not polarity sensitive and can be used to sink or source a load.

### 3-Wire DC



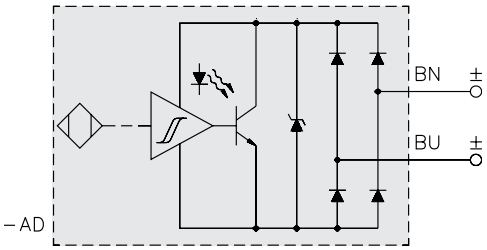

Source (PNP)

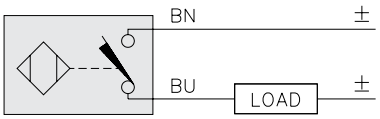



Sink (NPN)

## DC Outputs

### "AD" 2-Wire DC Output

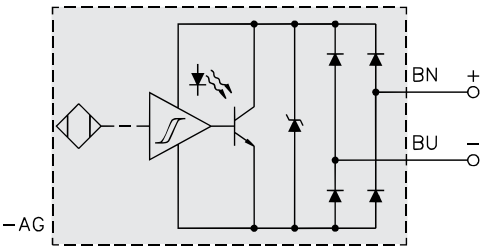


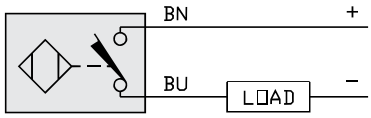




Wiring Diagram

**Note:**
Turck 2-wire DC sensors with an "AD" designation are not polarity sensitive and can be used to sink or source a load.

### "AG" 2-Wire DC Output



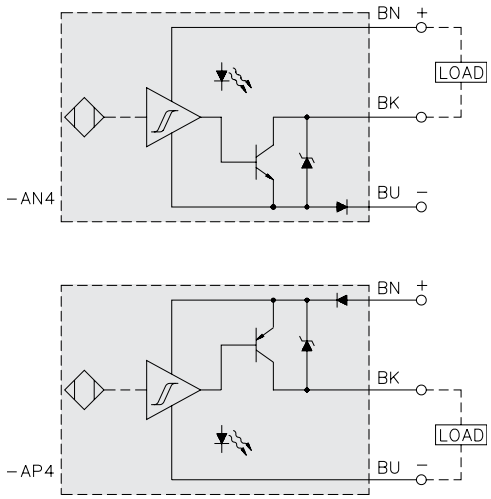

Wiring Diagram

We reserve the right to make technical alterations without prior notice.

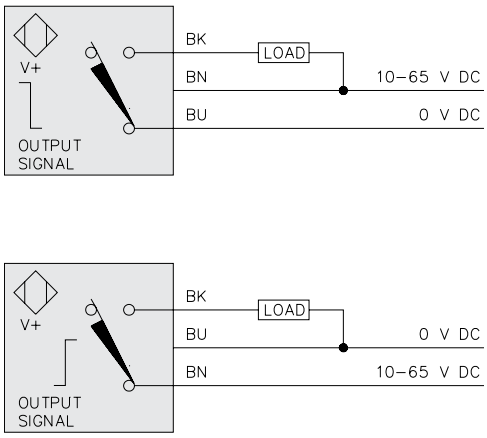
# Technical Reference | DC Wiring

## DC Outputs

### "AN4" and "AP4" 3-Wire DC Outputs




Electronic Output Circuit

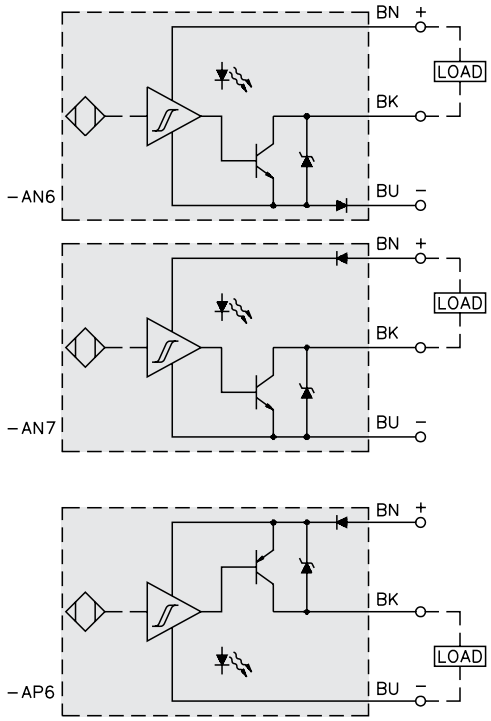



Wiring Diagram

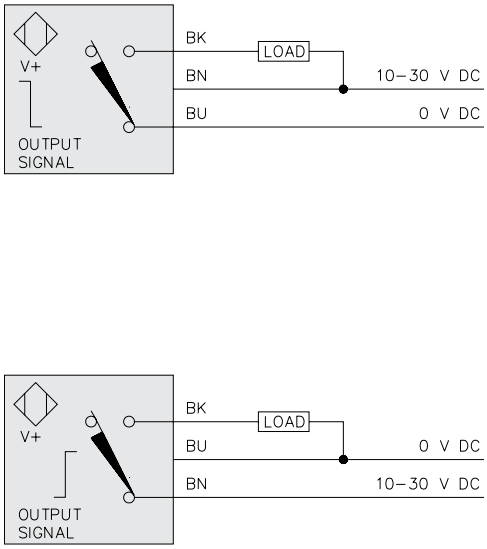
NPN transistor
(i.e. current sinking
negative switching)
N.O. output

PNP transistor
(i.e. current sourcing
positive switching)
N.O. output

### "AN6(7)" and "AP6" 3-Wire DC Outputs




Electronic Output Circuit




Wiring Diagram

NPN transistor
(i.e. current sinking
negative switching)
N.O. output

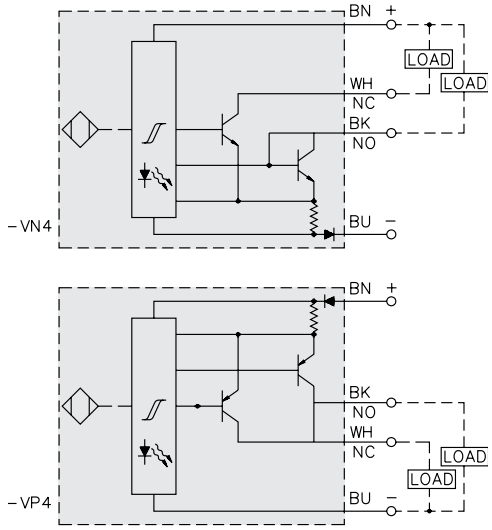
PNP transistor
(i.e. current sourcing
positive switching)
N.O. output

**Note:**
Order current sinking (NPN) sensors with the voltage range "7" only when low voltage drop for TTL gates is required. In all other cases, order sensors with voltage ranges "4" or "6".

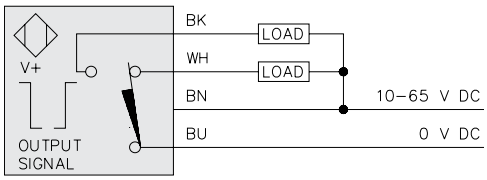
We reserve the right to make technical alterations without prior notice.

## DC Outputs

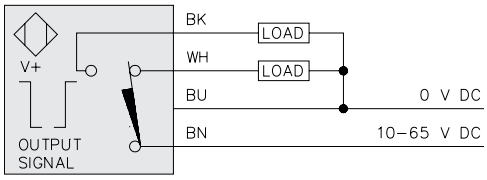
### "VN4" and "VP4" 4-Wire DC Outputs




Electronic Output Circuit



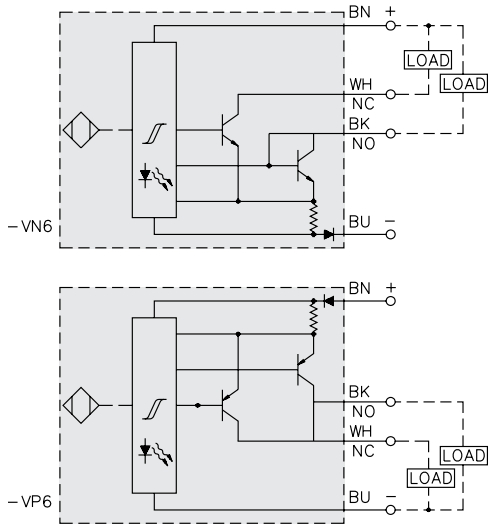

NPN transistor (i.e. current sinking negative switching) complementary output (SPDT)



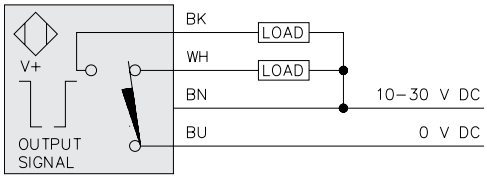

PNP transistor (i.e. current sourcing positive switching) complementary output (SPDT)

Wiring Diagram

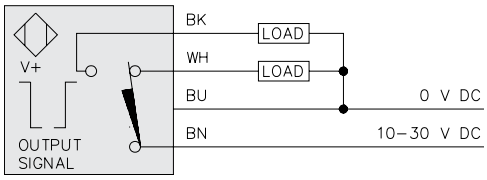
### "VN6" and "VP6" 4-Wire DC Outputs




Electronic Output Circuit




NPN transistor (i.e. current sinking negative switching) complementary output (SPDT)



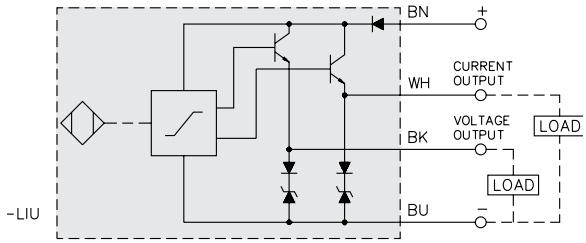

PNP transistor (i.e. current sourcing positive switching) complementary output (SPDT)

Wiring Diagram

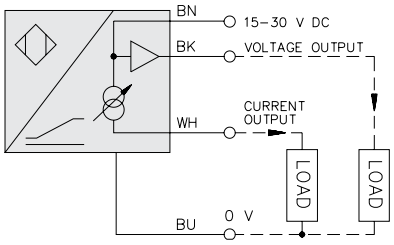
We reserve the right to make technical alterations without prior notice.

## DC Outputs

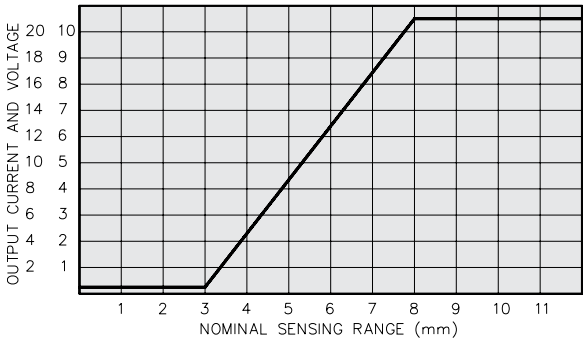
### "LIU" 4-Wire Linear Analog DC Output




Electronic Output Circuit




Wiring Diagram




Typical Response Curve

Linear Analog Output; Current and Voltage

## Series/Parallel Connection

**Logic functions with DC proximity sensors:**
Self-contained proximity sensors can be wired in series or parallel to perform such logic functions as AND, OR, NAND, NOR. The wiring diagrams show the hook-up of four sensors with NPN and PNP outputs. Take into account the accumulated no-load current and voltage drop per sensor added in the series string.

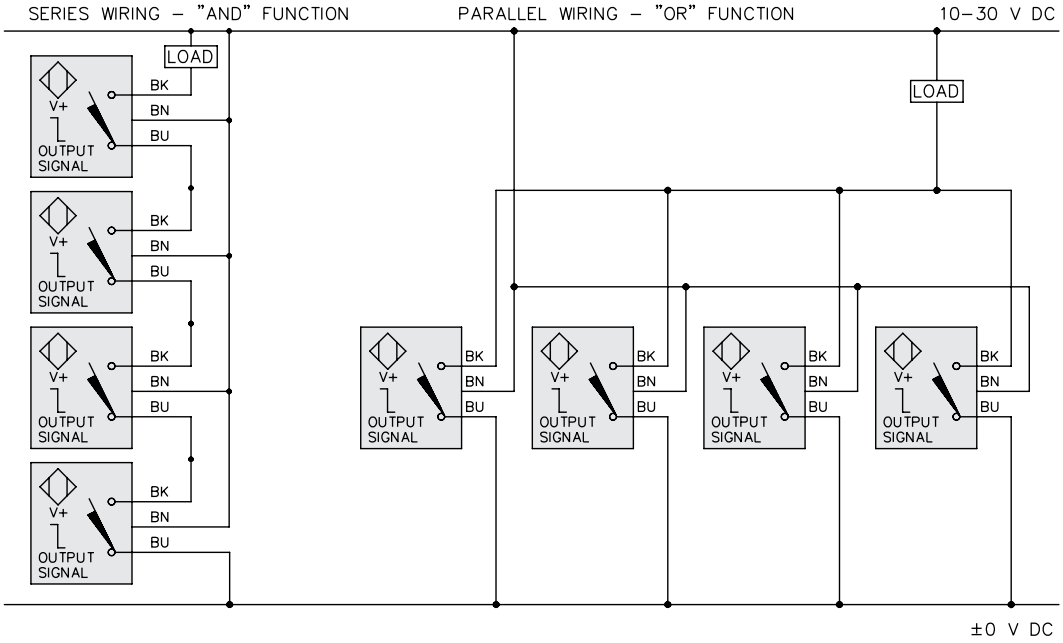
**Series-connection:**
N.O. sensors: AND Function
(target present, all sensors: load "on")
N.C. sensors: NOR Function
(target present, any sensor: load "off")

**Parallel-connection:**
N.O. sensors: OR Function
(target present, any sensor: load "on")
N.C. sensors: NAND Function
(target present, all sensors: load "off")

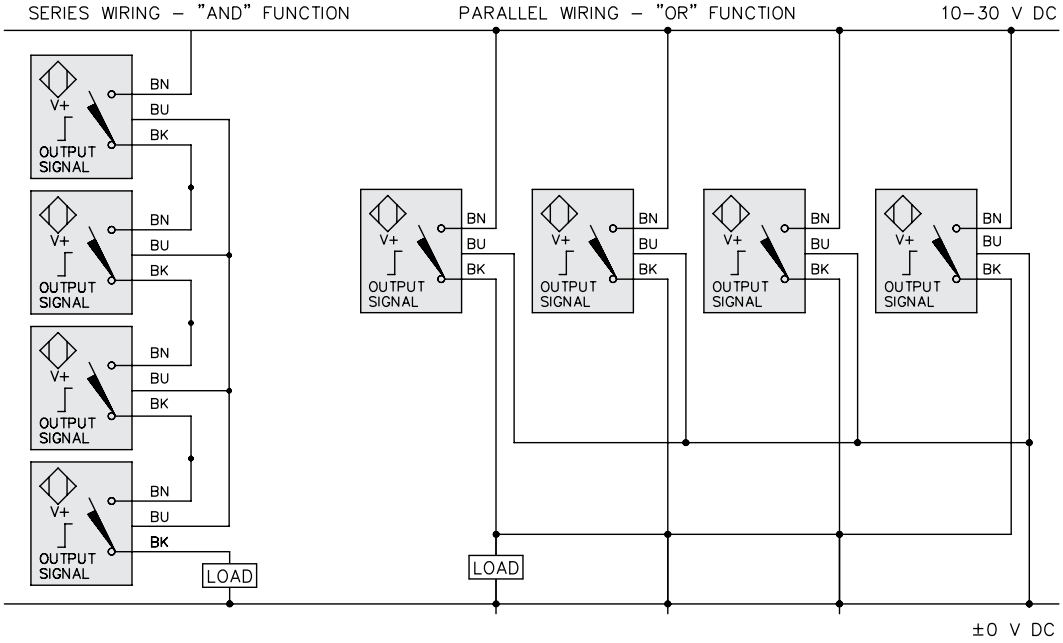
**Turck Tip**
To prevent the load from seeing the cumulative voltage drop of multiple 3-wire sensors in series, alternating polarity sensors can be used provided that the desired polarity is at the load. Wiring 3-wire sensors in series delays the load by the accumulated "time delay before availability" of all sensors in the string.

We reserve the right to make technical alterations without prior notice.

## Series/Parallel Connection




NPN Connection




PNP Connection

We reserve the right to make technical alterations without prior notice.

# Technical Reference | AC Wiring

## Short-Circuit and Overload Protection

Turck AC sensors with the Voltage Range designation "30" or "32" are short-circuit and overload protected (manual reset). These sensors incorporate a specially designed circuit which continuously monitors the ON state output current for a short-circuit or overload condition. If either of these fault conditions occurs, the output is latched OFF until the power has been cycled OFF and ON again.

Always select short-circuit and overload protected sensors whenever possible.

**CAUTION!**

**DO NOT**
operate an incandescent light bulb as a load. The extremely high cold current will cause an overload condition.

**DO NOT**
directly operate a motor with a proximity sensor. The inrush current can cause an overload condition. Always use a motor starter, relay or other appropriate device.

**DO NOT**
operate a proximity sensor from a wall outlet without a load. This is considered a "dead" short and can cause catastrophic damage to nonshort-circuit protected sensors.

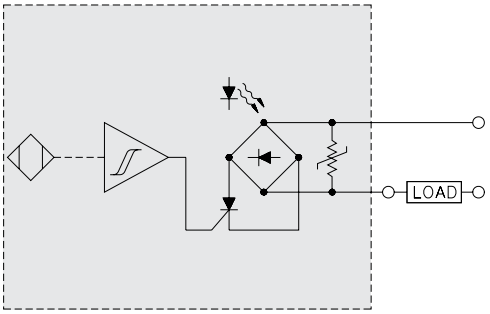
**DO NOT**
forget to ground. AC and AC/DC sensors must be grounded or there exists a potential of electrical shock.

## AC and AC/DC Outputs

These sensors are used as pilot devices for AC-operated loads such as relays, contactors, solenoids, etc. The solid-state output permits use of the sensors directly on the line in series with an appropriate load. They, therefore, replace mechanical limit switches without alteration of circuitry, where operating speed or environmental conditions require the application of solid-state sensors.

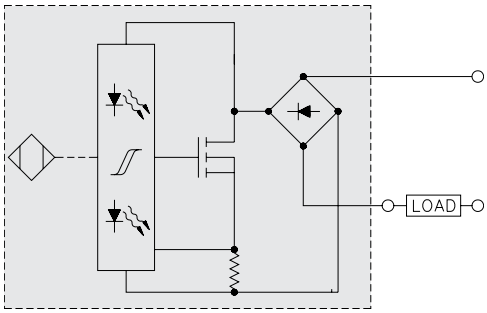
These sensors are typically available in a voltage range of 20-250 VAC. All models are available with either normally open (N.O.), normally closed (N.C.) or programmable outputs (from N.O. to N.C.). Careful consideration must be given to the voltage drop across AC/DC sensors when used at 24 VDC.

**AC/DC Outputs - "3", "31", "33", non-SCP**




Electronic Output Circuit

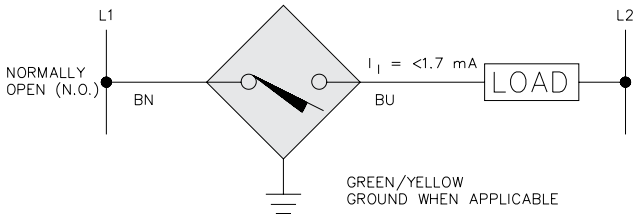
**AC/DC Outputs - "30", "32", SCP**

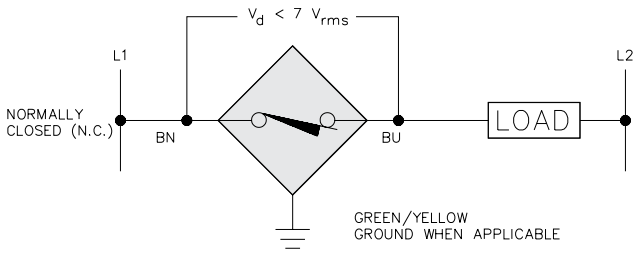



Electronic Output Circuit

We reserve the right to make technical alterations without prior notice.

## AC and AC/DC Outputs



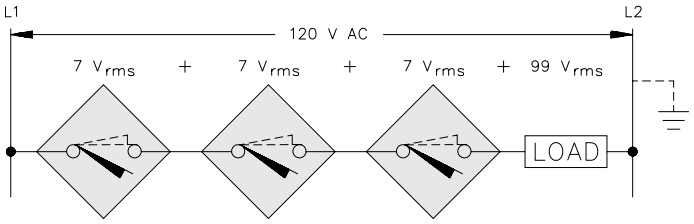

Electro-Mechanical Equivalents

Since the sensors are connected in series with the load by means of only two leads, an off-state current flows through the load in the magnitude of approximately 1.7 mA.

This, however, does not affect the proper and reliable performance of most AC loads. Another characteristic of solid state sensors is a 5 to 7 volt drop developed across the sensor in the ON state.

All models contain a snubber network to protect against transients from inductive loads, which can cause false triggering.

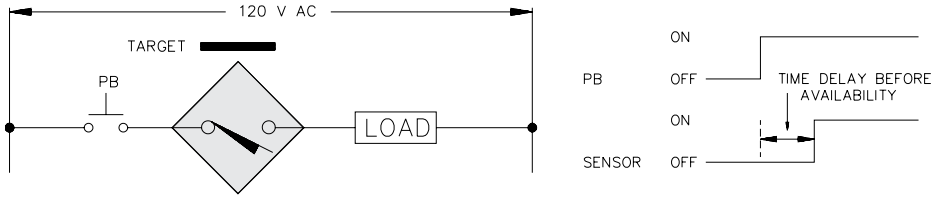
## Series Connection



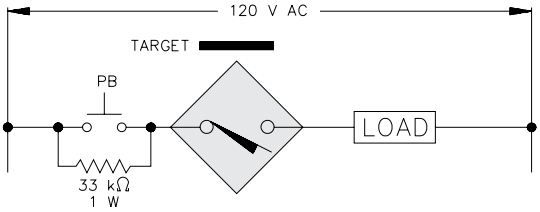

**Series-connection:**
N.O. sensors: AND Function
(target present, all sensors: load "ON")
N.C. sensors: NOR Function
(target present, any sensor: load "OFF")

The maximum number of sensors to be operated in series depends on the stability of the line voltage and the operating characteristics of the load in question. The supply voltage minus the accumulative on state voltage drop across the series connection (approximately 7 Vrms per sensor) must be ≥ the minimum required load voltage.

## Mechanical Switches in Series




**Problem:**
Mechanical switches in series with proximity sensors should always be avoided because they can create an open circuit, leaving the proximity sensor without power. In order to operate properly, a proximity sensor should be powered continuously. A typical problem encountered when the mechanical contact closes while the target is present is a short time delay that is experienced before the load energizes (time delay before availability).

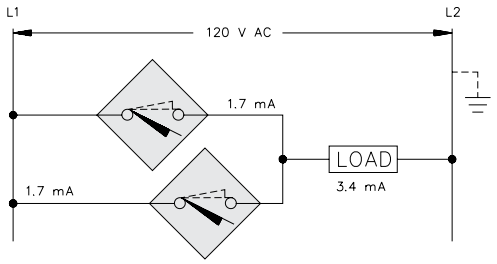



**Solution:**
A 33 kΩ, 1W by-pass resistor can be added across the mechanical contact to eliminate the time delay before availability. This will allow enough leakage current to keep the sensor ready for instantaneous operation.

We reserve the right to make technical alterations without prior notice.

# Technical Reference | AC Wiring

## Parallel Connection



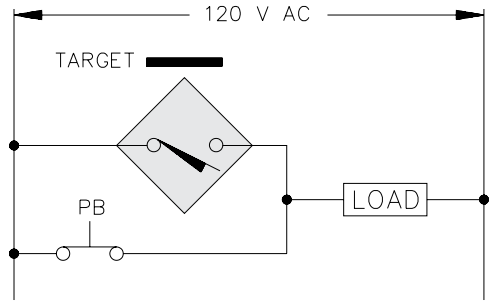

**Parallel Connection:**
N.O. sensors: OR Function
(target present, any sensor: load "ON")
N.C. sensors: NAND Function
(target present, all sensors: load "OFF")

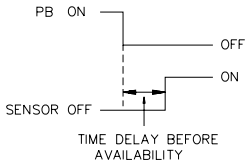
Wiring AC proximity sensors in parallel can result in inconsistent operation and should generally be avoided.

On-state voltage drop: With any sensor ON, the voltage across all other sensors is typically 7 Vrms. Since the minimum rated voltage for AC sensors is 20 Vrms, no other sensor with a target present can turn ON until the first sensor turns OFF. This transition is not instantaneous due to the time delay before availability, during which the load may drop out.

Leakage current through the load: This is equal to the total leakage of all sensors wired in parallel. Too much leakage into a solid state load can cause the input to turn ON and not turn OFF. Small relays may not drop out if the leakage current exceeds the relay's holding current.

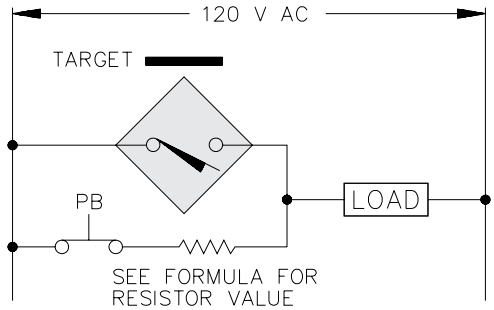
## Mechanical Switches in Parallel




**Problem:**
As previously discussed, proximity sensors should be powered continuously to avoid the time delay before availability during power-up.

With mechanical switches in parallel, the sensor is shorted out every time the contact is closed, leaving it without power. If the target is present when the mechanical contact is opened, a small delay will be experienced during which the load may drop out.




**Solution:**
This delay can be avoided by adding a resistor in series with the mechanical contact. The voltage drop developed across the resistor with the contact closed will be enough to keep the sensor active. Use the formula below to determine the value and wattage.

**Formula:**

$$R = \frac{\text{minimum operating voltage of proximity sensor}}{\text{load current at operating voltage}}$$

**Example:**

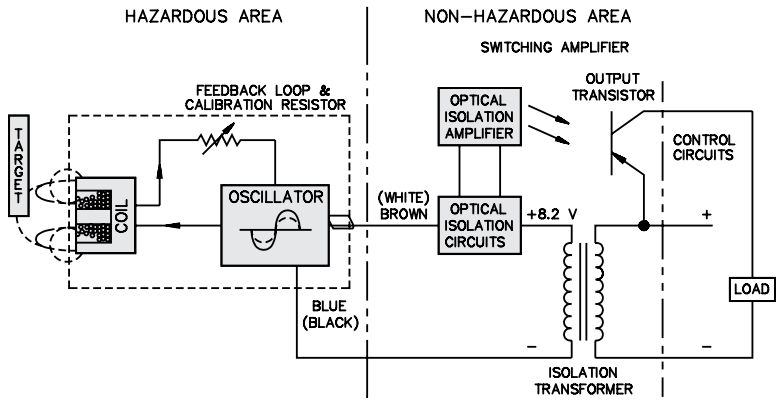
$$R = \frac{20\ \text{V}}{180\ \text{mA}}$$

$$R = 110\ \Omega$$

Minimum resistor wattage rating: E x I
Example: 20 V x 180 mA = 3.6 W≈ 5 watts recommended

We reserve the right to make technical alterations without prior notice.

## NAMUR (Y0 and Y1) Output




The NAMUR (Y0 and Y1) sensor behaves like a variable resistor when a target approaches. The impedance increases or decreases between 1 kΩ and 8 kΩ.

NAMUR sensors are 2-wire sensing devices used with switching amplifiers. Because of the small amount of energy needed to operate NAMUR sensors, they can be used in intrinsically safe applications.

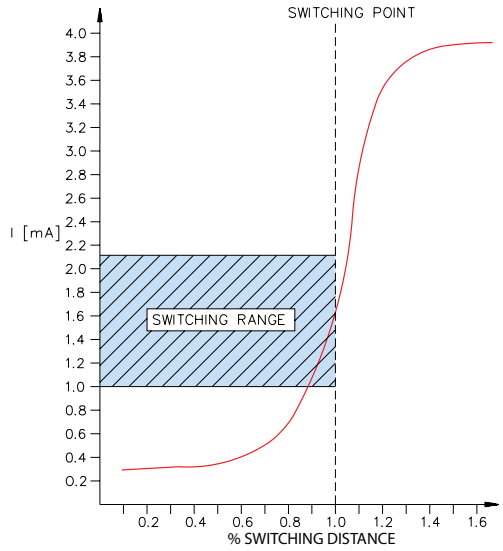
The operation of this sensor is similar to that of a variable resistor with a change in impedance as a target approaches the sensor. When no metal is being sensed, the inductive sensor is in a low impedance state and draws a current of more than 2.2 mA. When a metal target enters the high-frequency field radiated from the sensor head, the impedance increases as the target approaches. When fully damped, the sensor draws less than 1.0 mA.

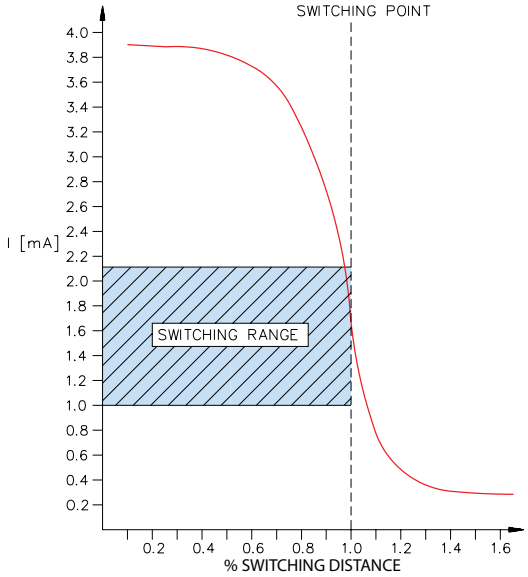
**Note: For capacitive and inductive magnet operated sensors, the current change characteristics are opposite.**

The current differential from the undamped to the damped (metal present) state is used to trigger an amplifier at a defined switching point. These sensors contain a relatively small number of components, which allows the construction of small devices and also assures a high degree of reliability.

In the undamped and damped state, the devices have fairly low impedance and are therefore, unaffected by most transients. NAMUR sensor circuits operate on direct current. Therefore, cable runs of several sensors may be run parallel to one another without mutual interference.

## Typical Output Curves



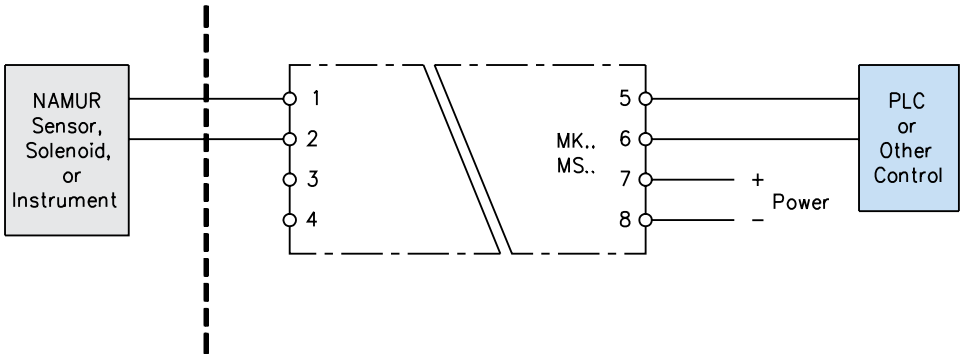




**Note:**
The typical curve of current versus sensing distance with 8.2 V DC supply and 1 kΩ source impedance. All NAMUR (Y0 and Y1) sensors are calibrated to pass through 1.55 mA at nominal sensing range ±10%.

We reserve the right to make technical alterations without prior notice.

# Technical Reference | Namur Wiring

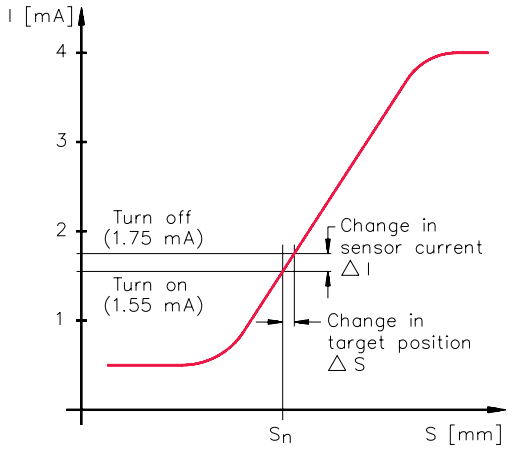
## Typical Intrinsically Safe Installation

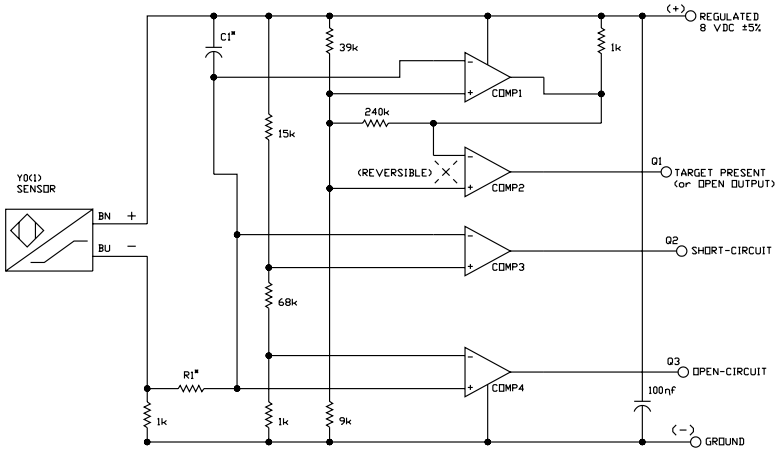



For guidance on installation of Turck intrinsically safe systems, refer to the Instrument Society of America publication ISA-RP12.6-1995, "Wiring Practices for Hazardous (Classified) Locations Instrumentation".

The complete line of Intrinsically Safe and Associated Apparatus can be found on Turck's website.

## Custom Interface Circuits




NAMUR sensors can operate outside the nominal operating values when the sensor is used in a nonhazardous area. The supply voltage limits are: $V_{min}$ = 5 VDC; $V_{max}$ = 30 VDC

Within this voltage range the load resistance $R_i$ must be adjusted for the supply voltage. The following table gives typical values:

| $V_{supply}$ (DC) | $R_i$ (kΩ ) | $I_{sn}$ (mA) | ΔI (mA) |
|---|---|---|---|
| 5 | 0.39 | ≈0.7 | ≈0.1 |
| 12 | 1.8 | ≈2.3 | ≈0.3 |
| 15 | 2.2 | ≈2.9 | ≈0.4 |
| 24 | 3.9 | ≈3.8 | ≈0.5 |

If these values are used, the current $I_{sn}$ corresponds to the rated operating distance (Sn) of the sensor. NAMUR sensors are short-circuit protected up to 15 VDC and reverse polarity protected up to 10 VDC.

We reserve the right to make technical alterations without prior notice.

| Third Party Approval and Certification Bodies | | |
|---|---|---|
| **Canadian Standards Association (CSA)** | CSA is a Canadian provider of product testing and certification services. CSA certifies products for use in hazardous (classified) locations as well as non-hazardous locations. CSA is accredited by the Standards Council of Canada and is also a US NRTL (Nationally Recognized Test Laboratory), an ATEX Notified Body, and an IECEx ExCB (IECEx Certification Body). | |
| **FM Approvals (FM)** | FM approves devices for use in hazardous (classified) locations as well as products in other loss prevention categories. FM is a US NRTL (Nationally Recognized Test Laboratory), an ATEX Notified Body, and an IECEx ExCB (IECEx Certification Body), and is SCC accredited for Canada. | |
| **Underwriters Laboratories (UL)** | UL is a US-based provider of product safety testing and certification services for a broad range of both industrial and consumer products. UL lists stand-alone devices, such as sensors, and recognizes system components, such as relays, PWAs, etc. UL is a US NRTL (Nationally Recognized Test Laboratory), an ATEX Notified Body, and an IECEx ExCB (IECEx Certification Body), and is SCC accredited for Canada. | |
| **ATEX** | ATEX is the name of the European Union Directive 2014/34/EU covering hazardous location equipment and environments. Product testing and certification is carried out by ATEX Notified Bodies, which are organizations that have been accredited by an EU member state to conduct such testing according to EN Standards. | |
| **IECEx** | The IECEx System is the International Electrotechnical Commission's (IEC) system for providing assurance that products meet specified IEC standards. The system aims to provide internationally accepted and standardized certifications. Product testing and certification are carried out by IECEx ExCBs (IECEx Certification Bodies). | |
| **CE** | CE marking is a certification mark that indicates conformity with health, safety, and environmental protection standards for products sold within the European Economic Area (EEA).[1] The CE marking is also found on products sold outside the EEA that are manufactured in, or designed to be sold in, the EEA. This makes the CE marking recognizable worldwide even to people who are not familiar with the European Economic Area. It is in that sense similar to the FCC Declaration of Conformity used on certain electronic devices sold in the United States. | |
| **CCC** | CCC stands for China Compulsory Certificate Mark and is required for products imported into China as well as products built in China. The CCC Mark was created in 2002 when China joined the World Trade Organization. The CCC applies to a wide range of products. As part of the approval process, product samples are subjected to conformity testing and once approved the manufacture will be subject to regular audits. The approval is required for sensors with operating voltages in excess of 36 volts. | |
| **RoHS** | RoHS stands for Restriction of Hazardous Substances. RoHS, also known as Directive 2002/95/EC, originated in the European Union and restricts the use of specific hazardous materials found in electrical and electronic products. All applicable products in the EU market after July 1, 2006 must pass RoHS compliance. | |

**Note:**
Turck products comply with many International standards. Consult factory for more information.

We reserve the right to make technical alterations without prior notice.

# Technical Reference | Compliances

## Hazardous Location Approvals

| The NAMUR sensors shown in this catalog are Intrinsically Safe per the following: | |
|---|---|
| **USA** | Class I, Division, Groups A, B, C, D; Class II, Division 1, Groups E, F, G; Class III, Division 1<br>Class I, Zone 0, AEx ia Group IIC T5<br>Intrinsically Safe when connected to an appropriately certified associated apparatus.<br>See Turck Control Drawing IS-1.118 for US installations. |
| **Canada** | Class I, Division, Groups A, B, C, D; Class II, Division 1, Groups E, F, G; Class III, Division 1<br>Ex ia Group IIC T4-T6<br>Intrinsically Safe when connected to an appropriately certified associated apparatus.<br>See Turck Control Drawing IS-1.203 for Canada installations. |
| **European Union** | II 1 G Exia IIC T4-T6 Ga<br>II 2 G Ex ia IIC T4-T6 Gb<br>II 1 D Ex ia T95°C or T115°C Da<br>Intrinsically Safe when connected to an appropriately ATEX-certified associated apparatus.<br>See ATEX certificate at Turck.com or contact factory for information on certified devices. |
| **IEC member countries per IECEx** | Zone 0 Ex ia IIC T4-T6<br>Ex ia IIC T4-T6<br>Ex ia D 20 T95°C or T115°C<br>Intrinsically Safe when connected to an appropriately IECEx-certified associated apparatus.<br>See IECEx certificate at Turck.com or contact factory for information on certified devices. |

| Many 3-wire DC sensors are approved for Class I, Division 2 hazardous locations: | |
|---|---|
| **USA and Canada** | Class I, Division 2, Groups A, B, C, D<br>Selected Sensors with –AN6X, -AP6X, -RN6X or -RP6X outputs.<br>Part numbers include /S1751 option code<br>Integral cables have ITC rating<br>See Control Drawing Ni-2.409 for US and Canada installations. |

| Standards for Intrinsically Safe systems may be found in the following publications: | |
|---|---|
| **USA** | National Electrical Code, ANSI/NFPA 70, Articles 504 and 505<br>Underwriters Laboratories Standard UL 913<br>Underwriters Laboratories Standard UL 60079-11<br>FM Approvals Standard Class 3610 |
| **Canada** | Canadian Electrical Code, C22.1 Section 18 and Appendix F<br>CSA C22.2 No. 157<br>CSA C22.2 No. 60079-11 |
| **Europe (EU)** | EN 60079-11 |
| **IECEx** | IEC 60079-11 |

We reserve the right to make technical alterations without prior notice.

## Hazardous Location Definitions

| Class/Division Classifications: | |
|---|---|
| **Class I** | Locations in which flammable gases or vapors exist or may be present in the air in quantities sufficient to produce explosive or ignitable mixtures. |
| **Class II** | Locations that are hazardous because of the presence of combustible dust. |
| **Class III** | Locations that are hazardous because of the presence of easily ignitable fibers or flyings, but in which such fibers or flyings are not likely to be suspended in the air in quantities sufficient to produce ignitable mixtures. |
| **Division 1** | Locations in which hazardous concentrations in the air exist continuously, intermittently, or periodically under normal operating conditions. |
| **Division 2** | Locations in which hazardous materials are handled, processed or used, but in which they are normally confined within closed containers or closed systems from which they can escape only in case of accidental rupture or breakdown. |
| **Group A** | Atmospheres containing acetylene. |
| **Group B** | Atmospheres containing hydrogen, fuel and combustible process gases containing more than 30% hydrogen by volume, or gases or vapors of equivalent hazard such as butadiene, ethylene oxide, propylene oxide and acrolein. |
| **Group C** | Atmospheres such as ethyl ether, ethylene, acetaldehyde, cyclopropane, or gases or vapors of equivalent hazard. |
| **Group D** | Atmospheres such as acetone, alcohol, ammonia, benzene, butane, cyclopropane, ethylene dichloride, gasoline, hexane, lacquer solvent vapors, methane, natural gas, naphtha, propane, xylene, or gases or vapors of equivalent hazard. |
| **Group E** | Atmospheres containing combustible metal dusts, including aluminum, magnesium, and their commercial alloys, and other combustible dusts with similarly hazardous characteristics. |
| **Group F** | Atmospheres containing combustible carbonaceous dusts, including carbon black, charcoal and coal. |
| **Group G** | Atmospheres containing other combustible dusts, such as chemical, agricultural or plastic dusts. |

| Class I Zone Classifications: | |
|---|---|
| **Zone 0** | Locations in which ignitable mixtures exist continuously or for long periods of time. |
| **Zone 1** | Locations in which ignitable mixtures are likely to occur during normal operation. |
| **Zone 2** | Locations in which ignitable mixtures are not likely to occur during normal operation. |
| **Gas Group IIC** | Atmospheres containing acetylene or hydrogen, or gases and vapors of equivalent hazard. |
| **Gas Group IIB** | Atmospheres containing ethylene, or gases and vapors of equivalent hazard. |
| **Gas Group IIA** | Atmospheres containing propane, or gases and vapors of equivalent hazard. |

We reserve the right to make technical alterations without prior notice.

# Technical Reference | Protection

## Enclosure Ratings

| NEMA 250-1991 | |
|---|---|
| **NEMA 1** | Enclosures are intended for indoor use primarily to provide a degree of protection against limited amounts of falling dirt. |
| **NEMA 3** | Enclosures are intended for outdoor use primarily to provide a degree of protection against rain, sleet, windblown dust, and damage from external ice formation. |
| **NEMA 4** | Enclosures are intended for indoor or outdoor use primarily to provide a degree of protection against windblown dust and rain, splashing water, hose-directed water, and damage from external ice formation. |
| **NEMA 4X** | Enclosures are intended for indoor or outdoor use primarily to provide a degree of protection against corrosion, windblown dust and rain, splashing water, hose-directed water and damage from external ice formation. |
| **NEMA 6** | Enclosures are intended for indoor or outdoor use primarily to provide a degree of protection against hose-directed water, the entry of water during occasional temporary submersion at a limited depth, and damage from external ice formation. |

| IEC 529 | |
|---|---|
| **IP 40** | Protection against solid bodies larger than 1 mm. No protection against liquids. |
| **IP 65** | Dust tight. Protection against water spray from all directions at 14.2 PSI through a 12.5 mm nozzle. |
| **IP 67** | Dust tight. Protection against the effects of immersion in water for 30 minutes at 1 meter. |
| **IP 68** | Dust tight. Protection against the effects of indefinite immersion in water at a pressure specified by the manufacturer.<br>Ex. Turck's IP 68 definitions is IP 67 plus.<br>■ 24 hours at 70 °C<br>■ 24 hours at -25 °C<br>■ 7 days at 1 meter under water at a constant temperature<br>■ 10 cycles +70 °C and -25 °C, minimum of 1 hour at each temperature |
| **IP 69K** | Hot steam jet cleaning per EN 60529 (IP enclosure ratings) and DIN 40050-9. |

**Turck Tip**

**For oily environments**

Use plastic sensors with quick disconnects and Turck TPU "/S90" cordsets.

**For washdown environments**

Use Turck's Uprox+ Washdown Sensors and appropriate mating cordsets.

We reserve the right to make technical alterations without prior notice.

## Material Descriptions

| Plastics | |
|---|---|
| **ABS - Acrylonitrile-Butadiene-Styrene** | Impact resistant, rigid. Resistant to aqueous acids, alkalis, salts, alcohols, oils, concentrated hydrochloric acid; disintegrated by concentrated sulfuric or nitric acids, esters, ketones |
| **CPE, Thermoset (rubber cables)** | Excellent resistance to oils, acids, chemicals, ozone, extreme temperatures, cuts, abrasions; flame retardant in welding applications |
| **PA - Polyamide (nylon)** | Good mechanical strength, temperature resistant |
| **PA, Amorphous (Trogamid T)** | Similar properties to nylon, but transparent. Hard, rigid, good chemical resistance |
| **PA 12-GF30** | Nylon 12, 30% glass filled |
| **PA 66-GF25-V0** | Nylon 66, 25% glass filled, self-extinguishing |
| **PBT - Polybutylene Terephthalate (when glass reinforced, Crastin®)** | Good mechanical strength; resistant to abrasion; resistant to alcohols, oils, some acids, trichloroethylene |
| **PBT-GF30-V0** | PBT, 30% glass filled, self-extinguishing |
| **PEI - Polyetherimide (Ultem®)** | Excellent resistance to most commercial automotive fluids, fully hydrogenated hydrocarbons, alcohols, weak aqueous solutions. Withstands higher temperatures. |
| **POM - Polyoxymethylene / Polyacetal (Delrin®)** | High impact resistance; good mechanical strength; good resistance to oils, alcohols, alkalis, gasoline, xylene, toluene. Dielectric constant 3.7 |
| **PP - Polypropylene** | Excellent resistance against chemicals including acids, solvents and solutions. High temperature resistance and good mechanical strength |
| **PTFE - Polytetrafluoroethylene** | Optimum resistance against high temperature and chemicals; low dielectric constant (2.0) |
| **TPU, Thermoplastic Polyurethane** | Elastic, resistant to abrasion, impact-resistant, oil- and grease-tolerant |
| **PVC - Polyvinylchloride** | Good mechanical strength, viscosity to impact; resistant to acids, alkalis |
| **PVC, irradiated** | Heat and chemical resistant, withstands short-term temperatures to 482° F |
| **PVDF - Polyvinylideneflouride (Kynar®)** | Resistant to high and low temperatures, good resistance to chemicals (similar to PTFE), high mechanical strength |
| **Silicon** | For use at high or low ambient temperatures (-50 to +180 °C), moderate mechanical strength, average resistance against alkalis, acids, oils, and solvents |
| **IRPA12 - Irradiated Polyamide (nylon)** | Good mechanical strength, temp. resistant |
| **EPTR - Elastomer, Polymer Thermal Plastic** | Good fluid resistance |
| **TROG - Trogamid T** | Hard, rigid, good chemical resistance |

| Metals | |
|---|---|
| **AG** | Armorguard® |
| **SS** | Stainless Steel |
| **CPB** | Chrome Plated Brass |
| **CuZn - Brass** | Generally good resistance to industrial atmospheres |
| **GD - AlSi12 - Aluminum, die-cast** | Low specific weight, long-life characteristics |
| **GD - ZnAl4Cu1 (Z410) - Zinc, die-cast** | Long-life characteristics |
| **TC** | PTFE Coated |
| **WG** | Weldguard® |
| **AL** | Anodized Aluminum |
| **SF - Stoneface®** | High abrasion resistance, excellent for MIG welding applications, high heat and weld flow immunity |
| **TS - Tool Steel** | Excellent durability |

We reserve the right to make technical alterations without prior notice.

# Technical Reference | General Specifications

## Chemical Compatibility

The information in this chart is derived from reputable industry sources and is to be used only as a guide in selecting materials suitable for your application. Turck does not warrant in any fashion that the information in this chart is accurate or complete, or that any material is suitable for any purpose.

Most ratings listed here apply to a 48-hour exposure period.

Ratings: A - No effect
B - Minor effect
C - Moderate effect
D - Severe effect
φ - No specific data, but probable rating.

| Housing Style | ABS | Trog. T | PA 12 | PBT | PEI | POM | PP | PTFE | PUR | PVC | PVDF | 306 SS | Al | Brass | Zinc |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ammonia, liquid** | B | B | A | B | D | C/D | A | A | C | A | A | B | A | D | A |
| **Chlorine anhydrous liquid** | nd | nd | D | D | nd | C | D | A | C | D | A | C | D | D | nd |
| **De-ionized water** | nd | nd | A | nd | A | nd | A | A | nd | A | A | A | A | A | nd |
| **Formic acid** | D | D | D | A | nd | C | A | A | C | A | A | A/B | A | D | D |
| **Gasoline** | D | A | A | A | A | A | C | A | A | C | A | A | A | A | nd |
| **Hydrochloric acid <40%** | A | A/B | D | A | A | C | C | A | D | B | A | D | D | D | D |
| **Hydrofluoric acid <50%** | C | D | D | B | A | D | A | A | C | B | A | D | D | D | nd |
| **Methanol** | D | D | B | A | A | A | A | A | B | A | A | A | A | A | A |
| **Phosphoric acid <40%** | B(C) | D | B | A | A | D | A | A | Dφ | B | B | D | C | D | D |
| **Potassium hydroxide <15%** | A | A | C | B | A | B | A | A | C | A | A | B | D | D | nd |
| **Sodium hydroxide <55%** | A | A | C | B | A | B | A | A | B | A | D | B | D | D | D |
| **Sodium hypochlorite ≤13%** | B | nd | B | A | nd | C | A | A | B | A | A | C | D | D | A |
| **Sulfuric acid <75%** | B | A | D | A | A | D | A | A | C | A | A | D | D | D | D |
| **Toluene** | D | A | A | A | A | A | C | A | C | D | A | A | A | A | nd |
| **Trichloroethylene** | D | A | C | A | nd | B | | A | D | D | B | A/B | D | A | A |

We reserve the right to make technical alterations without prior notice.

## Maximum Tightening Torque Specifications

The tightening torque should be considered for all threaded sensors to prevent premature failures of sensors due to stresses on the barrel and/or internal electronics. The values below are the absolute maximum ratings and apply only to the mounting hardware provided with each sensor. It is recommended to always allow for tolerances when specifying a tightening torque to prevent accidental over-tightening of the sensor. Liquid thread sealants of an anaerobic base, such as Loctite, are recommended if strong vibrations are likely.

Caution: Sensor barrels are typically brass. Consider break torque when selecting grade of thread sealant.

| Barrel Size | Metal Barrel | Plastic Barrel |
|---|---|---|
| **5 mm** | 5 Nm (3.7 ft-lb) | - - - - |
| **8 mm** | 5 Nm (3.7 ft-lb) | - - - - |
| **8 mm (M08 Ferrite)** | 7 Nm (5.2 ft-lb) | - - - - |
| **12 mm** | 10 Nm (7.4 ft-lb) | 1 Nm (0.7 ft-lb) |
| **18 mm** | 25 Nm (18 ft-lb) | 2 Nm (1.4 ft-lb) |
| **30 mm** | 75 Nm (55 ft-lb) | 5 Nm (3.7 ft-lb) |
| **47 mm** | 90 Nm (66 ft-lb) | - - - - |

## Fahrenheit to Celsius Temperature

* Water Freezing Point
** Water Boiling Point
For temperature conversions not given use the following formulas:
°Celsius = (°Fahrenheit - 32) x .556
°Fahrenheit = (°Celsius x 1.8) + 32

| Degrees Fahrenheit | Degrees Celsius |
|---|---|
| -70 | -56.7 |
| -65 | -53.9 |
| -60 | -51.2 |
| -55 | -48.4 |
| -50 | -45.6 |
| -45 | -42.8 |
| -40 | -40.0 |
| -35 | -37.3 |
| -30 | -34.5 |
| -25 | -31.7 |
| -20 | -28.9 |
| -15 | -26.1 |
| -10 | -23.4 |
| 0 | -17.8 |
| 5 | -15.0 |
| 10 | -12.2 |
| 15 | -9.5 |
| 20 | -6.7 |
| 25 | -3.9 |
| 30 | -1.1 |
| *32 | *0.0 |
| 35 | 1.7 |
| 40 | 4.4 |
| 45 | 7.2 |
| 50 | 10.0 |
| 55 | 12.8 |
| 60 | 15.6 |
| 65 | 18.3 |
| 70 | 21.1 |

| Degrees Fahrenheit | Degrees Celsius |
|---|---|
| 75 | 23.9 |
| 80 | 26.7 |
| 85 | 29.2 |
| 90 | 32.2 |
| 95 | 35.0 |
| 100 | 37.8 |
| 105 | 40.6 |
| 110 | 43.4 |
| 115 | 46.1 |
| 120 | 48.9 |
| 125 | 51.7 |
| 130 | 54.5 |
| 135 | 57.3 |
| 140 | 60.0 |
| 145 | 62.8 |
| 150 | 65.6 |
| 155 | 68.4 |
| 160 | 71.2 |
| 165 | 73.9 |
| 170 | 76.7 |
| 175 | 79.5 |
| 180 | 82.3 |
| 185 | 85.1 |
| 190 | 87.8 |
| 195 | 90.6 |
| 200 | 93.4 |
| 205 | 96.2 |
| 210 | 99.0 |
| **212 | **100.0 |

## Drill Hole Sizes for Metric Threads

| Thread Size | Pitch | Thru Hole (mm) | Tap Hole Dia. (mm) | Thru Hole (in) | Tap Hole Dia. (in) |
|---|---|---|---|---|---|
| **M5 x 0.5** | 0.5 | 5.0 | 4.5 | 13/64 | 5/32 |
| **M8 x 1** | 1.0 | 8.0 | 7 | 21/64 | 1/4 |
| **M12 x 1** | 1.0 | 12.0 | 11 | 31/64 | 13/32 |
| **M18 x 1** | 1.0 | 18.0 | 17 | 23/32 | 41/64 |
| **M30 x 1.5** | 1.5 | 30.0 | 28 | 1-3/16 | 1-5/64 |
| **PG 13.5** | 1.41 | 20.4 | 19 | 13/16 | 23/32 |
| **PG 36** | 1.59 | 47.0 | 45.5 | 1-7/8 | 1-47/64 |

We reserve the right to make technical alterations without prior notice.

# Technical Reference | Conversions

## Millimeters Equivalents of Decimals and Fractions

Notes:
1M = 100 cm = 1000 mm

For conversions not given use the following formulas:
Millimeters = Inches x 25.4
Inches = Millimeters ÷ 25.4

| Millimeters | Inches | Fraction |
|---|---|---|
| 0.10 | 0.0039 | |
| 0.20 | 0.0079 | |
| 0.30 | 0.0118 | |
| 0.40 | 0.0157 | |
| 0.50 | 0.0197 | |
| 0.60 | 0.0236 | |
| 0.70 | 0.0276 | |
| 0.80 | 0.0315 | |
| 0.90 | 0.0354 | |
| 1.00 | 0.0394 | |
| 1.59 | 0.0625 | 1/16 |
| 2.00 | 0.0787 | |
| 3.00 | 0.1181 | |
| 3.18 | 0.1250 | 1/8 |
| 4.00 | 0.1575 | |
| 4.76 | 0.1875 | 3/16 |
| 5.00 | 0.1969 | |
| 6.00 | 0.2362 | |
| 6.35 | 0.2500 | 1/4 |
| 7.00 | 0.2756 | |
| 7.94 | 0.3125 | 5/16 |
| 8.00 | 0.3150 | |
| 9.00 | 0.3543 | |
| 9.53 | 0.3750 | 3/8 |
| 10.00 | 0.3937 | |
| 11.00 | 0.4331 | |
| 11.11 | 0.4375 | 7/16 |
| 12.00 | 0.4724 | |
| 12.70 | 0.5000 | 1/2 |
| 13.00 | 0.5512 | |
| 14.00 | 0.5512 | |
| 14.29 | 0.5625 | 9/16 |
| 15.00 | 0.5906 | |
| 15.88 | 0.6250 | 5/8 |
| 16.00 | 0.6299 | |
| 17.00 | 0.6693 | |
| 17.46 | 0.6875 | 11/16 |
| 18.00 | 0.7087 | |
| 19.00 | 0.7480 | |
| 19.05 | 0.7500 | 3/4 |
| 20.00 | 0.7874 | |

| Millimeters | Inches | Fraction |
|---|---|---|
| 20.64 | 0.8125 | 13/16 |
| 21.00 | 0.8268 | |
| 22.00 | 0.8661 | |
| 22.23 | 0.8750 | 7/8 |
| 23.00 | 0.9055 | |
| 23.81 | 0.9375 | 15/16 |
| 24.00 | 0.9449 | |
| 25.40 | 1.000 | 1 |
| 26.00 | 1.024 | |
| 27.00 | 1.063 | |
| 28.00 | 1.102 | |
| 29.00 | 1.142 | |
| 30.00 | 1.181 | |
| 31.00 | 1.220 | |
| 32.00 | 1.260 | |
| 33.00 | 1.299 | |
| 34.00 | 1.339 | |
| 35.00 | 1.378 | |
| 36.00 | 1.417 | |
| 37.00 | 1.457 | |
| 38.00 | 1.496 | |
| 39.00 | 1.535 | |
| 40.00 | 1.575 | |
| 41.00 | 1.614 | |
| 42.00 | 1.654 | |
| 43.00 | 1.693 | |
| 44.00 | 1.732 | |
| 45.00 | 1.772 | |
| 46.00 | 1.811 | |
| 47.00 | 1.850 | |
| 48.00 | 1.890 | |
| 49.00 | 1.929 | |
| 50.00 | 1.969 | |
| 51.00 | 2.008 | |
| 52.00 | 2.047 | |
| 53.00 | 2.087 | |
| 54.00 | 2.126 | |
| 55.00 | 2.165 | |
| 56.00 | 2.205 | |
| 57.00 | 2.244 | |
| 58.00 | 2.283 | |

| Millimeters | Inches | Fraction |
|---|---|---|
| 59.00 | 2.323 | |
| 60.00 | 2.362 | |
| 61.00 | 2.402 | |
| 62.00 | 2.441 | |
| 63.00 | 2.480 | |
| 64.00 | 2.520 | |
| 65.00 | 2.559 | |
| 66.00 | 2.598 | |
| 67.00 | 2.638 | |
| 68.00 | 2.677 | |
| 69.00 | 2.717 | |
| 70.00 | 2.756 | |
| 71.00 | 2.795 | |
| 72.00 | 2.835 | |
| 73.00 | 2.874 | |
| 74.00 | 2.913 | |
| 75.00 | 2.953 | |
| 76.00 | 2.992 | |
| 77.00 | 3.031 | |
| 78.00 | 3.071 | |
| 79.00 | 3.110 | |
| 80.00 | 3.150 | |
| 81.00 | 3.189 | |
| 82.00 | 3.228 | |
| 83.00 | 3.268 | |
| 84.00 | 3.307 | |
| 85.00 | 3.346 | |
| 86.00 | 3.386 | |
| 87.00 | 3.425 | |
| 88.00 | 3.465 | |
| 89.00 | 3.504 | |
| 90.00 | 3.543 | |
| 91.00 | 3.583 | |
| 92.00 | 3.622 | |
| 93.00 | 3.661 | |
| 94.00 | 3.701 | |
| 95.00 | 3.740 | |
| 96.00 | 3.780 | |
| 97.00 | 3.819 | |
| 98.00 | 3.858 | |
| 99.00 | 3.898 | |
| 100.00 | 3.937 | |

We reserve the right to make technical alterations without prior notice.

**Axial Approach**
The approach of the target with its center maintained on the sensor reference axis.

**Axially Polarized Ring Magnet**
A ring magnet whose poles are the two flat sides of the disk. Mounted on pistons for permaprox® cylinder position sensing through nonmagnetic cylinder walls.

**Capacitive Proximity Sensor**
A proximity sensor producing an electrostatic field that senses conductive targets and nonconductive materials having a dielectric constant of >1 within its sensing zone.

**Complementary Output**
Two outputs, one normally open and one normally closed, that can be used simultaneously.

**Continuous Load Current**
The maximum current allowed to continuously flow through the sensor output in the ON state.

**Correction Factors**
Percentage of the rated operating distance (Sn) that represents the operating distance for targets constructed from materials other than mild steel (mild steel's correction factor is 1.0).

**Differential Travel (Hysteresis)**
The difference between the operating point as the target approaches the sensor face, and the release point as the target moves away. Given as a percentage of the operating distance (Sn).

**Dynamic Output**
A sensor output that stays energized for a set duration of time, independent of the time the target is present (one-shot).

**Embeddable (Shielded) Proximity Sensor**
A sensor that can be flush-mounted in any material without that material influencing the sensing characteristics.

**Free Zone**
The space around a proximity sensor that must be kept free of any material capable of affecting the sensing characteristics.

**Inductive Proximity Sensor**
A proximity sensor producing an electromagnetic field that senses only metal targets within its sensing zone.

**Inductive Magnet Operated Sensor (Permaprox®)**
A solid-state proximity sensor using inductive technology to detect magnetic fields, giving a switch point output similar to that of a inductive proximity sensor.

**Inrush Current**
The maximum instantaneous load current that a sensor can tolerate when switching the output. Commonly seen with capacitive loads.

**IP Rating**
Ingress Protection rating per IEC 529.

**Lateral Approach**
The approach of a target perpendicular to the sensor reference axis.

**Load**
A device or circuit that is operated by the energy output of another device such as a proximity sensor.

**M Threading**
ISO 68 Metric straight threading, designated as "Nominal Size" X "Pitch", in mm. (Ex. M5X0.5)

**Minimum Load Current**
For 2-Wire sensors, the minimum load current defines the smallest specified current that a sensor requires for reliable operation.

**NAMUR**
The acronym for a European standards organization.

**NAMUR Sensor**
A 2-wire variable-resistance DC sensor whose operating characteristics conform to DIN 19 234. Requires a remote amplifier for operation. Typically used for intrinsically safe applications.

**NEMA Rating**
An enclosure rating per NEMA Standard 250.

**No-Load Current**
The current drawn by a DC proximity sensor from the power supply when the outputs are not connected to a load.

**Nonembeddable (Nonshielded) Proximity Sensor**
A sensor is nonembeddable when a specified free zone must be maintained around its sensing face in order not to influence the sensing characteristics.

**Normally Closed (N.C.)**
The output is OFF when the target is detected by the sensor.

**Normally Open (N.O.)**
The output is ON when the target is detected by the sensor.

**NPN Output (Current Sinking)**
A transistor output that switches the common or negative voltage to the load. Load is between sensor and positive supply voltage.

**NPSM Threading**
American National Standard Straight Pipe Thread for Free-Fitting Mechanical Parts.

**NPT Threading**
American National Standard Taper Pipe Thread.

We reserve the right to make technical alterations without prior notice.

# Technical Reference | Glossary

**Off-State (Leakage) Current**
The current that flows through the load circuit when the sensor is in the OFF-state. Also known as leakage or residual current.

**Operating Distance**
A distance at which the target approaching the sensing face along the reference axis causes the output signal to change.

**PG Threading**
Steel conduit threading per German standard DIN 40 430.

**PNP Output (Current Sourcing)**
Transistor output that switches the positive voltage to the load. Load is between sensor and common.

**Programmable Output**
Sensor output whose N.O. or N.C. function can be selected by means of a jumper or specific terminal connection.

**Radially Polarized Ring Magnet**
A ring magnet whose poles are the inner and outer diameter rings.

**Rated Operating Distance (Sn)**
A conventional quantity used to designate the operating distance. It does not take into account either manufacturing tolerances or variations due to external conditions such as operating voltage and temperature.

**Reference Axis**
An axis perpendicular to the sensing face and passing through its center.

**Repeatability**
The deviation in the actual operating distance measured at a constant temperature and voltage over an 8-hour period. It is expressed as a percentage (%) of the rated operating distance (Sn).

**Response frequency**
The maximum rate that the output can change in response to the input and still maintain linearity.

**Response Time**
The time required for the device switching element to respond after the target enters or exits the sensing zone.

**Reverse Polarity Protection**
Internal components that prevent damage to the sensor due to the incorrect connection of the power supply.

**Ripple**
The alternating component remaining on a DC signal after rectifying, expressed in percentage of rated voltage.

**Sensing Face**
The surface of the proximity sensor through which the electromagnetic (or electrostatic) field emerges.

**Short-Circuit Protection**
The ability of a sensor to withstand a shorted condition (no current-limiting load connected) without damage.

**Slew Rate**
The rate of change of the output voltage with respect to a step change in input. A change in output of 0 to 10 volts at a slew rate of 1.25 V/ms would take 8 ms to slew to the new value.

**Solid State**
Pertains to devices using semiconductors instead of mechanical parts.

**Static Output**
A sensor output that stays energized as long as the target is present.

**Switching Frequency**
The maximum number of times per second that the sensor can change state (ON and OFF) under ideal conditions, usually expressed in Hertz (Hz).

**Time-Delay Before Availability**
The length of time after power is applied to the sensor before it is ready to operate correctly, expressed in milliseconds (ms).

**Uprox Sensor®**
An inductive proximity sensor that detects all metals at the same range. Uprox sensors are inherently weld-field immune, operate over a wider temperature range and have a higher switching frequency than standard inductive sensors.

**Uprox+ Sensor®**
Same basic characteristics as the Uprox Sensor, but with a redesigned multi coil system which provides increased sensing capabilities. Uprox+ also carries an IP68 environmental rating

**Weld-Field Immunity (WFI)**
The ability of a sensor not to false-trigger in the presence of strong magnetic fields typically produced by resistance welders.

**Wire-Break Protection**
Results in the output being OFF on a DC sensor if either supply wire is broken.

We reserve the right to make technical alterations without prior notice.

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# Warranty Terms and Conditions

## RISK OF LOSS

Delivery of the equipment to a common carrier shall constitute delivery to the Purchaser and the risk of loss shall transfer at that time to Purchaser. Should delivery be delayed due to an act or omission on the part of the Purchaser, risk of loss shall transfer to the Purchaser upon notification by Turck Inc. that the order is complete and ready for shipment.

## WARRANTIES

Turck Inc. (hereinafter "Turck") offers five (5) WARRANTIES to cover all products sold. They are as follows:

1) The **12-MONTH WARRANTY** is available for the products listed - generally those not covered by **LIFETIME**, **5-YEAR**, **24-MONTH** or **18-MONTH** warranty. No registration required.
2) The **18-MONTH WARRANTY** is available for the products listed - generally those not covered by **LIFETIME** or **5-YEAR WARRANTY**. No registration is required.
3) The **24-MONTH WARRANTY** is available for the products listed - generally those not covered by **LIFETIME**, **5-YEAR** or **18-MONTH**. No registration is required.
4) The **5-YEAR WARRANTY** is available generally for the products listed. No registration is required.
5) A **LIFETIME WARRANTY** is available for the products listed. It becomes effective when the accompanying TURCK **LIFETIME WARRANTY REGISTRATION** is completed and returned to Turck.

## GENERAL TERMS AND CONDITIONS FOR ALL WARRANTIES

- **12-MONTH STANDARD WARRANTY**
- **18-MONTH STANDARD WARRANTY**
- **24-MONTH STANDARD WARRANTY**
- **5-YEAR WARRANTY**
- **LIFETIME WARRANTY**

Turck warrants the Products covered by the respective WARRANTY AGREEMENTS to be free from defects in material and workmanship under normal and proper usage for the respective time periods listed above from the date of shipment from Turck. In addition, certain specific terms apply to the various WARRANTIES.

**THESE EXPRESS WARRANTIES ARE IN LIEU OF AND EXCLUDE ALL OTHER REPRESENTATIONS MADE - BOTH EXPRESSED AND IMPLIED. THERE ARE NO WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE FOR PRODUCTS COVERED BY THESE TERMS AND CONDITIONS.**

Turck warrants that the goods sold are as described, but no promise, description, affirmation of fact, sample model or representation, oral or written shall be part of an order, unless set forth in these terms and conditions, or are in writing and signed by an authorized representative of Turck. These WARRANTIES do not apply to any Product which has been subject to misuse, negligence, or accident - or to any Product which has been modified or repaired, improperly installed, altered, or disassembled - except according to Turck's written instructions.

These WARRANTIES are subject to the following conditions:

1) These WARRANTIES are limited to the electronic and mechanical performance only, as expressly detailed in the Product specifications and NOT to cosmetic performance.
2) These WARRANTIES shall not apply to any cables attached to, or integrated with the Product. However, the **18-MONTH WARRANTY** shall apply to cables sold separately by Turck.
3) These WARRANTIES shall not apply to any Products which are stored, or utilized, in harsh environmental or electrical conditions outside Turck's written specifications.
4) The WARRANTIES are applicable only to Products shipped from Turck subsequent to January 1, 1988.

## ADDITIONAL SPECIFIC TERMS FOR:

**(12-MONTH STANDARD WARRANTY) for Linear Displacement Transducers, EZ Track, RFID Products, Draw Wire Assemblies and Slip Rings.**

**(18-MONTH STANDARD WARRANTY) FOR Q-TRACK INDUCTIVE SENSORS, ULTRASONIC SENSORS, FLOW SENSORS, PRESSURE SENSORS, TEMPERATURE SENSORS, INCLINOMETERS, CABLES AND ALL NON-SENSING PRODUCTS SOLD BY TURCK INC. INCLUDING MULTI-SAFE, MULTI-MODUL, MULTI-CART AND RELATED AMPLIFIER PRODUCTS, RELAYS AND TIMERS.**

**(24-MONTH STANDARD WARRANTY) FOR ENCODERS excluding Draw Wire Assemblies.**

**5-YEAR WARRANTY FOR INDUCTIVE AND CAPACITIVE PROXIMITY SENSORS: The periods covered for the above WARRANTIES and Products shall be 12 MONTHS, 18-MONTHS, 24-MONTHS and 5-YEARS, respectively, from the date of shipment from Turck.**

**LIFETIME WARRANTY (OPTIONAL - REGISTRATION REQUIRED) FOR INDUCTIVE, INDUCTIVE MAGNET OPERATED AND CAPACITIVE PROXIMITY SENSORS SOLD TO THE ORIGINAL PURCHASER FOR THE LIFETIME OF THE ORIGINAL APPLICATION.**

# Warranty Terms and Conditions

**THE FOLLOWING TERMS APPLY TO THE LIFETIME WARRANTY IN ADDITION TO THE GENERAL TERMS:**

1) This WARRANTY shall be effective only when the LIFETIME WARRANTY REGISTRATION has been completed, signed by the End User and an authorized Turck Representative or Distributor and has been received by Turck no later than six (6) months after installation in the End User's Plant, or two (2) years from the date product was shipped from Turck, whichever is sooner.
2) This warranty is available only to Turck's authorized Representatives, Distributors and to the Original User. (The term "Original User" means that person, firm, or corporation which first uses the Product on a continuous basis in connection with the operation of a production line, piece of machinery, equipment, or similar device.) In the event the ownership of the product is transferred to a person, firm or corporation other than the Original User, this WARRANTY shall terminate.
3) This WARRANTY is applicable only to the Original Application. In the event the machinery, equipment, or production line to which the Product is connected, or on which it is installed, is substituted, changed, moved or replaced, the WARRANTY shall terminate.
4) This WARRANTY shall be valid only if the Product was purchased by the Original User from Turck, or from an authorized Turck Distributor, or was an integral part of a piece of machinery and equipment obtained by the Original user from an Original Equipment Manufacturer, which itself, was purchased directly from Turck or from an authorized Distributor.

**PURCHASER'S REMEDIES**

This Remedy shall apply to all WARRANTIES. If a Turck Distributor desires to make a WARRANTY Claim, the Distributor shall, if requested by Turck, ship the Product to Turck's factory in Minneapolis, Minnesota, postage or freight prepaid. If the User desires to make a WARRANTY Claim, they shall notify the authorized Turck Distributor from whom it was purchased or, if such Distributor is unknown, shall notify Turck. Turck shall, at its option, take any of the following two courses of action for any products which Turck determines are defective in materials or workmanship.

1) Repair or replace the Product and ship the Product to the Original Purchaser or to the authorized Turck Distributor, postage or freight prepaid; or
2) Repay to the Original Purchaser that price paid by the Original Purchaser; provided that if the claim is made under the LIFETIME WARRANTY, and such Product is not then being manufactured by Turck, then the amount to be repaid by Turck to the Original Purchaser shall be reduced according to the following schedule:

| Number of Years Since Date of Purchase by Original Purchaser | Percent of Original Purchase Price To Be Paid by Turck |
|---|---|
| 10 | 50% |
| 15 | 25% |
| 20 | 10% |
| More than 20 | 5% |

**PURCHASER'S REMEDIES SHALL BE LIMITED EXCLUSIVELY TO THE RIGHT OF REPLACEMENT, REPAIR OR REPAYMENT AS PROVIDED AND DOES NOT INCLUDE ANY LABOR COST OR REPLACEMENT AT ORIGINAL PURCHASER'S SITE. TURCK SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL DAMAGES RESULTING FROM ANY BREACH OF ANY WARRANTY, EXPRESSED OR IMPLIED, APPLICABLE TO THE PRODUCT, INCLUDING WITHOUT LIMITATION, ANY DAMAGES RESULTING FROM PROPERTY DAMAGE, PERSONAL INJURY OR BUSINESS INTERRUPTION.**

**CONSIDER SAFETY AND PROTECTION PRECAUTIONS**

Turck takes great care to design and build reliable and dependable products, however, some products can fail eventually. You must take precautions to design your equipment to prevent property damage and personal injury in the unlikely event of failure. As a matter of policy, Turck does NOT recommend the installation of electronic controls as the sole device FOR THE PROTECTION OF PERSONNEL in connection with power driven presses, brakes, shears and similar equipment and, therefore, the customer should build in redundancy or dual control using approved safety devices for these applications.

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TURCK

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# Proximity

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Turck's sensors, connectivity, and fieldbus technology products are built to be the best. As one of the most **prominent** sensor manufacturers **in the world**, we even back our sensors with a **lifetime warranty**. Turck works by bringing **rugged engineering** solutions to your industrial automation applications.

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# Innovative Sensing Solutions

At Turck, we understand that every application is unique, which is why we dedicate ourselves to finding the optimal engineered solution for all applications. Whether you need a sensor, cordset, or network I/O, Turck's range of innovative manufacturing capabilities and engineering expertise allows us to work beyond the scope of our competitors. We utilize the most up-to-date manufacturing processes, including EDM, molding, and laser trimming, ensuring that our products not only survive, but thrive in the harshest of conditions.

## Complimentary Sensor Audits

We consider it our job to help our customers decrease failures and reduce operation downtime, which is why we offer a complimentary audit program. The audit helps to identify, evaluate, and solve problem areas where sensors and cordsets are continually damaged or destroyed. This reduction in downtime will reduce your costs and ensure you get the most value out of your production processes.

## Lifetime Warranty

We have the utmost confidence in our products, and you should, too! Solutions from Turck are not only built to work, but built to last. All of our products come with extensive warranties, and many of our sensors have an optional lifetime warranty against sensor failure, so you can rest easy knowing that you have invested in a dependable solution.

### GLOBAL LEADERS

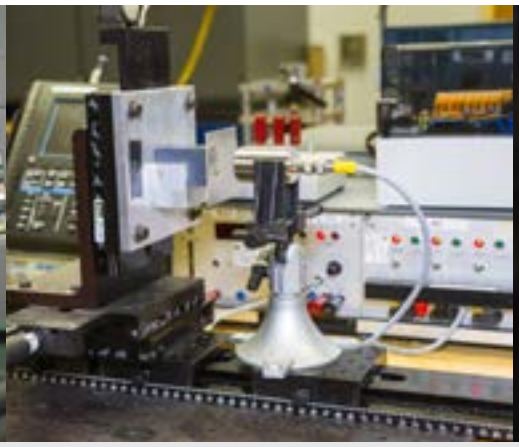
PROVIDING CUSTOMERS WITH SENSING SOLUTIONS

- Sensing ranges from .08 – 100 mm
- Overmolds
- Custom designed sensor housings
- Pigtails / Mold-ons
- Mating cordsets
- Free software and support
- Wide range of accessories
- Kitting

### MATERIALS

BUILT TO LAST IN THE HARSHEST ENVIRONMENTS

- Stainless steel
- Overmolds
- Viton
- PUR/TPU/TPE
- Armored Cable
- PTFE and Weldguard coating
- FDA Approved Washdown



### SHIPPING

SHIP ONE-TO-ONE MILLION, WITH NO LIMIT

We understand that some applications require less parts, which is why we offer flexible minimum orders to ensure you only receive the number of parts you need.

### TESTING

OUR PRODUCTS UNDERGO EXTENSIVE TESTING

To continuously deliver solutions of only the highest quality, Turck products undergo a rigorous set of tests. These tests are in accordance to national and international standards, such as IEC and UL. Our products meet and exceed industry standards, ensuring their survivability and dependability in all applications.

### INVENTORY

USE TURCKS VAST NETWORK OF DISTRIBUTORS, OR...

Get immediate access to your Turck products with your own on-site Turck vending machine. Convenient access to your most used products can help save money and reduce downtime.

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# Rectangular Inductive Sensor Selection Guide

| Rectangular Style Sensors | | | | | |
|---|---|---|---|---|---|
| | | | | | |
| **Housing** | 4.7 mm | 5.5 mm | 6 mm | 8 mm | 10 mm |
| **Sensing Range** | 2 mm | 2 - 3.5 mm | 3 mm | 5 - 8 mm | 2 - 5 mm |
| **Pages** | A11 | A11 | A11 | A13 - 16 | A17 |
| **Features** | | | | Uprox+ | Uprox+ |

| Rectangular Style Sensors | | | | | |
|---|---|---|---|---|---|
| | | | | | |
| **Housing** | Variable, with pigtail | 10 mm | 12 mm | 14 mm | 20 mm |
| **Sensing Range** | 2 - 7 mm | 2 - 4 mm | 2 - 5 mm | 10 - 20 mm | 15 - 25 mm |
| **Pages** | A19 | A21 | A23 | A25 | A27 - 30 |
| **Features** | | | Uprox+ | | |

| Rectangular Style Sensors | | | | | |
|---|---|---|---|---|---|
| | | | | | |
| **Housing** | 18 mm | 25 mm | 30 mm | 40 mm | 40 mm |
| **Sensing Range** | 5 - 10 mm | 10 mm | 15 mm | 20 mm | 15 - 50 mm |
| **Pages** | A31 | A31 | A31 | A33 | A35 - 40 |
| **Features** | | | | Uprox+ | Uprox+ |

| Rectangular Style Sensors | | | | | |
|---|---|---|---|---|---|
| | | | | | IS |
| **Housing** | 40 mm | 80 mm | 80 mm | 90 mm | Variable |
| **Sensing Range** | 15 - 50 mm | 40 - 75 mm | 50 - 75 mm | 60 - 100 mm | 2 - 50 mm |
| **Pages** | A41 - 46 | A47 - 50 | A51 | A53 | A55 - 58 |
| **Features** | Uprox+ | Uprox+ | Uprox+ | | Intrinsically Safe |

We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensor Part Number Key

| B | i | 15 | | - | Q | 20 | | - | A | P | 6 | X2 | Wiring Option* | Special Option Code** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

**Mounting**
B = embeddable
N = nonembeddable

**Principle of Operation**
i = inductive

**Rated Operating Distance (mm)**

**Sensing Characteristics**
S = side sensing on Q10S sensor
U = Uprox® Sensor

**Housing Style**
**Rectangular**
K = smooth
Q = metal or plastic, various rectangular styles
**Limit Switch**
CA = Stubby®, short aluminum housing, connector
CK = Stubby, short plastic housing, connector
CP = Combiprox®, plastic housing, terminal chamber base with removable sensor

**Housing Height (mm)**

**Number of LEDs**
(blank) = no LEDs
X = 1 LED
X2 = 2 LEDs

**Voltage Range**
**AC/DC: (No SCP**)**
3 = 20-250 VAC, 10-300 VDC
31 = 20-250 VAC, 10-300 VDC, plastic barrel
**AC/DC: (Latched SCP)**
30 = 20-250 VAC, 10-300 VDC 400 mA
32 = 20-250 VAC, 10-300 VDC 400 mA
**DC:**
4 = 10-65 VDC, polarity protected, pulsed SCP**
6 = 10-30 VDC, polarity protected, pulsed SCP
**SCP = short-circuit and overload protection

**Output**
D = 2-wire DC (transistor output)
DZ = 2-wire AC/DC, (power MOSFET output)
N = NPN transistor (current sinking)
P = PNP transistor (current sourcing)
Z = 2-wire AC or 2-wire AC/DC

**Output Function**
A = normally open (N.O.)
F = connection programmable (N.O. or N.C.)
V = complementary outputs: one N.O., one N.C.
Y0 = NAMUR output, requires switching amplifier
Y1 = NAMUR output, requires switching amplifier/ATEX approved

**Secondary Housing Modifier**
SR = straight terminal chamber

**NOTE:**
Part number keys are to assist in identification only.
Verify new part numbers with factory; some configurations are not possible.

## Wiring Options*

**A. Connectorized Sensor**

**Bi15 - Q20 - AN6X2 - H1 1 4 1**

**Connector Family**
B1 = Minifast®, Metal, Male
B2 = Minifast, Plastic, Male
B3 = Microfast®, Metal, Male
H1 = Eurofast®, Metal or Plastic, Male
V1 = Picofast®, Metal, Male
V2 = Picofast, Snap and M8x1, Male (Q08 Only)

**Connector/Sensor Transition**
1 = straight

**Wiring Configuration**
**Example:**
1 = Standard
3 = N.C. DC Output on Pin 4 (for US)

**Number of Pins**

**B. Potted Cable**

**Bi15 - Q20 - AN6X2 - 7M**

**Cable Length**
Blank = 2 meter cable
7M = 7 meter cable

## Special Option Codes**

**Bi - 5 - Q08 - AN6XS /S34**

**Option Code**
**Example:**
/S34 = Weld Field Immune
/S97 = -40 °C (-40 °F) Operating Temperature
/S100 = +100 °C (+212 °F) Operating Temperature
/S1590 = CK/CA40 sensors with Weldguard laminate
/S1591 = CA40 sensors with Weldguard and Armorguard

We reserve the right to make technical alterations without prior notice.

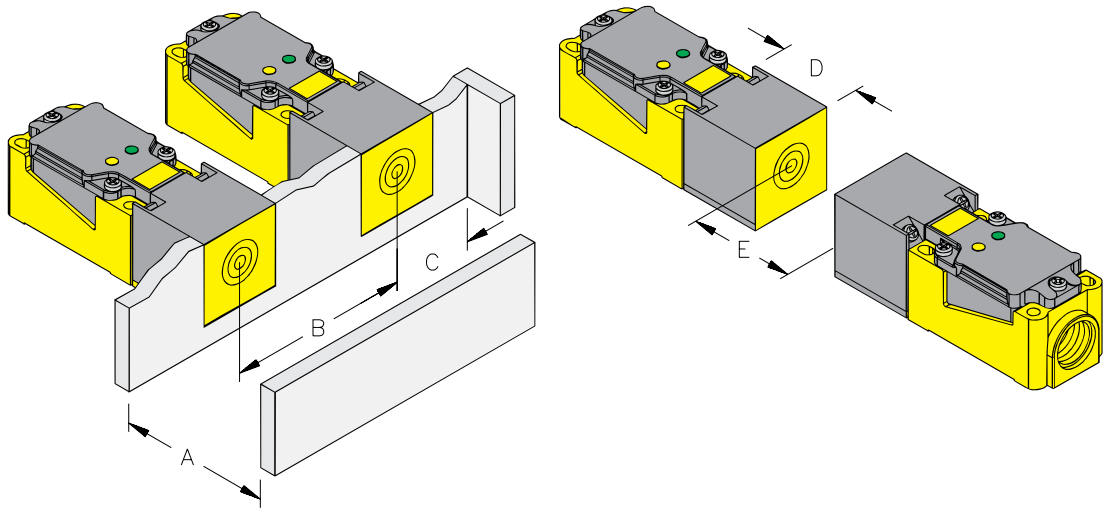
# Rectangular Inductive Sensors

## Mounting

Turck inductive proximity sensors are manufactured with a shielded coil, designated by "Bi" in the part number, and a nonshielded coil, designated by "Ni" in the part number (see page A2). Embeddable (shielded) units may be safely flush-mounted in metal. Nonembeddable (nonshielded) units require a metal free area around the sensing face. Because of possible interference of the electromagnetic fields generated by the oscillators, minimum spacing is required between adjacent or opposing sensors.

It is good engineering practice to mount sensors horizontally or with the sensing face looking down. Avoid sensors that look up wherever possible, especially if metal filings and chips are present.

## Embeddable Mounting Characteristics - Rectangular Housings




### Flush Mountable - CK40 and CP40

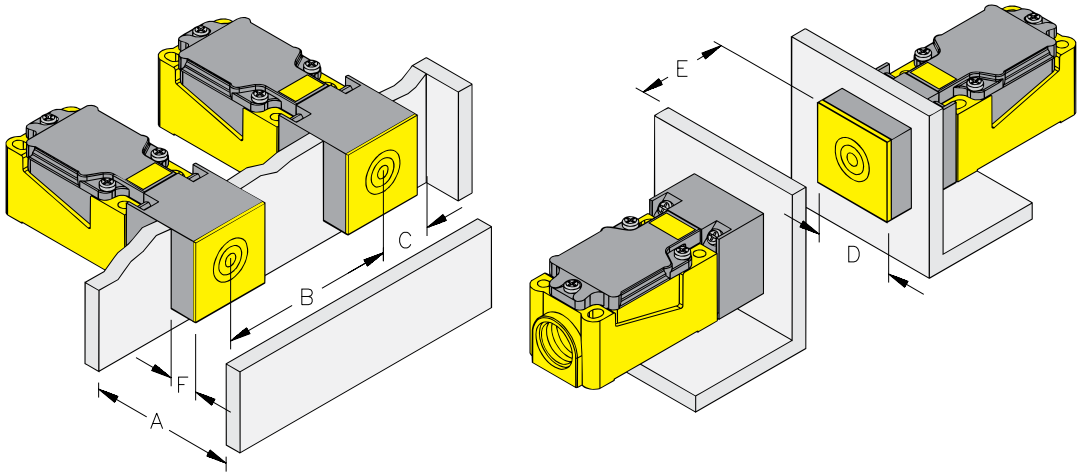
| Housing Type | Sensor Type | A | B | C | D | E |
|---|---|---|---|---|---|---|
| CP40/CK40 | Bi15U | 45.00 | 80.00 | 40.00 | 40.00 | 90.00 |
| CP40/CK40 | Bi15 | 45.00 | 80.00 | 40.00 | 40.00 | 90.00 |
| CP40/CK40/CA40 | Bi20U | 60.00 | 80.00 | 40.00 | 40.00 | 120.00 |
| CP40 | Bi20 | 60.00 | 80.00 | 40.00 | 40.00 | 120.00 |
| CP40/CK40 | Bi30U | 90.00 | 80.00 | 40.00 | 40.00 | 180.00 |

Dimensions are in mm.

We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors

## Nonembeddable Mounting Characteristics - Rectangular Housings

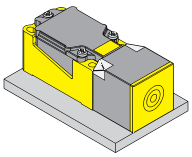



### Non - Flush Mountable - CA25, CK40, and CP40

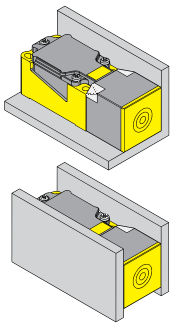
| Housing Type | Sensor Type | A | B | C | D | E | F | 1-Side | 2-Side | 3-Side | 4-Side |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CP/CK40 | Ni20 | 60.00 | 120.00 | 60.00 | 40.00 | 120.00 | 20.00 | | | | |
| CP/CK40 | Ni25U | 75.00 | 240.00 | 60.00 | 40.00 | 150.00 | 30.00 | Sr=22 mm* | Sr=20 mm* | Sr=17 mm* | Sr=13 mm* |
| CP/CK40 | Ni25 | 75.00 | 120.00 | 60.00 | 40.00 | 150.00 | 40.00 | | | | |
| CP/CK40 | Ni35U | 105.00 | 240.00 | 60.00 | 40.00 | 210.00 | 30.00 | Sr=28 mm* | Sr=24 mm* | Sr=19 mm* | |
| CP/CK40 | Ni35 | 105.00 | 180.00 | 60.00 | 40.00 | 210.00 | 40.00 | | | | |
| CP/CK40 | Ni40U | 120.00 | 240.00 | 60.00 | 40.00 | 240.00 | 30.00 | | | | |
| CP/CK40 | Ni40 | 120.00 | 180.00 | 60.00 | 40.00 | 240.00 | 40.00 | | | | |
| CP/CK40 | Ni50U | 105.00 | 240.00 | 60.00 | 40.00 | 240.00 | 30.00 | Sr=35 mm* | Sr=25 mm* | Sr=20 mm* | Sr=15 mm* |

Dimensions are in mm.
*Uprox Non-embeddable flush mounting guidelines. The above Uprox Ni sensors with DC ouptuts can be flush mounted because the sensor automatically compensates for metal alongside its sensing face by decreasing the sensing range, preventing the output from locking on.

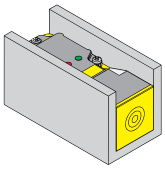
**1-Side**



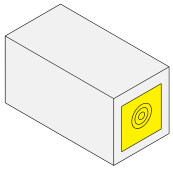
**2-Side**



**3-Side**

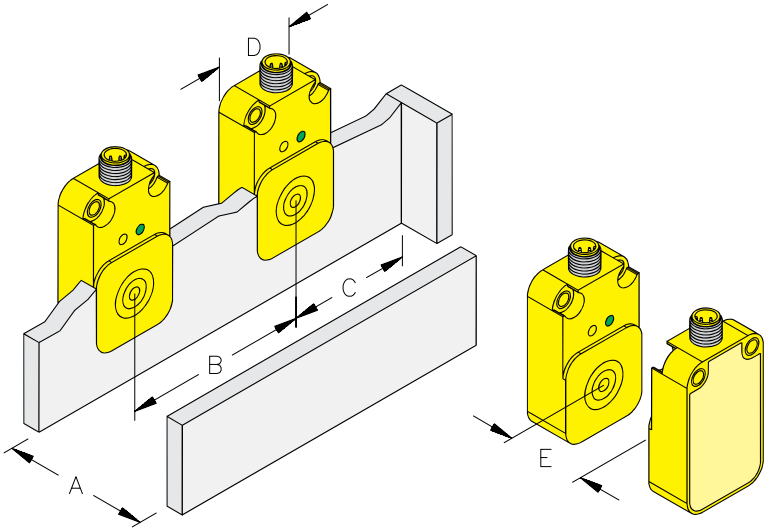


**4-Side**



We reserve the right to make technical alterations without prior notice.

## Embeddable Mounting Characteristics - Rectangular Housings




### Flush Mountable

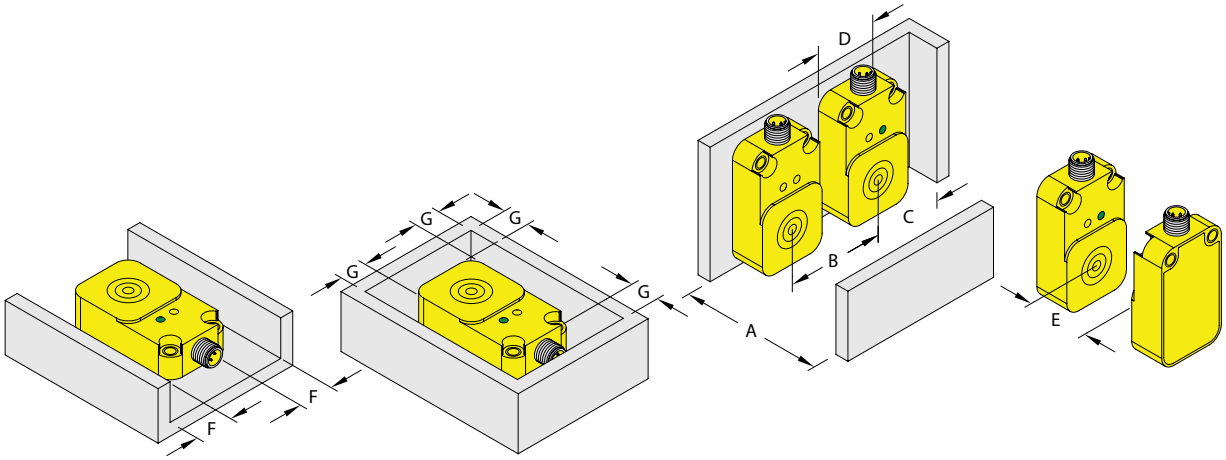
| Housing Type | Sensor Type | A | B | C | D | E |
|---|---|---|---|---|---|---|
| **Q4.7** | **Bi2** | 6.00 | 16.00 | 12.00 | 8.00 | 12.00 |
| **Q5.5** | **Bi2** | 6.00 | 16.00 | 8.00 | 8.00 | 12.00 |
| **Q06** | **Bi3** | 9.00 | 35.00 | 17.00 | 17.30 | 18.00 |
| **Q08** | **Bi5** | 15.00 | 40.00 | 20.00 | 20.00 | 30.00 |
| **Q08** | **Bi5U** | 15.00 | 40.00 | 20.00 | 20.00 | 30.00 |
| **Q08** | **Bi7** | 21.00 | 40.00 | 20.00 | 20.00 | 42.00 |
| **Q10** | **Bi8** | 24.00 | 50.00 | 25.00 | 25.00 | 48.00 |
| **Q10** | **Bi8U** | 24.00 | 50.00 | 25.00 | 25.00 | 48.00 |
| **Q14** | **Bi10** | 30.00 | 45.00 | 30.00 | 30.00 | 60.00 |
| **Q14** | **Bi10U** | 30.00 | 45.00 | 30.00 | 30.00 | 60.00 |
| **Q20** | **Bi15** | 45.00 | 60.00 | 40.00 | 40.00 | 90.00 |
| **Q20** | **Bi15U** | 45.00 | 60.00 | 40.00 | 40.00 | 90.00 |
| **CP80** | **Bi40** | 120.00 | 160.00 | 80.00 | 80.00 | 240.00 |
| **Q80** | **Bi50U** | 150.00 | 240.00 | 80.00 | 80.00 | 300.00 |

Dimensions are in mm.

We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors

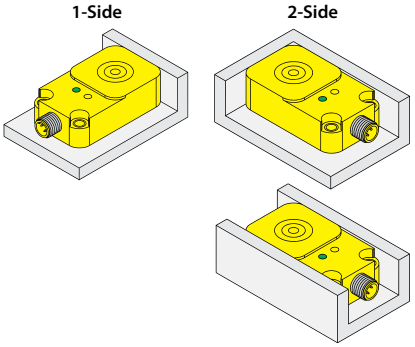
## Embeddable Mounting Characteristics - Rectangular Housings




### Non-flush Mountable - Minimum Distances - Q5.5, Q14, Q20, CP80, Q80 and K90

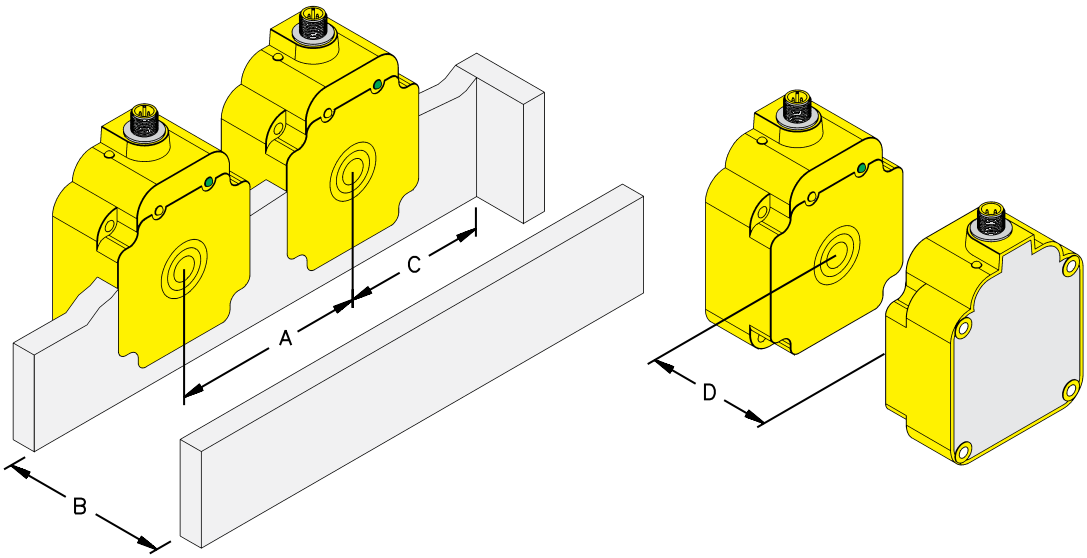
| Housing Type | Sensor Type | A | B | C | D | E | F | G | 1-Side | 2-Side | 3 & 4-Side |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Q5.5 | Ni3.5 | 11.00 | 24.00 | 12.00 | 8.00 | 21.00 | 4.00 | 8.00 | | | |
| Q14 | Ni20 | 60.00 | 90.00 | 45.00 | 30.00 | 120.00 | 20.00 | 40.00 | | | |
| Q20 | Ni25 | 75.00 | 120.00 | 60.00 | 40.00 | 150.00 | 25.00 | 50.00 | | | |
| CP80 | Ni40 | 120.00 | 240.00 | 120.00 | 80.00 | 240.00 | 80.00 | 80.00 | | | |
| Q80 | Ni75U | 225.00 | 240.00 | 60.00 | 80.00 | 450.00 | 80.00 | 80.00 | Sr=50 mm* | Sr=45 mm* | Sr=40 mm* |
| CP80 | Ni75U | 225.00 | 240.00 | 120.00 | 80.00 | 450.00 | 80.00 | 80.00 | | | |
| K90 | Ni60 | 180.00 | 270.00 | 135.00 | 90.00 | 360.00 | 60.00 | 90.00 | | | |
| K90SR | Ni100U | 300.00 | 270.00 | 90.00 | 90.00 | 600.00 | 100.00 | 200.00 | Sr=70 mm* | | |

Dimensions are in mm.
*Uprox Non-embeddable flush mounting guidelines. The above Uprox Ni sensors with DC ouputs can be flush mounted because the sensor automatically compensates for metal alongside its sensing face by decreasing the sensing range, preventing the output from locking on.




We reserve the right to make technical alterations without prior notice.

## Embeddable Mounting Characteristics

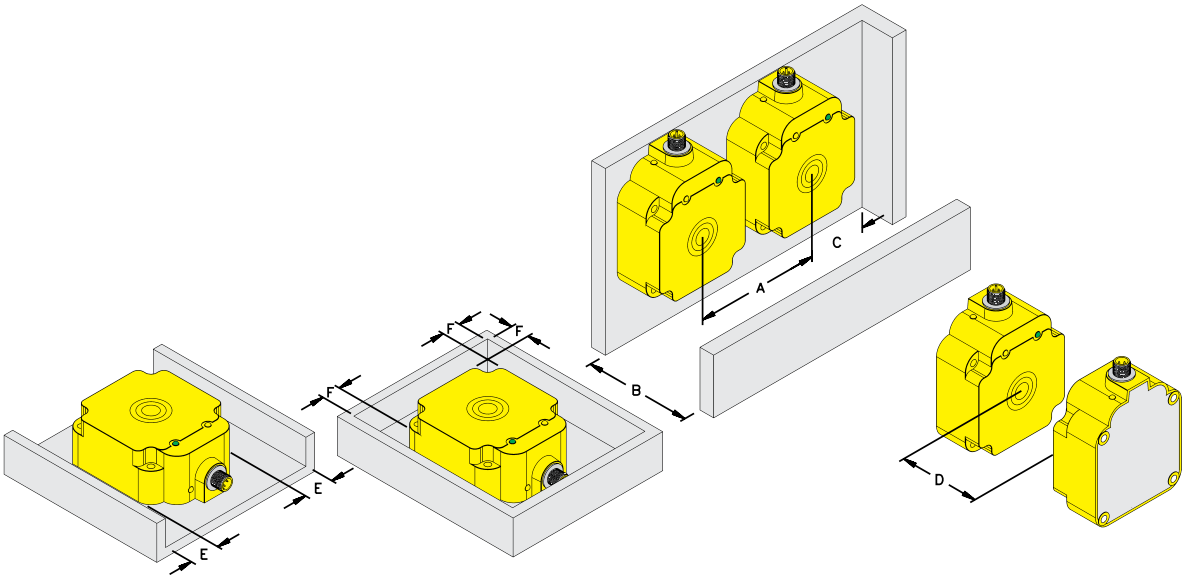



### Embeddable, Square Sensors

| Part Number | A | B | C | D |
|---|---|---|---|---|
| Bi50U-Q80 | 240.00 | 150.00 | 80.00 | 300.00 |

Dimensions are in mm.

## Nonembeddable Mounting Characteristics




### Nonembeddable, Square Sensors

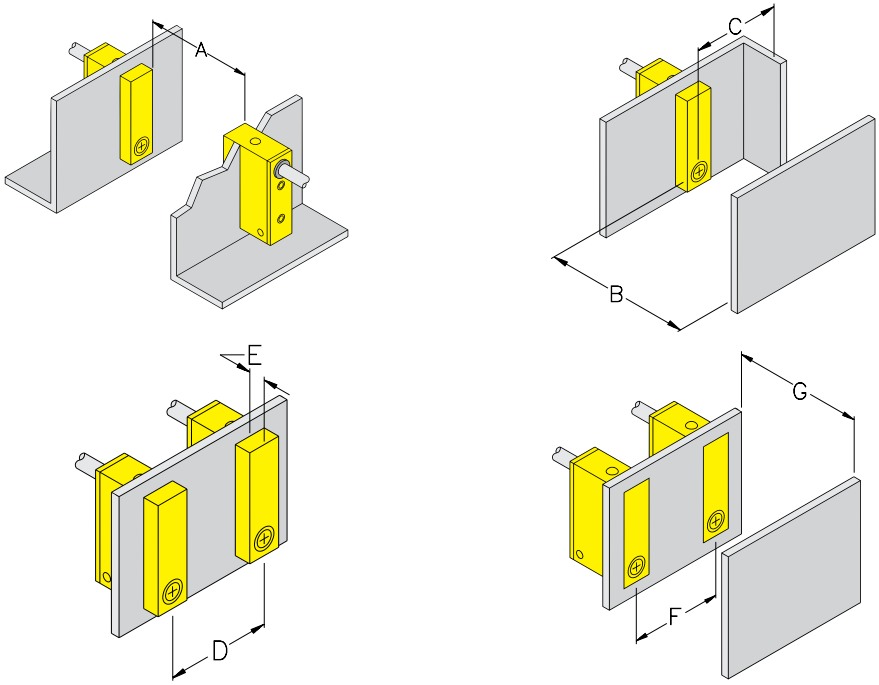
| Part Number | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| Ni75U-Q80 | 240.00 | 225.00 | 60.00 | 450.00 | 80.00 | 80.00 |

Dimensions are in mm.

We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors

## Embeddable Mounting Characteristics - Rectangular Housings




### Flush Mountable

| Housing Type | Sensor Type | Housing | A | C | F | G |
|---|---|---|---|---|---|---|
| Q6.5 | Bi1 | 6.50 | 6.00 | 7.00 | 13.00 | 3.00 |
| Q10S | Bi2 | 10.00 | 12.00 | 10.00 | 20.00 | 6.00 |
| Q12 | Bi2 | 12.00 | 12.00 | 12.00 | 24.00 | 6.00 |

Dimensions are in mm.

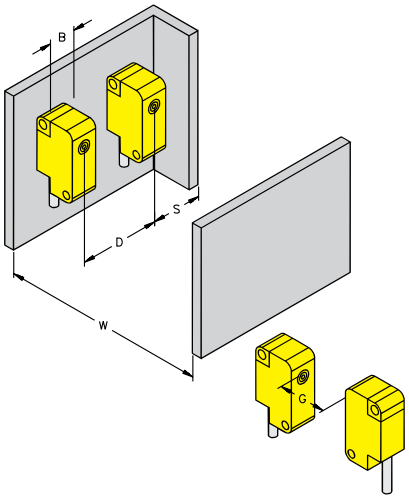
### Non-Flush Mountable

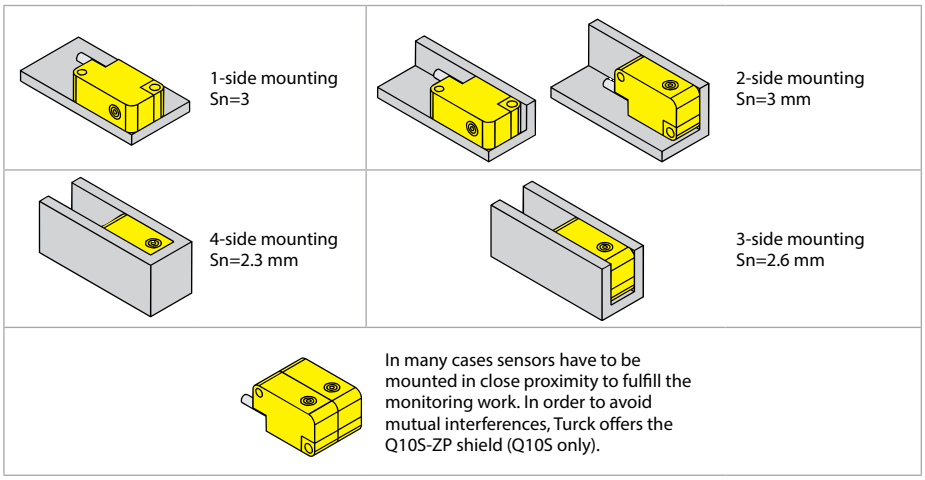
| Housing Type | Sensor Type | Housing | A | B | C | D | E |
|---|---|---|---|---|---|---|---|
| Q6.5 | Ni2 | 6.50 | 12.00 | 6.00 | 10.00 | 20.00 | 4.00 |
| Q9.5 | Ni2 | 9.50 | 12.00 | 6.00 | 14.00 | 19.00 | 4.00 |
| Q12 | Ni4 | 12.00 | 24.00 | 12.00 | 18.00 | 24.00 | 8.00 |
| Q25 | Ni10 | 25.00 | 60.00 | 30.00 | 38.00 | 75.00 | 20.00 |
| Q30 | Ni15 | 30.00 | 90.00 | 45.00 | 45.00 | 90.00 | 30.00 |

Dimensions are in mm.

We reserve the right to make technical alterations without prior notice.

## Embeddable Mounting Characteristics

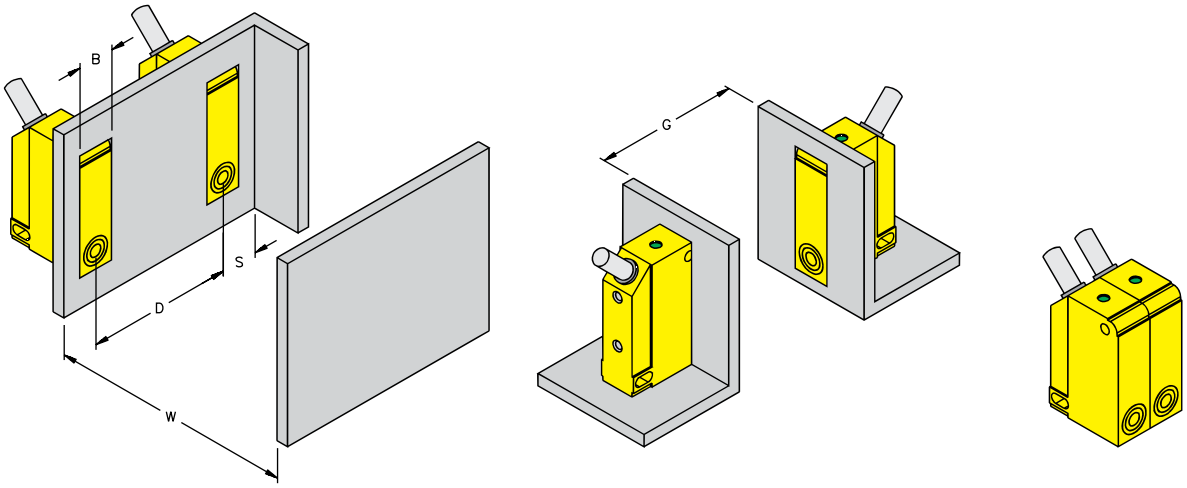



### Nonembeddable, Square Sensors

| Part Number | D | W | S | G | B Width of Active Face |
|---|---|---|---|---|---|
| **Ni5U-Q10S** | 31.00 | 15.00 | 15.30 | 30.00 | 10.20 |

Dimensions are in mm.




### Embeddable, Square Sensors

| Part Number | D | W | S | G | B Width of Active Face |
|---|---|---|---|---|---|
| **Bi5U-Q12** | 48.00 | 25.00 | 12.00 | 50.00 | 12.00 |

Dimensions are in mm.

We reserve the right to make technical alterations without prior notice.

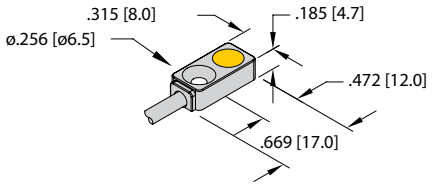
Notes

# Rectangular Inductive Sensors | Q4.7, Q5.5, & Q06

## Top Sensing Subminiature Qpak Housing

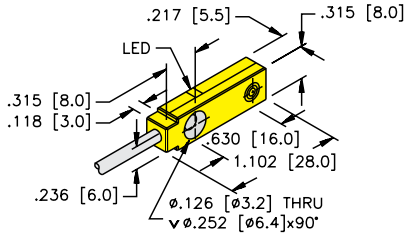
| Housing Style | Dimension Drawings |
|---|---|

A



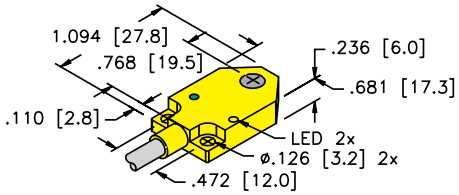

4.7 mm - Embeddable, Potted-In Cable

B




5.5 mm - Embeddable/Nonembeddable, Potted-In Cable

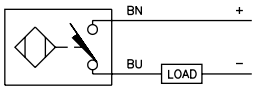
C



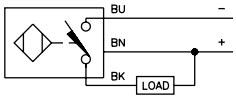

6.0 mm - Embeddable, Potted-In Cable

### Wiring Diagrams/Mating Cordsets

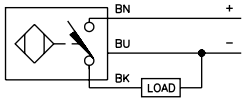
1




2




3




### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥170 mA on 150 mA Load Current | Temperature Drift: | ≤±10% |
| | ≥120 mA on 100 mA Load Current | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| No-Load Current: | ≤15 mA (Ferrite, Uprox, Rectangular) | Repeatability: | ≤2% of Rated Operating Distance |
| | ≤20 mA (Uprox+, Uprox 3) | | |
| Time Delay Before Availability: | ≤8 ms | | |

We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | Q4.7, Q5.5, & Q06

## Top Sensing Subminiature Qpak Housing

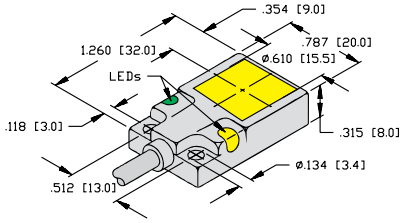
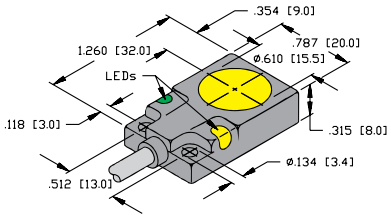
| Part Number/ ID Number | Features | Embeddable | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Front Cap/Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi2-Q4.7-AN6X** 1614001 | | • | 2 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤100 | 0 to +85 | IP67 | Zinc | PA | N/A | YE | 2M/TPU | A | 2 | A4 |
| **Bi2-Q4.7-AP6X** 1614000 | | • | 2 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤100 | 0 to +85 | IP67 | Zinc | PA | N/A | YE | 2M/TPU | A | 3 | A4 |
| **Bi2-Q5.5-AG6X** 1613108 | | • | 2 | 2-wire DC | 10-30 VDC | 1000 | ≤50 | -25 to +70 | IP67 | PP | PP | N/A | YE | 2M/TPU | B | 1 | A2 |
| **Bi2-Q5.5-AN6X** 1613100 | | • | 2 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤150 | -25 to +85 | IP67 | PP | PP | N/A | YE | 2M/TPU | B | 2 | A4 |
| **Bi2-Q5.5-AN6X/S34** 1613101 | WFI | • | 2 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤150 | -25 to +70 | IP67 | PP | PP | N/A | YE | 2M/TPU | B | 2 | A4 |
| **Ni3.5-Q5.5-AN6X** 4613610 | | | 3.5 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤150 | -25 to +70 | IP67 | PP | PP | N/A | YE | 2M/TPU | B | 2 | A4 |
| **Bi2-Q5.5-AP6X** 1613000 | | • | 2 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤150 | -25 to +85 | IP67 | PP | PP | N/A | YE | 2M/TPU | B | 3 | A4 |
| **Bi2-Q5.5-AP6X/S34** 1613001 | WFI | • | 2 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤150 | -25 to +70 | IP67 | PP | PP | N/A | YE | 2M/TPU | B | 3 | A4 |
| **Ni3.5-Q5.5-AP6X** 4613601 | | | 3.5 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤150 | -25 to +70 | IP67 | PP | PP | N/A | YE | 2M/TPU | B | 3 | A4 |
| **Bi3-Q06-AN6X2** 1620150 | | • | 3 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | PBT | PA | GN | YE | 2M/TPU | C | 2 | A4 |
| **Bi3-Q06-AP6X2** 1620100 | | • | 3 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | PBT | PA | GN | YE | 2M/TPU | C | 3 | A4 |



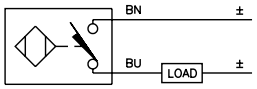
We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | Q08

## Top Sensing Qpak Housing with Potted-in Cable

| Housing Style | Dimension Drawings |
|---|---|
| | A   8.0 mm - Embeddable, Potted-In Cable |
| B   8.0 mm - Embeddable, Potted-In Cable | |

### Wiring Diagrams/Mating Cordsets

1
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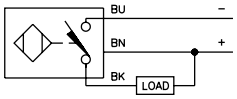


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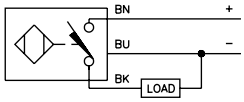


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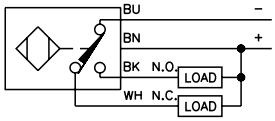


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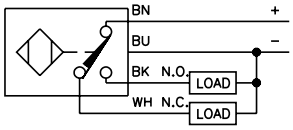



### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥170 mA on 150 mA Load Current | Temperature Drift: | ≤±10% |
| | ≥120 mA on 100 mA Load Current | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| No-Load Current: | ≤15 mA (Ferrite, Uprox, Rectangular) | Repeatability: | ≤2% of Rated Operating Distance |
| | ≤20 mA (Uprox+, Uprox 3) | | |
| Time Delay Before Availability: | ≤8 ms | | |

We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | Q08

## Top Sensing Qpak Housing with Potted-in Cable

| Part Number/ ID Number | Features | Embeddable | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Front Cap/Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi5U-Q08-AN6X2** 1608911 | Uprox | • | 5 | 3-wire DC NPN | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP67 | Zinc | PA 12 | GN | YE | 2M/TPU | B | 2 | A4 |
| **Bi5U-Q08-AP6X2** 1608901 | Uprox | • | 5 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP67 | Zinc | PA 12 | GN | YE | 2M/TPU | B | 3 | A4 |
| **Bi5-Q08-AD4X/S34** 4414550 | WFI | • | 5 | 2-wire DC | 10-65 VDC | 50 | ≤100 | -25 to +70 | IP67 | Zinc | PA 12 | N/A | YE | 2M/TPU | B | 1 | A2 |
| **Bi5-Q08-VN6X2** 1600200 | Comp. Outputs | • | 5 | 4-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | Zinc | PA 12 | GN | YE | 2M/TPU | B | 4 | A4 |
| **Bi5-Q08-VP6X2** 1600100 | Comp. Outputs | • | 5 | 4-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | Zinc | PA 12 | GN | YE | 2M/TPU | B | 5 | A4 |
| **Bi7-Q08-AN6X2** 1601620 | Ext. Range | • | 7 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | Zinc | PA 12 | GN | YE | 2M/TPU | B | 2 | A4 |
| **Bi7-Q08-AP6X2** 1601600 | Ext. Range | • | 7 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | Zinc | PA 12 | GN | YE | 2M/TPU | B | 3 | A4 |
| **Bi7-Q08-VN6X2** 1600920 | Ext. Range | • | 7 | 4-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | Zinc | PA 12 | GN | YE | 2M/TPU | B | 4 | A4 |
| **Bi7-Q08-VP6X2** 1600900 | Ext. Range | • | 7 | 4-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | Zinc | PA 12 | GN | YE | 2M/TPU | B | 5 | A4 |
| **Bi8U-Q08-AN6X2** 1662007 | Uprox+ | • | 8 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | Zinc | PA12 | GN | YE | 2M/TPU | A | 2 | A4 |
| **Bi8U-Q08-AP6X2** 1662006 | Uprox+ | • | 8 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | Zinc | PA12 | GN | YE | 2M/TPU | A | 3 | A4 |



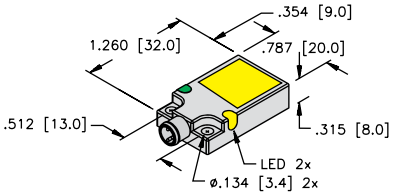
We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | Q08

## Top Sensing Qpak Housing with Integral Connector

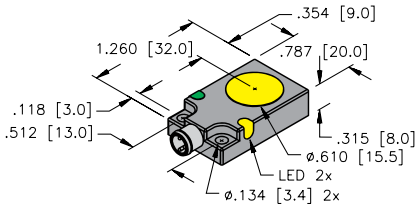
| Housing Style | Dimension Drawings |
|---|---|

A



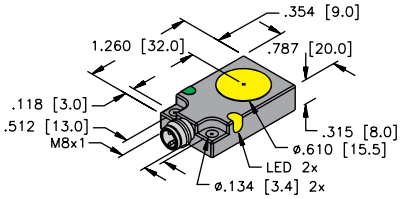

8.0 mm - Embeddable, Picofast Connector

B




8.0 mm - Embeddable, M8 snap-on Picofast Connector

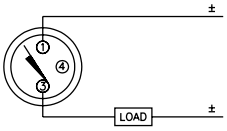
C




8.0 mm - Embeddable, M8 thread-on Picofast Connector

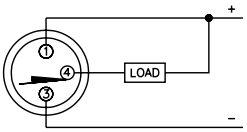
### Wiring Diagrams/Mating Cordsets

1



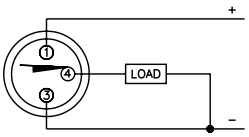

Mating Cordset: PKG 3Z-*; PKG 3M-*

2



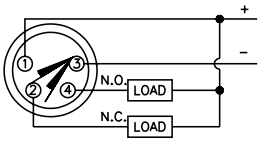

Mating Cordset: PKG 3Z-*; PKG 3M-*

3



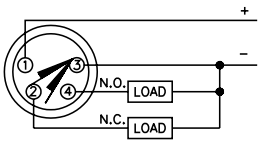

Mating Cordset: PKG 3Z-*; PKG 3M-*

4




Mating Cordset: PKG 4Z-*

5




Mating Cordset: PKG 4Z-*

### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥170 mA on 150 mA Load Current | Temperature Drift: | ≤±10% |
| | ≥120 mA on 100 mA Load Current | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| No-Load Current: | ≤15 mA (Ferrite, Uprox, Rectangular) | Repeatability: | ≤2% of Rated Operating Distance |
| | ≤20 mA (Uprox+, Uprox 3) | | |
| Time Delay Before Availability: | ≤8 ms | | |

We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | Q08

## Top Sensing Qpak Housing with Integral Connector

| Part Number/ ID Number | Features | Embeddable | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Front Cap/Face | Power LED | Output LED | Mating Cord | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi5U-Q08-AN6X2-V1131** 1608910 | Uprox | • | 5 | 3-wire DC NPN | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP67 | Zinc | PA 12 | GN | YE | PKG 3Z-* | B | 2 | A4 |
| **Bi5U-Q08-AP6X2-V1131** 1608900 | Uprox | • | 5 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP67 | Zinc | PA 12 | GN | YE | PKG 3Z-* | B | 3 | A4 |
| **Bi5U-Q08-AN6X2-V2131** 1608904 | Uprox | • | 5 | 3-wire DC NPN | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP67 | Zinc | PA 12 | GN | YE | PKG 3M-* | C | 2 | A4 |
| **Bi5U-Q08-AP6X2-V2131** 1608905 | Uprox | • | 5 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP67 | Zinc | PA 12 | GN | YE | PKG 3M-* | C | 3 | A4 |
| **Bi5-Q08-AD4X-V1130** 4414551 | | • | 5 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | Zinc | PA 12 | N/A | YE | PKG 3Z-* | B | 1 | A2 |
| **Bi5-Q08-AN6X2-V1131** 1600600 | | • | 5 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | Zinc | PA 12 | GN | YE | PKG 3Z-* | B | 2 | A4 |
| **Bi5-Q08-AP6X2-V1131** 1600500 | | • | 5 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | Zinc | PA 12 | GN | YE | PKG 3Z-* | B | 3 | A4 |
| **Bi5-Q08-VN6X2-V1141** 1600400 | Comp. Outputs | • | 5 | 4-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | Zinc | PA 12 | GN | YE | PKG 4Z-* | B | 4 | A4 |
| **Bi5-Q08-VP6X2-V1141** 1600300 | Comp. Outputs | • | 5 | 4-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | Zinc | PA 12 | GN | YE | PKG 4Z-* | B | 5 | A4 |
| **Bi5-Q08-AD4X-V2130** 4414553 | | • | 5 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | Zinc | PA 12 | N/A | YE | PKG 3M-* | C | 1 | A2 |
| **Bi5-Q08-AN6X2-V2131** 1600602 | | • | 5 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | Zinc | PA 12 | GN | YE | PKG 3M-* | C | 2 | A4 |
| **Bi5-Q08-AP6X2-V2131** 1600502 | | • | 5 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | Zinc | PA 12 | GN | YE | PKG 3M-* | C | 3 | A4 |
| **Bi7-Q08-AN6X2-V1131** 1601622 | Ext. Range | • | 7 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | Zinc | PA 12 | GN | YE | PKG 3Z-* | B | 2 | A4 |
| **Bi7-Q08-AP6X2-V1131** 1601602 | Ext. Range | • | 7 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | Zinc | PA 12 | GN | YE | PKG 3Z-* | B | 3 | A4 |
| **Bi7-Q08-AN6X2-V2131** 1601623 | Ext. Range | • | 7 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | Zinc | PA 12 | GN | YE | PKG 3M-* | C | 2 | A4 |
| **Bi7-Q08-AP6X2-V2131** 1601603 | Ext. Range | • | 7 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | Zinc | PA 12 | GN | YE | PKG 3M-* | C | 3 | A4 |
| **Bi7-Q08-VN6X2-V1141** 1600922 | Ext. Range | • | 7 | 4-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | Zinc | PA 12 | GN | YE | PKG 4Z-* | B | 4 | A4 |
| **Bi7-Q08-VP6X2-V1141** 1600902 | Ext. Range | • | 7 | 4-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | Zinc | PA 12 | GN | YE | PKG 4Z-* | B | 5 | A4 |
| **Bi8U-Q08-AN6X2-V1131** 1662008 | Uprox+ | • | 8 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | Zinc | PA 12 | GN | YE | PKG 3Z-* | A | 2 | A4 |
| **Bi8U-Q08-AP6X2-V1131** 1662005 | Uprox+ | • | 8 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | Zinc | PA 12 | GN | YE | PKG 3Z-* | A | 3 | A4 |

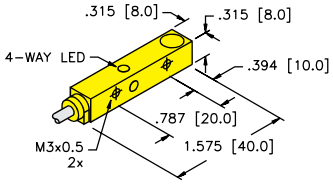
We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | Q8SE & Q10S

## Side Sensing Qpak Housing

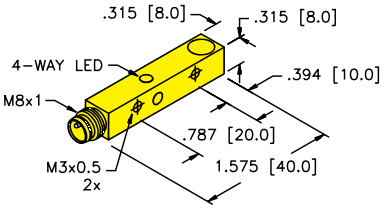
| Housing Style | Dimension Drawings |
|---|---|

A



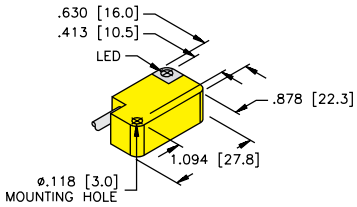

8.0 mm - Nonembeddable, Potted-In Cable

B




8.0 mm - Nonembeddable, M8 Picofast Connector

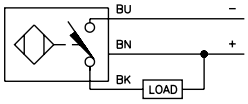
C



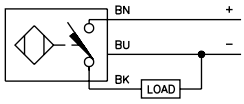

10 mm - Embeddable/Nonembeddable, Potted-In Cable

### Wiring Diagrams/Mating Cordsets

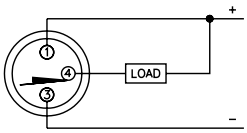
1




2

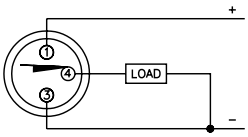



3



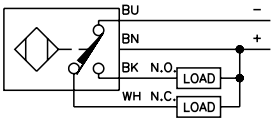

Mating Cordset: PKG 3Z-*

4

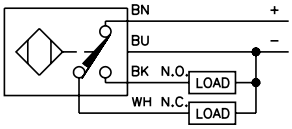



Mating Cordset: PKG 3Z-*

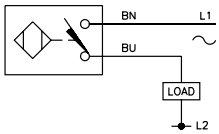
5




6




7




### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current |
| | ≥170 mA on 150 mA Load Current |
| | ≥120 mA on 100 mA Load Current |
| Off-State (Leakage) Current: | ≤0.1 mA |
| No-Load Current: | ≤15 mA (Ferrite, Uprox, Rectangular) |
| | ≤20 mA (Uprox+, Uprox 3) |
| Time Delay Before Availability: | ≤8 ms |
| Power-On Effect: | Per IEC 947-5-2 |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Transient Protection: | Per EN 60947-5-2 |
| Temperature Drift: | ≤±10% |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

### A6 — 2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | Q8SE & Q10S

## Side Sensing Qpak Housing

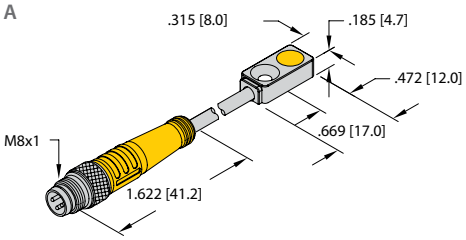
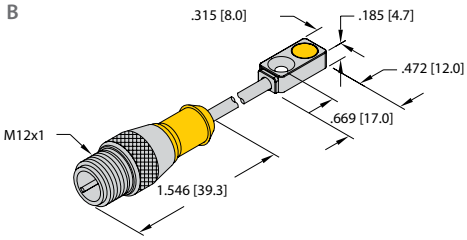
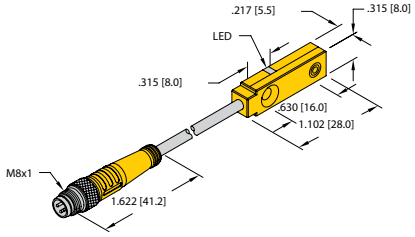
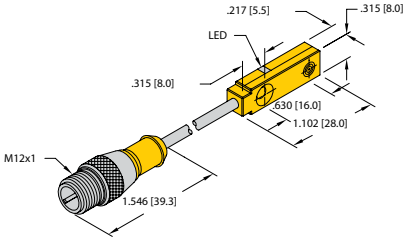
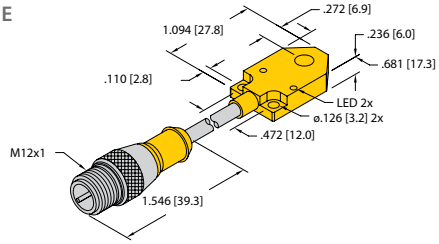
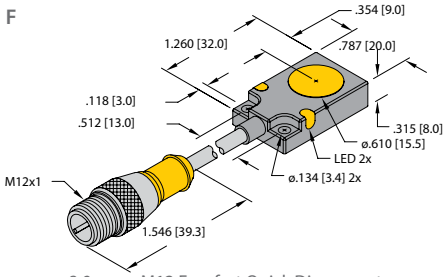
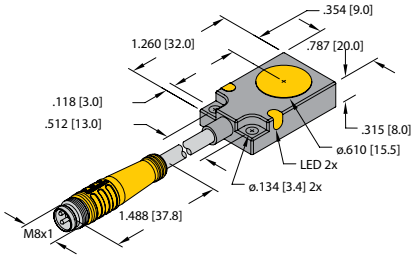
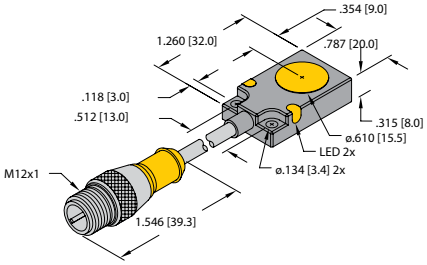
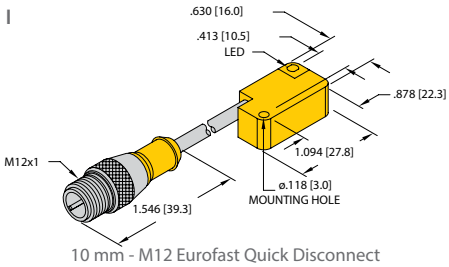
| Part Number/ ID Number | Features | Embeddable | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Front Cap/Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni4U-Q8SE-AN6X** 4635809 | Uprox+ | | 4 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤150 | -30 to +85 | IP68 | PP | PP | N/A | YE | 2M/TPU | A | 1 | A4 |
| **Ni4U-Q8SE-AP6X** 4635807 | Uprox+ | | 4 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤150 | -30 to +85 | IP68 | PP | PP | N/A | YE | 2M/TPU | A | 2 | A4 |
| **Ni4U-Q8SE-AN6X-V1131** 4635810 | Uprox+ | | 4 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤150 | -30 to +85 | IP68 | PP | PP | N/A | YE | - - | B | 3 | A4 |
| **Ni4U-Q8SE-AP6X-V1131** 4635808 | Uprox+ | | 4 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤150 | -30 to +85 | IP68 | PP | PP | N/A | YE | - - | B | 4 | A4 |
| **Bi2-Q10S-AN6X** 1619310 | | • | 2 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤150 | -25 to +70 | IP67 | PP-GF20 | PP | N/A | YE | 2M/TPU | C | 1 | A4 |
| **Bi2-Q10S-AP6X** 1609360 | | • | 2 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤150 | -25 to +70 | IP67 | PP-GF20 | PP | N/A | YE | 2M/TPU | C | 2 | A4 |
| **Bi2-Q10S-VN6X** 1609341 | Comp. Outputs | • | 2 | 4-wire DC NPN | 10-30 VDC | 2000 | ≤150 | -25 to +70 | IP67 | PP-GF20 | PP | N/A | YE | 2M/TPU | C | 5 | A4 |
| **Bi2-Q10S-VP6X** 1609340 | Comp. Outputs | • | 2 | 4-wire DC PNP | 10-30 VDC | 2000 | ≤150 | -25 to +70 | IP67 | PP-GF20 | PP-GF20 | N/A | YE | 2M/TPU | C | 6 | A4 |
| **Bi2-Q10S-AZ31X** 1309100 | | • | 2 | 2-wire AC | 20-250 VAC/10-300 VDC | 60 | ≤100 | -25 to +70 | IP67 | PP-GF20 | PP-GF20 | N/A | RD | 2M/TPU | C | 7 | A6 |
| **Ni5U-Q10S-AN6X** 1609365 | Uprox+ | | 5 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤150 | -30 to +85 | IP68 | PP-GF20 | PP-GF20 | N/A | YE | 2M/TPU | C | 1 | A4 |
| **Ni5U-Q10S-AP6X** 1609364 | Uprox+ | | 5 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤150 | -30 to +85 | IP68 | PP-GF20 | PP-GF20 | N/A | YE | 2M/TPU | C | 2 | A4 |



We reserve the right to make technical alterations without prior notice.

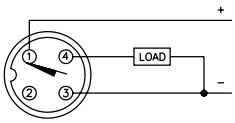
# Rectangular Inductive Sensors | Small Rectangular

**Sensor with Molded Connector**

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   4.7 mm - M8 Picofast Quick Disconnect | B   4.7 mm - M12 Eurofast Quick Disconnect |
| C   5.5 mm - M8 Picofast Quick Disconnect | D   5.5 mm - M12 Eurofast Quick Disconnect | E   6.0 mm - M12 Eurofast Quick Disconnect |
| F   8.0 mm - M12 Eurofast Quick Disconnect | G   8.0 mm - M8 Picofast Quick Disconnect | H   8.0 mm - M12 Eurofast Quick Disconnect |
| I   10 mm - M12 Eurofast Quick Disconnect | | |

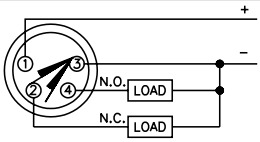
**Wiring Diagrams/Mating Cordsets**

1




Mating Cordset: RK 4T-*

2




Mating Cordset: PKG 3M-*

**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current |
| | ≥170 mA on 150 mA Load Current |
| | ≥120 mA on 100 mA Load Current |
| Off-State (Leakage) Current: | ≤0.1 mA |
| No-Load Current: | ≤15 mA (Ferrite, Uprox, Rectangular) |
| | ≤20 mA (Uprox+, Uprox 3) |
| Time Delay Before Availability: | ≤8 ms |
| Power-On Effect: | Per IEC 947-5-2 |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Transient Protection: | Per EN 60947-5-2 |
| Temperature Drift: | ≤±10% |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | Small Rectangular

## Sensor with Molded Connector

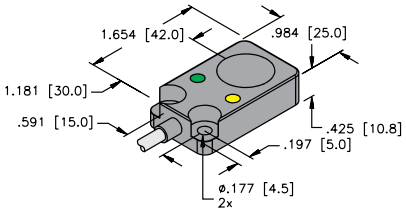
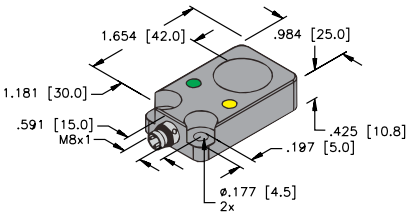
| Part Number/ ID Number | Features | Embeddable | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Front Cap/Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi2-Q4.7-AP6X-0.3-PSG3M** 1614000 | | • | 2 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤100 | 0 to +85 | IP67 | Zinc | PA | N/A | YE | 0.3M/TPU | A | 2 | A4 |
| **Bi2-Q4.7-AP6X-0.3-RS4T** 16140024 | | • | 2 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤100 | 0 to +85 | IP67 | Zinc | PA | N/A | YE | 0.3M/TPU | B | 1 | A4 |
| **Bi2-Q5.5-AP6X-0.2-PSG3M** 1613099 | | • | 2 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤150 | -25 to +85 | IP67 | PP | PP | N/A | YE | 0.2M/TPU | C | 2 | A4 |
| **Bi2-Q5.5-AP6X-0.2-RS4T** 1613094 | | • | 2 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤150 | -25 to +85 | IP67 | PP | PP | N/A | YE | 0.2M/TPU | D | 1 | A4 |
| **Bi3-Q06-AP6X2-0.2-RS4T** 1620193 | | • | 3 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | PBT | PA | GN | YE | 0.2M/TPU | E | 1 | A4 |
| **Bi5U-Q08-AP6X2-0.2-RS4T** 1608990 | Uprox | • | 5 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP67 | Zinc | PA 12 | GN | YE | 0.2M/TPU | F | 1 | A4 |
| **Bi5-Q08-AP6X2-0.2-PSG3F** 1600592 | | • | 5 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP67 | Zinc | PA 12 | GN | YE | 0.2M/TPU | G | 2 | A4 |
| **Bi7-Q08-AP6X2-0.2-RS4T** 1601683 | | • | 7 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | Zinc | PA 12 | GN | YE | 0.2M/TPU | H | 1 | A4 |
| **Bi2-Q10S-AP6X-0.2-RS4T** 1609390 | | • | 2 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤150 | -25 to +70 | IP67 | PP-GF20 | PP | N/A | YE | 0.2M/TPU | I | 1 | A4 |



We reserve the right to make technical alterations without prior notice.

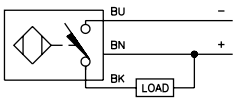
# Rectangular Inductive Sensors | Q10

## Top Sensing Qpak Housing

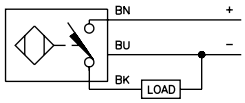
| Housing Style | Dimension Drawings |
|---|---|
| | A   10 mm - Embeddable, Potted-In Cable |
| B   10 mm - Embeddable, M8 Picofast Connector | |

### Wiring Diagrams/Mating Cordsets

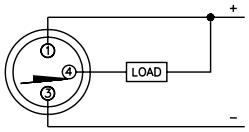
1




2

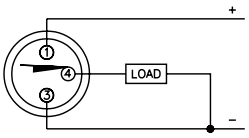



3



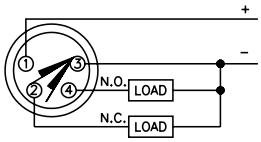

Mating Cordset: PKG 3Z-*

4



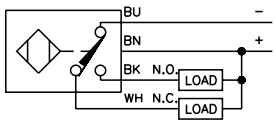

Mating Cordset: PKG 3Z-*

5

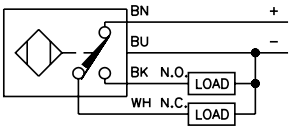



Mating Cordset: PKG 4Z-*

6




7




### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current |
| | ≥170 mA on 150 mA Load Current |
| | ≥120 mA on 100 mA Load Current |
| Off-State (Leakage) Current: | ≤0.1 mA |
| No-Load Current: | ≤15 mA (Ferrite, Uprox, Rectangular) |
| | ≤20 mA (Uprox+, Uprox 3) |
| Time Delay Before Availability: | ≤8 ms |
| Power-On Effect: | Per IEC 947-5-2 |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Transient Protection: | Per EN 60947-5-2 |
| Temperature Drift: | ≤±10% |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | Q10

## Top Sensing Qpak Housing

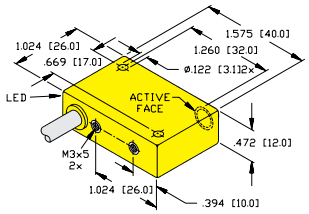
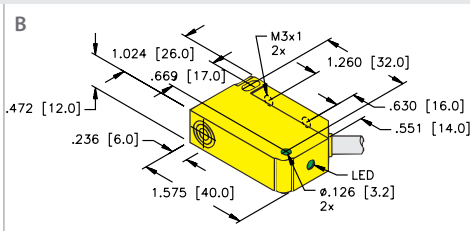
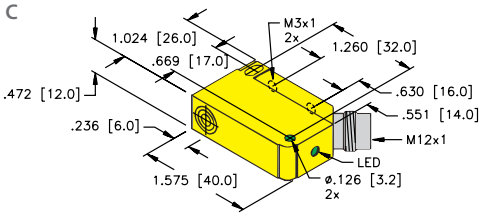
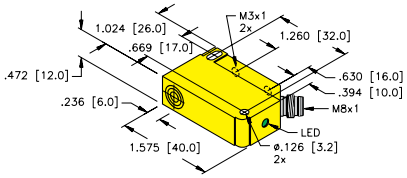
| Part Number/ ID Number | Features | Embeddable | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Front Cap/Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi8U-Q10-AN6X2** 1662003 | Uprox | • | 8 | 3-wire DC NPN | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP67 | PBT | PBT | GN | YE | 2M/TPU | A | 1 | A4 |
| **Bi8U-Q10-AP6X2** 1662001 | Uprox | • | 8 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP67 | PBT | PBT | GN | YE | 2M/TPU | A | 2 | A4 |
| **Bi8U-Q10-AN6X2-V1131** 1662004 | Uprox | • | 8 | 3-wire DC NPN | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP67 | PBT | PBT | GN | YE | - - | B | 3 | A4 |
| **Bi8U-Q10-AP6X2-V1131** 1662002 | Uprox | • | 8 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP67 | PBT | PBT | GN | YE | - - | B | 4 | A4 |
| **Bi8-Q10-VN6X2** 4616410 | Comp. Outputs | • | 8 | 4-wire DC NPN | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | 2M/TPU | A | 6 | A4 |
| **Bi8-Q10-VP6X2** 4616401 | Comp. Outputs | • | 8 | 4-wire DC PNP | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | 2M/TPU | A | 7 | A4 |
| **Bi8-Q10-VP6X2-V1141** 4616402 | Comp. Outputs | • | 8 | 4-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | - - | B | 5 | A4 |



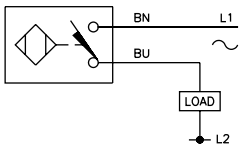
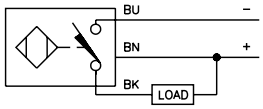
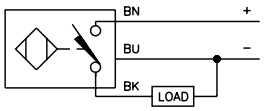
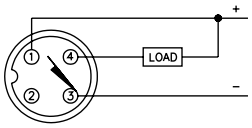
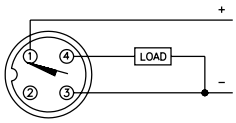
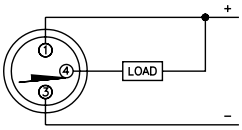
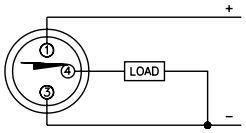
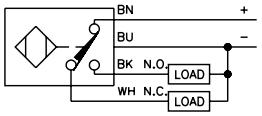
We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | Q12

## Side Sensing Qpak Housing

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   12 mm - Embeddable/Nonembeddable, Potted-In Cable | B   12 mm - Embeddable, Potted-In Cable |
| C   12 mm - Embeddable, M12 Eurofast Connection | D   12 mm - Embeddable, M8 Picofast Connection | |

### Wiring Diagrams/Mating Cordsets

| | | |
|---|---|---|
| 1   | 2   | 3   |
| 4   Mating Cordset: RK 4T-* | 5   Mating Cordset: RK 4T-* | 6   Mating Cordset: PKG 3Z-* |
| 7   Mating Cordset: PKG 3Z-* | 8   | |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥170 mA on 150 mA Load Current | Temperature Drift: | ≤±10% |
| | ≥120 mA on 100 mA Load Current | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| No-Load Current: | ≤15 mA (Ferrite, Uprox, Rectangular) | Repeatability: | ≤2% of Rated Operating Distance |
| | ≤20 mA (Uprox+, Uprox 3) | | |
| Time Delay Before Availability: | ≤8 ms | | |

### A6 — 2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Power-On Effect: | Per IEC 947-5-2 |
| | AC: ≤100 mA; DC: ≤100 mA | Transient Protection: | Per EN 60947-5-2 |
| Off-State (Leakage) Current: | ≤1.7 mA | Shock: | 30 g, 11 ms |
| Minimum Load Current: | ≥3.0 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | Q12

## Side Sensing Qpak Housing

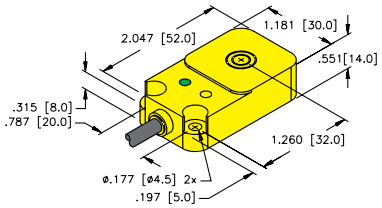
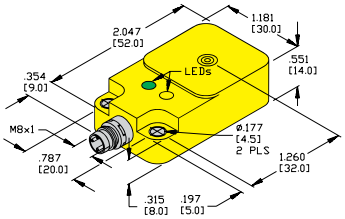
| Part Number/ ID Number | Features | Embeddable | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Front Cap/Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi2-Q12-AZ31X** 13100 | | • | 2 | 2-wire AC | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | PBT | PBT | N/A | YE | 2M/ PVC | A | 1 | A6 |
| **Ni4-Q12-AZ31X** 13102 | | | 4 | 2-wire AC | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | PBT | PBT | N/A | YE | 2M/ PVC | A | 1 | A6 |
| **Bi5U-Q12-AN6X2** 1635523 | Uprox+ | • | 5 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP68 | PA 12-GF30 | LCP | GN | YE | 2M/ TPU | B | 2 | A4 |
| **Bi5U-Q12-AP6X2** 1635522 | Uprox+ | • | 5 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP68 | PA 12-GF30 | LCP | GN | YE | 2M/ TPU | B | 3 | A4 |
| **Bi5U-Q12-VP6X2** 1635533 | Uprox+ | • | 5 | 4-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP68 | PA 12-GF30 | PA 12-GF30 | GN | YE | 2M/ TPU | B | 8 | A4 |
| **Bi5U-Q12-AN6X2-H1141** 1635527 | Uprox+ | • | 5 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP68 | PA 12-GF30 | LCP | GN | YE | - - | C | 4 | A4 |
| **Bi5U-Q12-AP6X2-H1141** 1635526 | Uprox+ | • | 5 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP68 | PA 12-GF30 | LCP | GN | YE | - - | C | 5 | A4 |
| **Bi5U-Q12-AN6X2-V1131** 1635525 | Uprox+ | • | 5 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP68 | PA 12-GF30 | LCP | GN | YE | - - | D | 6 | A4 |
| **Bi5U-Q12-AP6X2-V1131** 1635524 | Uprox+ | • | 5 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP68 | PA 12-GF30 | LCP | GN | YE | - - | D | 7 | A4 |



We reserve the right to make technical alterations without prior notice.

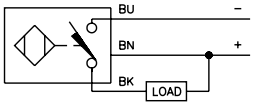
# Rectangular Inductive Sensors | Q14

## Top Sensing Qpak Housing

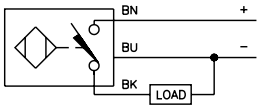
| Housing Style | Dimension Drawings |
|---|---|
| | A   14 mm - Potted-In Cable |
| B   14 mm - Embeddable/Nonembeddable, M8 Picofast Connector | |

### Wiring Diagrams/Mating Cordsets

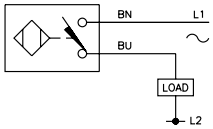
1



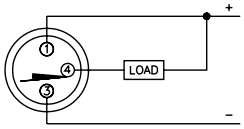

2




3

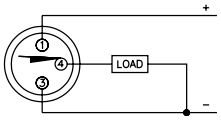



4




Mating Cordset: PKG 3M-*

5




Mating Cordset: PKG 3M-*

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥170 mA on 150 mA Load Current | Temperature Drift: | ≤±10% |
| | ≥120 mA on 100 mA Load Current | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| No-Load Current: | ≤15 mA (Ferrite, Uprox, Rectangular) | Repeatability: | ≤2% of Rated Operating Distance |
| | ≤20 mA (Uprox+, Uprox 3) | | |
| Time Delay Before Availability: | ≤8 ms | | |

### A5 — 2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Minimum Load Current: | ≥3.0 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Inrush Current: | ≤3.0 A (≤20 ms, max 5 Hz) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | Power-On Effect: | Per IEC 947-5-2 |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA | Transient Protection: | Per EN 60947-5-2 |
| | AC: ≥120 mA; DC: ≥120 mA | Shock: | 30 g, 11 ms |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | AC: ≤100 mA; DC: ≤100 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Off-State (Leakage) Current: | ≤1.7 mA (AC) | | |
| | ≤1.5 mA (DC) | | |

We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | Q14

## Top Sensing Qpak Housing

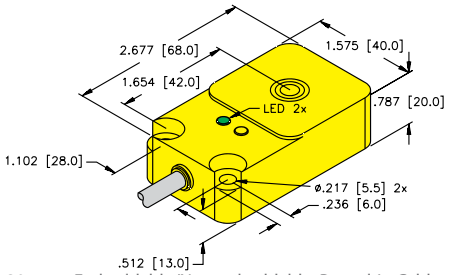
| Part Number/ ID Number | Features | Embeddable | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Front Cap/Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi10U-Q14-AN6X2** 1608710 | Uprox | • | 10 | 3-wire DC NPN | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP67 | PBT | PBT | GN | YE | 2M/ TPU | A | 1 | A4 |
| **Bi10U-Q14-AP6X2** 1608700 | Uprox | • | 10 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP67 | PBT | PBT | GN | YE | 2M/ TPU | A | 2 | A4 |
| **Bi10U-Q14-AN6X2-V1131** 1608510 | Uprox | • | 10 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP67 | PBT | PBT | GN | YE | - - | B | 4 | A4 |
| **Bi10U-Q14-AP6X2-V1131** 1608500 | Uprox | • | 10 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP67 | PBT | PBT | GN | YE | - - | B | 5 | A4 |
| **Bi10-Q14-AN6X2** 1608320 | | • | 10 | 3-wire DC NPN | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | 2M/ TPU | A | 1 | A4 |
| **Bi10-Q14-AP6X2** 1608720 | | • | 10 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | 2M/ TPU | A | 2 | A4 |
| **Bi10-Q14-ADZ32X2** 4256220 | | • | 10 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | PBT | PBT | GN | RD | 2M/ TPU | A | 3 | A5 |
| **Bi10-Q14-ADZ32X2/S34** 4256225 | WFI | • | 10 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | PBT | PBT | GN | RD | 2M/ TPU | A | 3 | A5 |
| **Bi10-Q14-AP6X2-V1131** 1608530 | | • | 10 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | - - | B | 5 | A4 |
| **Ni20-Q14-AP6X2-V1131** 4690210 | | | 20 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | - - | B | 5 | A4 |
| **Ni20-Q14-AN6X2** 4690220 | | | 20 | 3-wire DC NPN | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | 2M/ TPU | A | 1 | A4 |
| **Ni20-Q14-AP6X2** 4690205 | | • | 20 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | 2M/ TPU | A | 2 | A4 |
| **Ni20-Q14-ADZ32X2** 4205410 | | • | 20 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | PBT | PBT | GN | RD | 2M/ TPU | A | 3 | A5 |



We reserve the right to make technical alterations without prior notice.

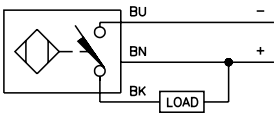
# Rectangular Inductive Sensors | Q20

## Top Sensing Qpak Housing with Potted-in Cable

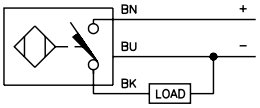
| Housing Style | Dimension Drawings |
|---|---|
| | A   20 mm - Embeddable/Nonembeddable, Potted-In Cable |

### Wiring Diagrams/Mating Cordsets

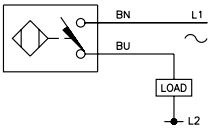
1




2




3




### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current |
| | ≥170 mA on 150 mA Load Current |
| | ≥120 mA on 100 mA Load Current |
| Off-State (Leakage) Current: | ≤0.1 mA |
| No-Load Current: | ≤15 mA (Ferrite, Uprox, Rectangular) |
| | ≤20 mA (Uprox+, Uprox 3) |
| Time Delay Before Availability: | ≤8 ms |
| Power-On Effect: | Per IEC 947-5-2 |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Transient Protection: | Per EN 60947-5-2 |
| Temperature Drift: | ≤±10% |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

### A5 — 2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA |
| | AC: ≥120 mA; DC: ≥120 mA |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA (AC) |
| | ≤1.5 mA (DC) |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤3.0 A (≤20 ms, max 5 Hz) |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | Q20

## Top Sensing Qpak Housing with Potted-in Cable

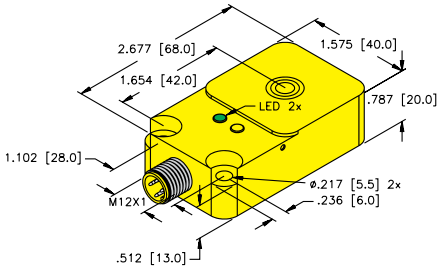
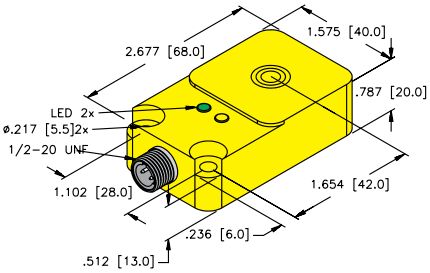
| Part Number/ ID Number | Features | Embeddable | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Front Cap/Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi15U-Q20-AN6X2** 1608810 | Uprox | • | 15 | 3-wire DC NPN | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP67 | PBT | PBT | GN | YE | 2M/TPU | A | 1 | A4 |
| **Bi15U-Q20-AP6X2** 1608800 | Uprox | • | 15 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP67 | PBT | PBT | GN | YE | 2M/TPU | A | 2 | A4 |
| **Bi15-Q20-AP6X2** 1608300 | | • | 15 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | 2M/TPU | A | 2 | A4 |
| **Bi15-Q20-ADZ32X2** 4256250 | | • | 15 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | PBT | PBT | GN | YE | 2M/TPU | A | 3 | A5 |
| **Ni25-Q20-AN6X2** 1602800 | | | 25 | 3-wire DC NPN | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | 2M/TPU | A | 1 | A4 |
| **Ni25-Q20-AP6X2** 1602700 | | | 25 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | 2M/TPU | A | 2 | A4 |



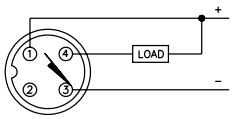
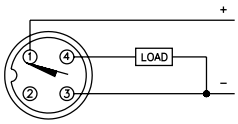
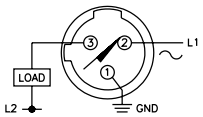
We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | Q20

## Top Sensing Qpak Housing with Integral Connector

| Housing Style | Dimension Drawings |
|---|---|
| | A   20 mm - Embeddable/Nonembeddable, M12 Eurofast Connector |
| B   20 mm - Embeddable, 1/2-20UNF Microfast Connector | |

### Wiring Diagrams/Mating Cordsets

| 1 | 2 | 3 |
|---|---|---|
|   |   |   |
| Mating Cordset: RK 4T-* | Mating Cordset:RK 4T-* | Mating Cordset: KB 3T-* |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥170 mA on 150 mA Load Current | Temperature Drift: | ≤±10% |
| | ≥120 mA on 100 mA Load Current | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| No-Load Current: | ≤15 mA (Ferrite, Uprox, Rectangular) | Repeatability: | ≤2% of Rated Operating Distance |
| | ≤20 mA (Uprox+, Uprox 3) | | |
| Time Delay Before Availability: | ≤8 ms | | |

### A5 — 2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Minimum Load Current: | ≥3.0 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Inrush Current: | ≤3.0 A (≤20 ms, max 5 Hz) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | Power-On Effect: | Per IEC 947-5-2 |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA | Transient Protection: | Per EN 60947-5-2 |
| | AC: ≥120 mA; DC: ≥120 mA | Shock: | 30 g, 11 ms |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | AC: ≤100 mA; DC: ≤100 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Off-State (leakage) Current: | ≤1.7 mA (AC) | | |
| | ≤1.5 mA (DC) | | |

We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | Q20

## Top Sensing Qpak Housing with Integral Connector

| Part Number/ ID Number | Features | Embeddable | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Front Cap/Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi15U-Q20-AN6X2-H1141** 1608610 | Uprox | • | 15 | 3-wire DC NPN | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP67 | PBT | PBT | GN | YE | A | 1 | A4 |
| **Bi15U-Q20-AP6X2-H1141** 1608600 | Uprox | • | 15 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP67 | PBT | PBT | GN | YE | A | 2 | A4 |
| **Bi15-Q20-AN6X2-H1141** 1608315 | | • | 15 | 3-wire DC NPN | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A4 |
| **Bi15-Q20-AP6X2-H1141** 1608305 | | • | 15 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 2 | A4 |
| **Bi15-Q20-ADZ32X2-B3131** 4256251 | | • | 15 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | PBT | PBT | GN | YE | B | 3 | A5 |
| **Ni25-Q20-AN6X2-H1141** 1602802 | | | 25 | 3-wire DC NPN | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A4 |
| **Ni25-Q20-AP6X2-H1141** 1602702 | | | 25 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 2 | A4 |



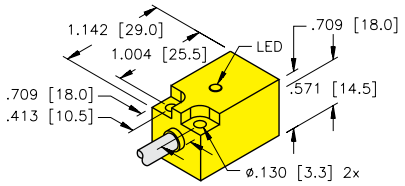
We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | Q18, Q25, & Q30

## Side Sensing Qpak Housing

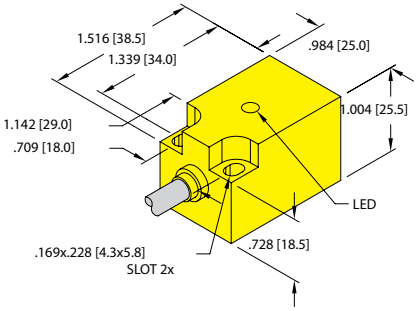
| Housing Style | Dimension Drawings |
|---|---|

A



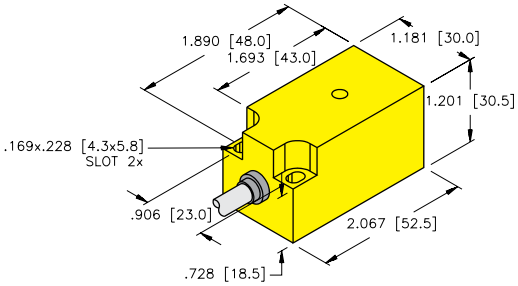

18 mm - Nonembeddable, Potted-In Cable

B




25 mm - Nonembeddable, Potted-In Cable

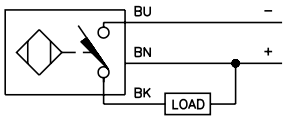
C



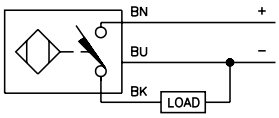

30 mm - Nonembeddable, Potted-In Cable

### Wiring Diagrams/Mating Cordsets

1




2




### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current |
| | ≥170 mA on 150 mA Load Current |
| | ≥120 mA on 100 mA Load Current |
| Off-State (Leakage) Current: | ≤0.1 mA |
| No-Load Current: | ≤15 mA (Ferrite, Uprox, Rectangular) |
| | ≤20 mA (Uprox+, Uprox 3) |
| Time Delay Before Availability: | ≤8 ms |
| Power-On Effect: | Per IEC 947-5-2 |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Transient Protection: | Per EN 60947-5-2 |
| Temperature Drift: | ≤±10% |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | Q18, Q25, & Q30

## Side Sensing Qpak Housing

| Part Number/ ID Number | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Front Cap/Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni5-Q18-AN6X** 4614607 | 5 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PBT | PBT | N/A | YE | 2M/PVC | A | 1 | A4 |
| **Ni5-Q18-AP6X** 4614606 | 5 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PBT | PBT | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Ni10-Q25-AN6X** 4652330 | 10 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PBT | PBT | N/A | YE | 2M/PVC | B | 1 | A4 |
| **Ni10-Q25-AP6X** 4652225 | 10 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PBT | PBT | N/A | YE | 2M/PVC | B | 2 | A4 |
| **Ni15-Q30-AN6X** 4659330 | 15 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PBT | PBT | N/A | YE | 2M/PVC | C | 1 | A4 |
| **Ni15-Q30-AP6X** 4659325 | 15 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PBT | PBT | N/A | YE | 2M/PVC | C | 2 | A4 |



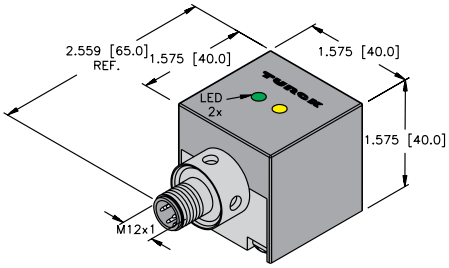
We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | CA40

**Rotatable Sensing Head with Metal Housing**

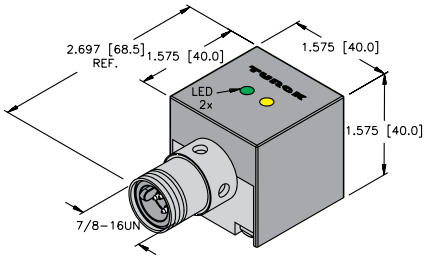
| Housing Style | Dimension Drawings |
|---|---|

A



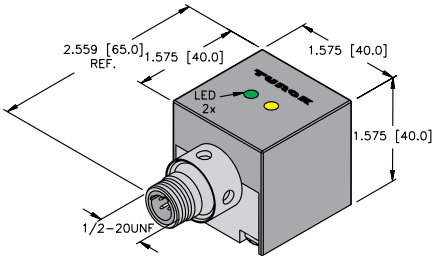

CA40 - Embeddable, Eurofast Connector

B




CA40 - Embeddable, Minifast Connector

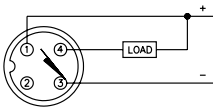
C




CA40 - Embeddable, Microfast Connector

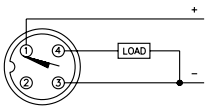
## Wiring Diagrams/Mating Cordsets

1



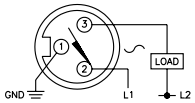

Mating Cordset: RK 4T-*

2



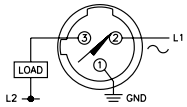

Mating Cordset: RK 4T-*

3




Mating Cordset: RKM 30-*M

4




Mating Cordset: KB 3T-*

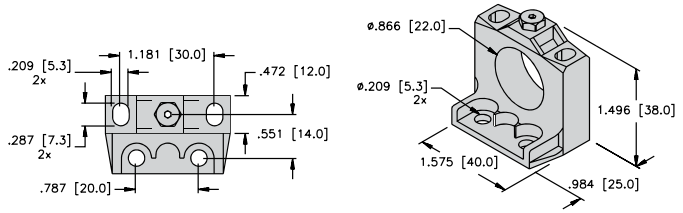
## A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current |
| | ≥170 mA on 150 mA Load Current |
| | ≥120 mA on 100 mA Load Current |
| Off-State (Leakage) Current: | ≤0.1 mA |
| No-Load Current: | ≤15 mA (Ferrite, Uprox, Rectangular) |
| | ≤20 mA (Uprox+, Uprox 3) |
| Time Delay Before Availability: | ≤8 ms |
| Power-On Effect: | Per IEC 947-5-2 |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Transient Protection: | Per EN 60947-5-2 |
| Temperature Drift: | ≤±10% |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

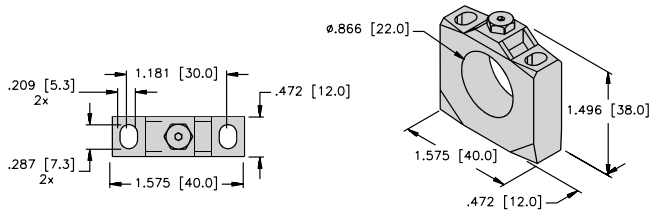
## A5 — 2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA |
| | AC: ≥120 mA; DC: ≥120 mA |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (leakage) Current: | ≤1.7 mA (AC) |
| | ≤1.5 mA (DC) |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤3.0 A (≤20 ms, max 5 Hz) |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

**BS 2.1 Mounting Bracket**




**BS 2.0 Mounting Bracket**




We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | CA40

## Rotatable Sensing Head with Metal Housing

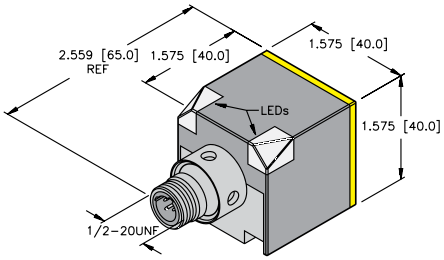
| Part Number/ ID Number | Features | Embeddable | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Front Cap/Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi20U-CA40-AN6X2-H1141 W/BS2.1** 1627390 | Uprox | • | 20 | 3-wire DC NPN | 10-30 VDC | 250 | ≤200 | 0 to +70 | IP67 | AL | TP | GN | YE | A | 1 | A4 |
| **Bi20U-CA40-AP6X2-H1141 W/BS2.1** 1627290 | Uprox | • | 20 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | 0 to +70 | IP67 | AL | TP | GN | YE | A | 2 | A4 |
| **Bi20U-CA40-AP6X2-H1141/S1590 W/BS2.0** 1627297 | Weldguard® | • | 20 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | 0 to +70 | IP67 | AL | WG | GN | YE | A | 2 | A4 |
| **Bi20U-CA40-ADZ30X2-B1131 W/BS2.1** 4283290 | Uprox | • | 20 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP67 | AL | TP | GN | YE | B | 3 | A5 |
| **Bi20U-CA40-ADZ30X2-B3131 W/BS2.1** 4283292 | Uprox | • | 20 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP67 | AL | TP | GN | YE | C | 4 | A5 |



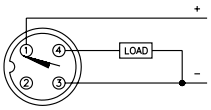
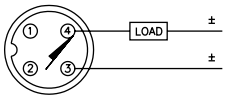
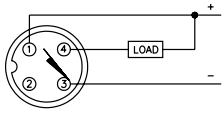
We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | CK40

**Rotatable Sensing Head with 2 and 3-wire DC Outputs**

| Housing Style | Dimension Drawings |
|---|---|
| | A   CK40 - Embeddable/Nonembeddable, Eurofast Connector |

**Wiring Diagrams/Mating Cordsets**

| 1 | 2 | 3 |
|---|---|---|
|   |   |   |
| Mating Cordset: RK 4T-* | Mating Cordset: RK 4.2T-* | Mating Cordset: RK 4T-* |

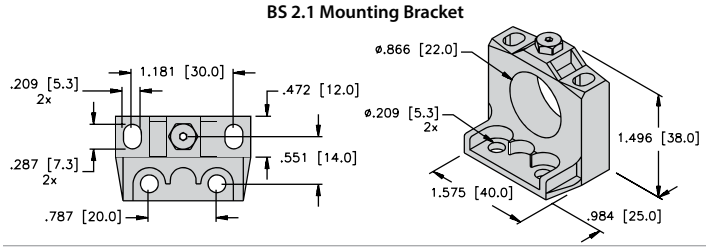
**A2 — 2-wire DC - (AD, RD, AG)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

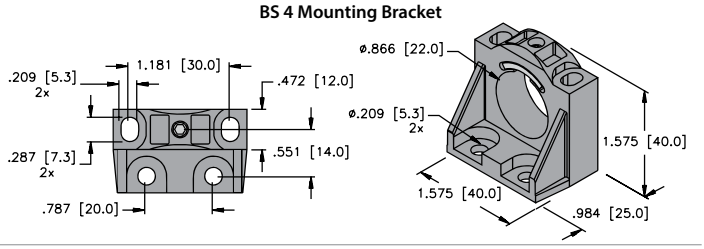
**A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥170 mA on 150 mA Load Current | Temperature Drift: | ≤±10% |
| | ≥120 mA on 100 mA Load Current | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| No-Load Current: | ≤15 mA (Ferrite, Uprox, Rectangular) | Repeatability: | ≤2% of Rated Operating Distance |
| | ≤20 mA (Uprox+, Uprox 3) | | |
| Time Delay Before Availability: | ≤8 ms | | |

**BS 2.1 Mounting Bracket**




**BS 4 Mounting Bracket**




We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | CK40

## Rotatable Sensing Head with 2 and 3-wire DC Outputs

| Part Number/ ID Number | Features | Embeddable | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Front Cap/Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi15U-CK40-AN6X2-H1141 W/BS2.1** 1625690 | Uprox | • | 15 | 3-wire DC NPN | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP68 | PBT | PBT | GN | YE | A | 3 | A4 |
| **Bi15U-CK40-AP6X2-H1141 W/BS2.1** 1625689 | Uprox | • | 15 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP68 | PBT | PBT | GN | YE | A | 1 | A4 |
| **Bi15-CK40-AN6X2-H1141 W/BS2.1** 1625190 | | • | 15 | 3-wire DC NPN | 10-30 VDC | 150 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 3 | A4 |
| **Bi15-CK40-AP6X2-H1141 W/BS2.1** 1625090 | | • | 15 | 3-wire DC PNP | 10-30 VDC | 150 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A4 |
| **Bi15-CK40-AD4X-H1141 W/BS2.1** 4465090 | | • | 15 | 2-wire DC | 10-65 VDC | 150 | ≤100 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 2 | A2 |
| **Bi20U-CK40-AN6X2-H1141** 1627231 | Uprox+ | • | 20 | 3-wire DC NPN | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP68 | PBT | PBT | GN | YE | A | 3 | A4 |
| **Bi20U-CK40-AP6X2-H1141 W/BS2.1** 1627288 | Uprox+ | • | 20 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP68 | PBT | PBT | GN | YE | A | 1 | A4 |
| **Bi30U-CK40-AN6X2-H1141** 1625820 | Uprox+ | • | 30 | 3-wire DC NPN | 10-30 VDC | 250 | ≤200 | -10 to +60 | IP68 | PBT | PBT | GN | YE | A | 3 | A4 |
| **Bi30U-CK40-AP6X2-H1141** 1625829 | Uprox+ | • | 30 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -10 to +60 | IP68 | PBT | PBT | GN | YE | A | 1 | A4 |
| **Ni20-CK40-AN6X2-H1141 W/BS2.1** 1625390 | | | 20 | 3-wire DC NPN | 10-30 VDC | 150 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 3 | A4 |
| **Ni20-CK40-AP6X2-H1141 W/BS2.1** 1625290 | | | 20 | 3-wire DC PNP | 10-30 VDC | 150 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A4 |
| **Ni20-CK40-AD4X-H1141 W/BS2.1** 4465290 | | | 20 | 2-wire DC | 10-65 VDC | 200 | ≤100 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 2 | A2 |
| **Ni25U-CK40-AN6X2-H1141 W/BS2.1** 1625789 | Uprox | | 25 | 3-wire DC NPN | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP68 | PBT | PBT | GN | YE | A | 3 | A4 |
| **Ni25U-CK40-AP6X2-H1141 W/BS2.1** 1625790 | Uprox | | 25 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP68 | PBT | PBT | GN | YE | A | 1 | A4 |
| **Ni35U-CK40-AP6X2-H1141** 1625800 | Uprox | | 35 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP67 | PBT | PBT | GN | YE | A | 1 | A4 |
| **Ni35U-CK40-AN6X2-H1141** 1625810 | Uprox | | 35 | 3-wire DC NPN | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP67 | PBT | PBT | GN | YE | A | 3 | A4 |
| **Ni50U-CK40-AN6X2-H1141** 1625823 | Uprox+ | | 50 | 3-wire DC NPN | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP68 | PBT | PBT | GN | YE | A | 3 | A4 |
| **Ni50U-CK40-AP6X2-H1141** 1625868 | Uprox+ | | 50 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP68 | PBT | PBT | GN | YE | A | 1 | A4 |



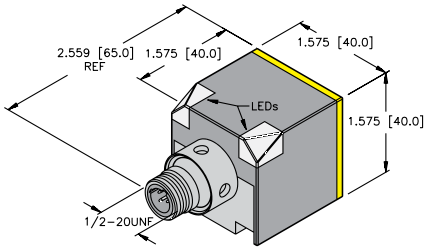
We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | CK40

**Rotatable Sensing Head with Complementary Outputs**

| Housing Style | Dimension Drawings |
|---|---|

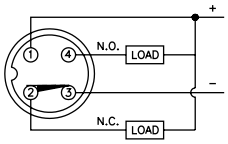
A




CK40 - Embeddable/Nonembeddable, Eurofast Connector

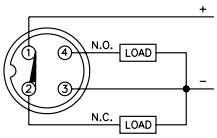
**Wiring Diagrams/Mating Cordsets**

1




Mating Cordset: RK 4.4T-*

2



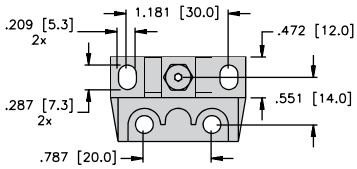

Mating Cordset: RK 4.4T-*

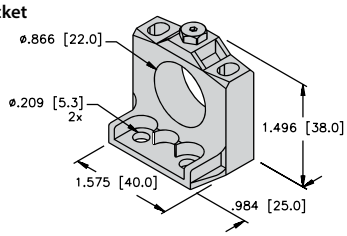
**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current |
| | ≥170 mA on 150 mA Load Current |
| | ≥120 mA on 100 mA Load Current |
| Off-State (Leakage) Current: | ≤0.1 mA |
| No-Load Current: | ≤15 mA (Ferrite, Uprox, Rectangular) |
| | ≤20 mA (Uprox+, Uprox 3) |
| Time Delay Before Availability: | ≤8 ms |

| | |
|---|---|
| Power-On Effect: | Per IEC 947-5-2 |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Transient Protection: | Per EN 60947-5-2 |
| Temperature Drift: | ≤±10% |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

**BS 2.1 Mounting Bracket**




We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | CK40

## Rotatable Sensing Head with Complementary Outputs

| Part Number/ ID Number | Features | Embeddable | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Front Cap/Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi15-CK40-VN4X2-H1141 W/BS2.1** 1550190 | Comp. Outputs | • | 15 | 4-wire DC NPN | 10-65 VDC | 250 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A4 |
| **Bi15-CK40-VP4X2-H1141 W/BS2.1** 1550091 | Comp. Outputs | • | 15 | 4-wire DC PNP | 10-65 VDC | 250 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 2 | A4 |
| **Ni20-CK40-VN4X2-H1141 W/BS2.1** 1550390 | Comp. Outputs | | 20 | 4-wire DC NPN | 10-65 VDC | 250 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A4 |
| **Ni20-CK40-VP4X2-H1141 W/BS2.1** 1550290 | Comp. Outputs | | 20 | 4-wire DC PNP | 10-65 VDC | 250 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 2 | A4 |
| **Ni35U-CK40-VP6X2-H1141** 1625815 | Uprox, Comp. Outputs | | 35 | 4-wire DC PNP | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 2 | A4 |
| **Ni50U-CK40-VN4X2-H1141** 1625806 | Uprox+, Comp. Outputs | | 50 | 4-wire DC NPN | 10-65 VDC | 250 | ≤200 | -25 to +70 | IP68 | PBT | PBT | GN | YE | A | 1 | A4 |
| **Ni50U-CK40-VP4X2-H1141** 1538302 | Uprox+, Comp. Outputs | | 50 | 4-wire DC PNP | 10-65 VDC | 250 | ≤200 | -25 to +70 | IP68 | PBT | PBT | GN | YE | A | 2 | A4 |



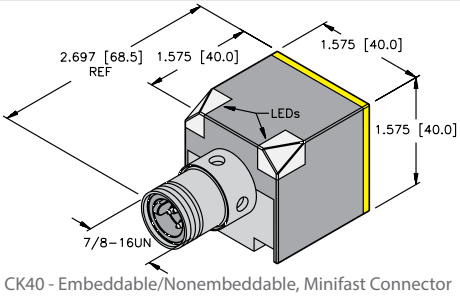
We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | CK40

**Rotatable Sensing Head with AC/DC Outputs**

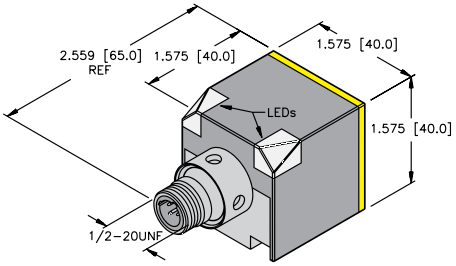
| Housing Style | Dimension Drawings |
|---|---|

A




CK40 - Embeddable/Nonembeddable, Minifast Connector

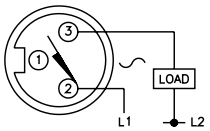
B




CK40 - Embeddable/Nonembeddable, Microfast Connector

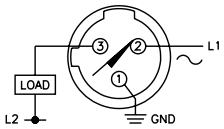
## Wiring Diagrams/Mating Cordsets

1




Mating Cordset: RKM 30-*M

2




Mating Cordset: KB 3T-*

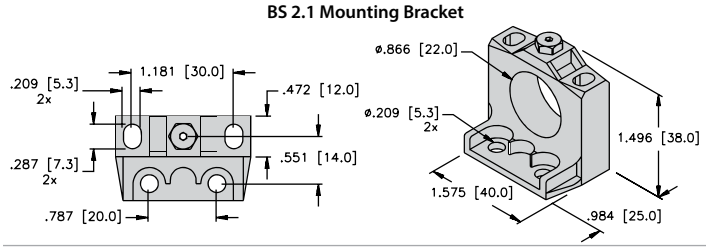
## A5 — 2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA |
| | AC: ≥120 mA; DC: ≥120 mA |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA (AC) |
| | ≤1.5 mA (DC) |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤3.0 A (≤20 ms, max 5 Hz) |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

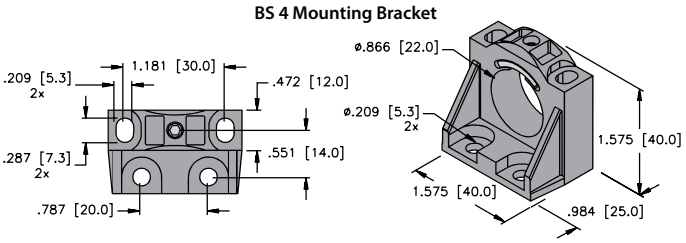
## A6 — 2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

**BS 2.1 Mounting Bracket**




**BS 4 Mounting Bracket**




We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | CK40

## Rotatable Sensing Head with AC/DC Outputs

| Part Number/ ID Number | Features | Embeddable | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Front Cap/Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi15U-CK40-ADZ30X2-B1131 W/BS2.1** 4280090 | Uprox | • | 15 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP68 | PBT | PBT | GN | YE | A | 1 | A5 |
| **Bi15U-CK40-ADZ30X2-B3131 W/B 2.1** 4280091 | Uprox | • | 15 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP68 | PBT | PBT | GN | YE | B | 2 | A5 |
| **Bi15-CK40-AZ3X2-B1131 W/BS2.1** 1335091 | | • | 15 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A5 |
| **Bi15-CK40-AZ3X2-B3131 W/BS2.1** 1335095 | | • | 15 | 2-wire AC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | B | 2 | A6 |
| **Ni20-CK40-AZ3X2-B1131 W/BS2.1** 1335291 | | | 20 | 2-wire AC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A6 |
| **Ni20-CK40-AZ3X2-B3131 W/BS2.1** 1335290 | | | 20 | 2-Wire AC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | B | 2 | A6 |
| **Ni25U-CK40-ADZ30X2-B1131 W/BS2.1** 4280290 | Uprox | | 25 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP67 | PBT | PBT | GN | YE | A | 1 | A5 |
| **Ni25U-CK40-ADZ30X2-B3131 W/BS2.1** 4280291 | Uprox | | 25 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP67 | PBT | PBT | GN | YE | B | 2 | A5 |
| **Ni35U-CK40-ADZ30X2-B1131** 4280410 | Uprox | | 35 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP68 | PBT | PBT | GN | YE | A | 1 | A5 |



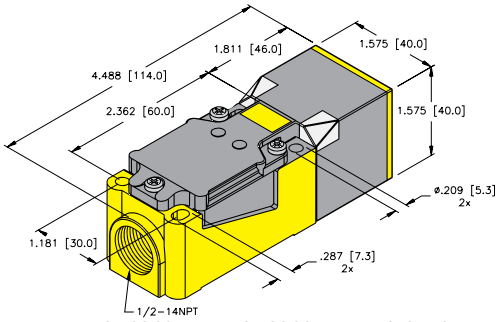
We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | CP40

**Rotatable Sensing Head with 2 and 3-wire DC Outputs and Terminal Chamber**

| Housing Style | Dimension Drawings |
|---|---|

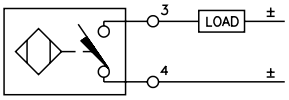
A



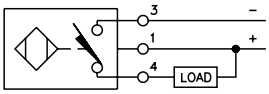

CP40 - Embeddable/Nonembeddable, Terminal Chamber

**Wiring Diagrams/Mating Cordsets**

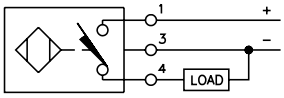
1




2




3




**A2 — 2-wire DC - (AD, RD, AG)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

**A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥170 mA on 150 mA Load Current | Temperature Drift: | ≤±10% |
| | ≥120 mA on 100 mA Load Current | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| No-Load Current: | ≤15 mA (Ferrite, Uprox, Rectangular) | Repeatability: | ≤2% of Rated Operating Distance |
| | ≤20 mA (Uprox+, Uprox 3) | | |
| Time Delay Before Availability: | ≤8 ms | | |

We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | CP40

**Rotatable Sensing Head with 2 and 3-wire DC Outputs and Terminal Chamber**

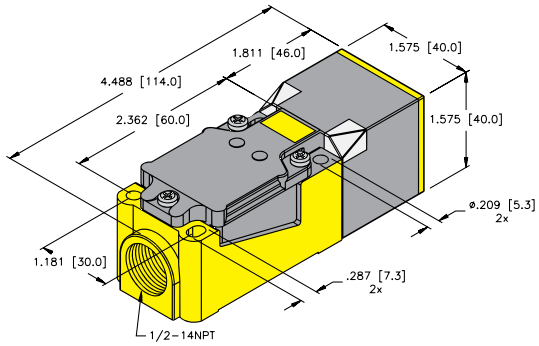
| Part Number/ ID Number | Features | Embeddable | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Front Cap/Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi15U-CP40-AP6X2** 1623502 | Uprox | • | 15 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP68 | PBT | PBT | GN | YE | A | 3 | A4 |
| **Bi15-CP40-AN6X2** 1623000 | | • | 15 | 3-wire DC NPN | 10-30 VDC | 150 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 2 | A4 |
| **Bi15-CP40-AN6X2/S10-S97** 1623001 | Low Temp. -40 °C | • | 15 | 3-wire DC NPN | 10-30 VDC | 250 | ≤200 | -40 to +70 | IP67 | PBT | PBT | GN | YE | A | 2 | A4 |
| **Bi15-CP40-AP6X2/S10** 16030 | | • | 15 | 3-Wire DC PNP | 10-30 VDC | 150 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 3 | A4 |
| **Bi15-CP40-AD4X/S10** 44770 | | • | 15 | 2-wire DC | 10-65 VDC | 150 | ≤100 | -25 to +70 | IP67 | PBT | PBT | N/A | YE | A | 1 | A2 |
| **Bi20U-CP40-AP6X2/S10** 1625826 | Uprox+ | • | 20 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP68 | PBT | PBT | GN | YE | A | 3 | A4 |
| **Bi30U-CP40-AP6X2/S10** 1625825 | Uprox+ | • | 30 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -10 to +60 | IP68 | PBT | PBT | GN | YE | A | 3 | A4 |
| **Ni20-CP40-AP6X2/S10** 16031 | | | 20 | 3-wire DC PNP | 10-30 VDC | 150 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 3 | A4 |
| **Ni20-CP40-AD4X/S10** 44771 | | | 20 | 2-wire DC | 10-65 VDC | 150 | ≤100 | -25 to +70 | IP67 | PBT | PBT | N/A | YE | A | 1 | A2 |
| **Ni25U-CP40-AP6X2/S10** 1623701 | Uprox | | 25 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP67 | PBT | PBT | GN | YE | A | 3 | A4 |
| **Ni40U-CP40-AP6X2/S10** 1623602 | Uprox | | 40 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP68 | PBT | PBT | GN | YE | A | 3 | A4 |
| **Ni50U-CP40-AN6X2/S10** 1625824 | Uprox+ | | 50 | 3-wire DC NPN | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP68 | PBT | PBT | GN | YE | A | 2 | A4 |
| **Ni50U-CP40-AP6X2/S10** 1625842 | Uprox+ | | 50 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP68 | PBT | PBT | GN | YE | A | 3 | A4 |



We reserve the right to make technical alterations without prior notice.

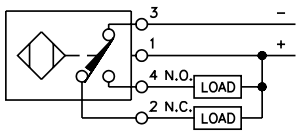
# Rectangular Inductive Sensors | CP40

**Rotatable Sensing Head with Complementary Outputs and Terminal Chamber**

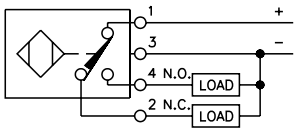
| Housing Style | Dimension Drawings |
|---|---|
| | A   CP40 - Embeddable/Nonembeddable, Terminal Chamber |

**Wiring Diagrams/Mating Cordsets**

1




2




**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥170 mA on 150 mA Load Current | Temperature Drift: | ≤±10% |
| | ≥120 mA on 100 mA Load Current | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| No-Load Current: | ≤15 mA (Ferrite, Uprox, Rectangular) | Repeatability: | ≤2% of Rated Operating Distance |
| | ≤20 mA (Uprox+, Uprox 3) | | |
| Time Delay Before Availability: | ≤8 ms | | |

We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | CP40

**Rotatable Sensing Head with Complementary Outputs and Terminal Chamber**

| Part Number/ ID Number | Features | Embeddable | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Front Cap/Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi15U-CP40-VN4X2/S10** 1540511 | Uprox | • | 15 | 4-wire DC NPN | 10-65 VDC | 250 | ≤200 | -30 to +85 | IP68 | PBT | PBT | GN | YE | A | 1 | A4 |
| **Bi15U-CP40-VP4X2/S10** 1540501 | Uprox | • | 15 | 4-wire DC PNP | 10-65 VDC | 250 | ≤200 | -30 to +85 | IP67 | PBT | PBT | GN | YE | A | 2 | A4 |
| **Bi15-CP40-VN4X2/S100** 15250 | Comp. Outputs | • | 15 | 4-wire DC NPN | 10-65 VDC | 150 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A4 |
| **Bi15-CP40-VN4X2/S100-S10** 15144 | High Temp. 100 °C | • | 15 | 4-wire DC NPN | 10-65 VDC | 150 | ≤200 | -25 to +100 | IP67 | PBT | PBT | GN | YE | A | 1 | A4 |
| **Bi15-CP40-VP4X2/S10** 15010 | Comp. Outputs | • | 15 | 4-wire DC PNP | 10-65 VDC | 150 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 2 | A4 |
| **Bi15-CP40-VP4X2/S100-S10** 15019 | High Temp. 100 °C | • | 15 | 4-wire DC PNP | 10-65 VDC | 150 | ≤200 | -25 to +100 | IP67 | PBT | PBT | GN | YE | A | 2 | A4 |
| **Bi20-CP40-VN4X2/S10** 1579221 | Ext. Range | • | 20 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A4 |
| **Bi20-CP40-VP4X2/S10** 15012 | Ext. Range | • | 20 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 2 | A4 |
| **Ni20-CP40-VN4X2/S10** 15251 | Comp. Outputs | | 20 | 4-wire DC NPN | 10-65 VDC | 150 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A4 |
| **Ni20-CP40-VP4X2/S10** 15011 | Comp. Outputs | | 20 | 4-wire DC PNP | 10-65 VDC | 150 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 2 | A4 |
| **Ni20-CP40-VP4X2/S100-S10** 15020 | High Temp. 100 °C | | 20 | 4-wire DC PNP | 10-65 VDC | 150 | ≤200 | -25 to +100 | IP67 | PBT | PBT | GN | YE | A | 2 | A4 |
| **Ni35-CP40-VN4X2/S10** 15254 | Comp. Outputs | | 35 | 4-wire DC NPN | 10-65 VDC | 150 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A4 |
| **Ni35-CP40-VP4X2/S10** 15014 | Comp. Outputs | | 35 | 4-wire DC PNP | 10-65 VDC | 150 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 2 | A4 |
| **Ni40U-CP40-VN4X2/S10** 1540611 | Uprox, Ext. Range | | 40 | 4-wire DC NPN | 10-65 VDC | 250 | ≤200 | -30 to +85 | IP68 | PBT | PBT | GN | YE | A | 1 | A4 |
| **Ni40U-CP40-VP4X2/S10** 1540601 | Uprox, Ext. Range | | 40 | 4-wire DC PNP | 10-65 VDC | 250 | ≤200 | -30 to +85 | IP68 | PBT | PBT | GN | YE | A | 2 | A4 |
| **Ni50U-CP40-VN4X2/S10** 1625807 | Uprox+ | | 50 | 4-wire DC NPN | 10-65 VDC | 250 | ≤200 | -30 to +85 | IP68 | PBT | PBT | GN | YE | A | 1 | A4 |
| **Ni50U-CP40-VP4X2** 1538303 | Uprox+ | | 50 | 4-wire DC PNP | 10-65 VDC | 250 | ≤200 | -30 to +85 | IP68 | PBT | PBT | GN | YE | A | 2 | A4 |



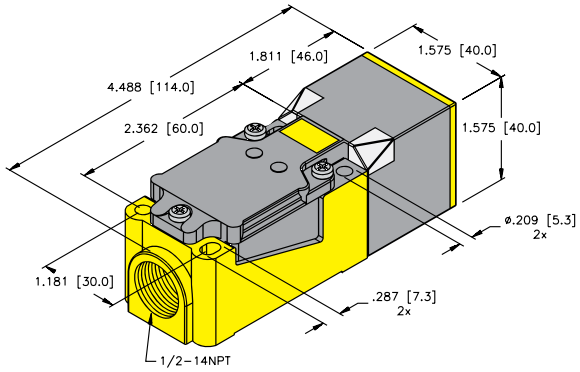
We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | CP40

**Rotatable Sensing Head with AC/DC Outputs and Terminal Chamber**

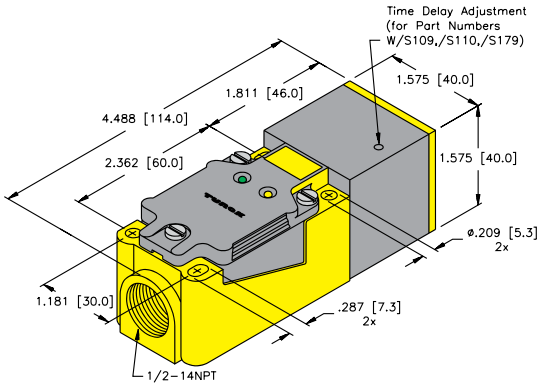
| Housing Style | Dimension Drawings |
|---|---|

A




CP40 - Embeddable/Nonembeddable, Terminal Chamber

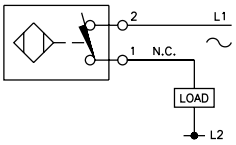
B



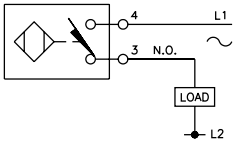

CP40 - Embeddable/Nonembeddable, Terminal Chamber

## Wiring Diagrams/Mating Cordsets

1




–OR–




## A5 — 2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA |
| | AC: ≥120 mA; DC: ≥120 mA |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA (AC) |
| | ≤1.5 mA (DC) |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤3.0 A (≤20 ms, max 5 Hz) |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

## A6 — 2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | CP40

## Rotatable Sensing Head with AC/DC Outputs and Terminal Chamber

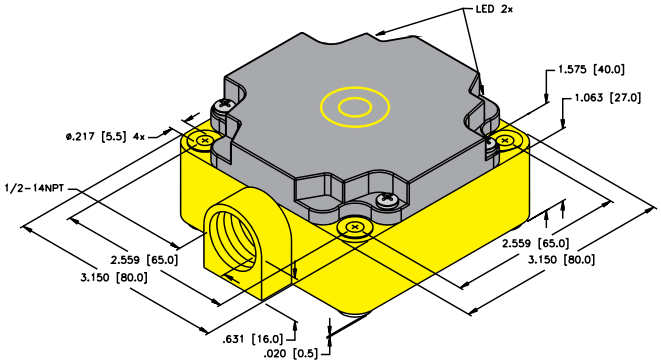
| Part Number/ ID Number | Features | Embeddable | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Front Cap/Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi15U-CP40-FDZ30X2** 4280601 | Uprox | • | 15 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP67 | PBT | PBT | GN | YE | A | 1 | A5 |
| **Bi15-CP40-FDZ30X2/S10** 42241 | Prog. Outputs | • | 15 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 60 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A5 |
| **Bi15-CP40-FDZ30X2/S10-S97** 42266 | Low Temp. -40 °C | • | 15 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 60 | ≤400/300 | -40 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A5 |
| **Bi15-CP40-FZ3X2/S109-S10** 13737 | Time Delay | • | 15 | 2-wire AC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | B | 1 | A6 |
| **Bi15-CP40-FZ3X2/S110-S10** 13735 | Time Delay | • | 15 | 2-wire AC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | B | 1 | A6 |
| **Bi15-CP40-FZ3X2/S10** 13410 | Prog. Outputs | • | 15 | 2-wire AC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A6 |
| **Bi15-CP40-FZ3X2/S10-S97** 1341010 | Low Temp. -40 °C | • | 15 | 2-wire AC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -40 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A6 |
| **Bi15-CP40-FZ3X2/S100-S10** 13776 | High Temp. 100 °C | • | 15 | 2-wire AC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +100 | IP67 | PBT | PBT | GN | YE | A | 1 | A6 |
| **Ni20-CP40-FDZ30X2/S10** 42242 | Prog. Outputs | | 20 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 60 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A5 |
| **Ni20-CP40-FZ3X2/S100** 13411 | Prog. Outputs | | 20 | 2-wire AC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A6 |
| **Ni20-CP40-FZ3X2/S100-S10** 13775 | High Temp. 100 °C | | 20 | 2-wire AC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +100 | IP67 | PBT | PBT | GN | YE | A | 1 | A6 |
| **Ni20-CP40-FZ3X2/S110-S10** 13746 | Time Delay | | 20 | 2-wire AC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | B | 1 | A6 |
| **Ni30-CP40-FZ3X2/S109-S10** 13747 | Time Delay | | 30 | 2-wire AC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | B | 1 | A6 |
| **Ni30-CP40-FZ3X2/S110-S10** 13744 | Time Delay | | 30 | 2-wire AC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | B | 1 | A6 |
| **Ni35-CP40-FDZ30X2/S10** 42245 | Prog. Outputs | | 35 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 60 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A5 |
| **Ni35-CP40-FZ3X2/S10** 13413 | Prog. Outputs | | 35 | 2-wire AC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A6 |
| **Ni40U-CP40-FDZ30X2/S10** 4280801 | Uprox | | 40 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP68 | PBT | PBT | GN | YE | A | 1 | A5 |
| **Ni40-CP40-FZ3X2/S100-S10** 1374802 | High Temp. 100 °C | | 40 | 2-wire AC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +100 | IP67 | PBT | PBT | GN | YE | A | 1 | A6 |



We reserve the right to make technical alterations without prior notice.

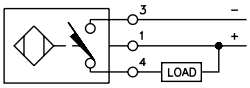
# Rectangular Inductive Sensors | CP80

## Top Sensing with 3 and 4-Wire DC Outputs and Terminal Chamber

| Housing Style | Dimension Drawings |
|---|---|
| | A   CP80 - Embeddable/Nonembeddable, Terminal Chamber |

### Wiring Diagrams/Mating Cordsets

1

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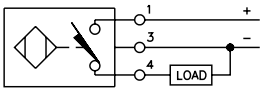


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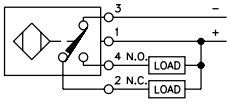


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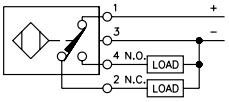



### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current |
| | ≥170 mA on 150 mA Load Current |
| | ≥120 mA on 100 mA Load Current |
| Off-State (Leakage) Current: | ≤0.1 mA |
| No-Load Current: | ≤15 mA (Ferrite, Uprox, Rectangular) |
| | ≤20 mA (Uprox+, Uprox 3) |
| Time Delay Before Availability: | ≤8 ms |
| Power-On Effect: | Per IEC 947-5-2 |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Transient Protection: | Per EN 60947-5-2 |
| Temperature Drift: | ≤±10% |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | CP80

## Top Sensing with 3 and 4-Wire DC Outputs and Terminal Chamber

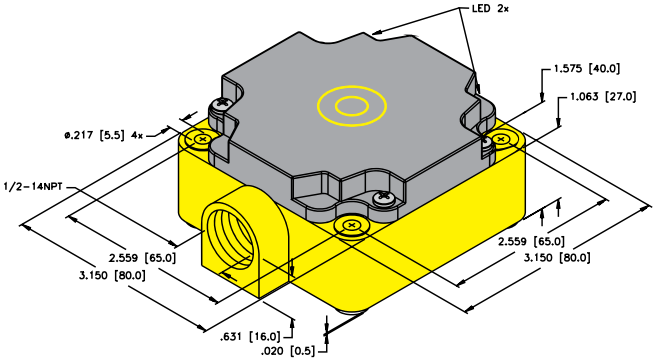
| Part Number/ ID Number | Features | Embeddable | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Front Cap/Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi40-CP80-VN4X2/S10** 1579800 | Comp. Outputs | • | 40 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 3 | A4 |
| **Bi40-CP80-VP4X2/S10** 15698 | Comp. Outputs | • | 40 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 4 | A4 |
| **Ni40-CP80-VP4X2/S10** 15015 | Comp. Outputs | | 40 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 4 | A4 |
| **Ni50-CP80-VN4X2/S10** 15256 | Comp. Outputs | | 50 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 3 | A4 |
| **Ni50-CP80-VP4X2/S10** 15016 | Comp. Outputs | | 50 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 4 | A4 |
| **Ni75U-CP80-AN6X2/S10** 1623811 | Uprox | | 75 | 3-wire DC NPN | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP67 | PBT | PBT | GN | YE | A | 1 | A4 |
| **Ni75U-CP80-AP6X2/S10** 1623801 | Uprox | | 75 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -30 to +85 | IP67 | PBT | PBT | GN | YE | A | 2 | A4 |
| **Ni75U-CP80-VN4X2/S10** 1540811 | Uprox | | 75 | 4-wire DC NPN | 10-65 VDC | 250 | ≤200 | -30 to +85 | IP67 | PBT | PBT | GN | YE | A | 3 | A4 |
| **Ni75U-CP80-VP4X2/S10** 1540801 | Uprox | | 75 | 4-wire DC PNP | 10-65 VDC | 250 | ≤200 | -30 to +85 | IP67 | PBT | PBT | GN | YE | A | 4 | A4 |



We reserve the right to make technical alterations without prior notice.

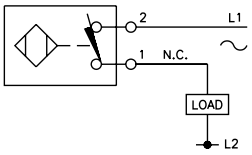
# Rectangular Inductive Sensors | CP80

## Top Sensing with AC/DC Outputs and Terminal Chamber

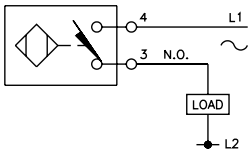
| Housing Style | Dimension Drawings |
|---|---|
| | A   CP80 - Embeddable/Nonembeddable, Terminal Chamber |

### Wiring Diagrams/Mating Cordsets

1




–OR–




### A5 — 2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA |
| | AC: ≥120 mA; DC: ≥120 mA |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (leakage) Current: | ≤1.7 mA (AC) |
| | ≤1.5 mA (DC) |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤3.0 A (≤20 ms, max 5 Hz) |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

### A6 — 2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | CP80

## Top Sensing with AC/DC Outputs and Terminal Chamber

| Part Number/ ID Number | Features | Embeddable | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Front Cap/Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi40-CP80-FDZ30X2/S10** 4230901 | Prog. Outputs | • | 40 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A5 |
| **Bi40-CP80-FZ3X2/S10** 1340401 | Prog. Outputs | • | 40 | 2-wire AC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A6 |
| **Ni40-CP80-FZ3X2/S100** 13415 | Prog. Outputs | | 40 | 2-wire AC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A6 |
| **Ni40-CP80-FZ3X2/S100-S10** 13453 | High Temp. 100 °C | | 40 | 2-wire AC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +100 | IP67 | PBT | PBT | GN | YE | A | 1 | A6 |
| **Ni50-CP80-FZ3X2/S10** 13410 | Prog. Outputs | | 50 | 2-wire AC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A6 |
| **Ni50-CP80-FDZ30X2/S100** 42321 | Prog. Outputs | | 50 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | A | 1 | A5 |
| **Ni50-CP80-FDZ30X2/S100-S10** 42290 | High Temp. 100 °C | | 50 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +100 | IP67 | PBT | PBT | GN | YE | A | 1 | A5 |
| **Ni75U-CP80-FDZ30X2/S10** 4280901 | Uprox | | 75 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP67 | PBT | PBT | GN | YE | A | 1 | A5 |



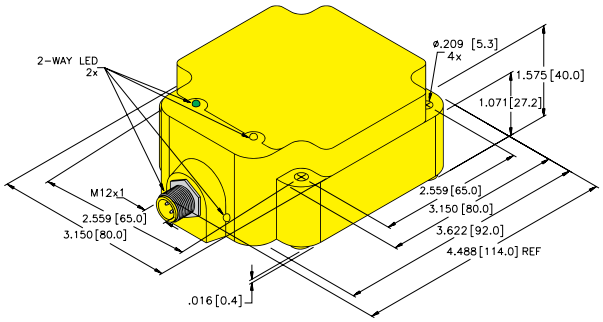
We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | Q80

**Top Sensing with 3 and 4-Wire DC or AC/DC Outputs**

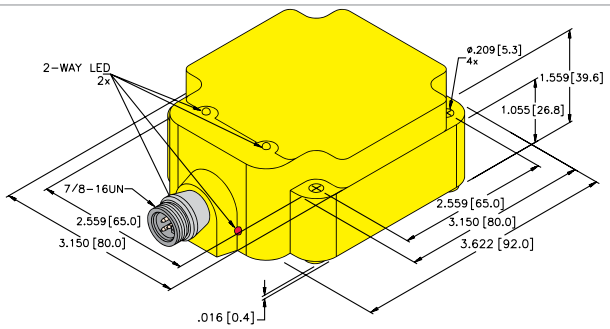
| Housing Style | Dimension Drawings |
|---|---|

A



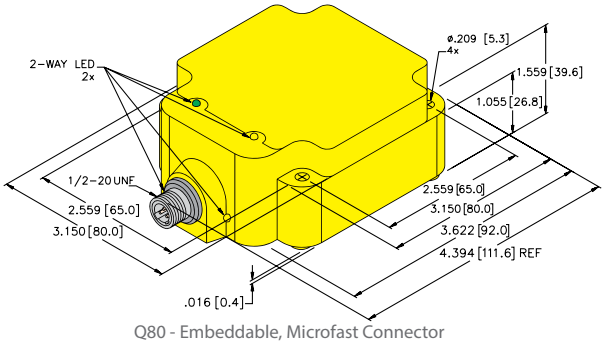

Q80 - Embeddable/Nonembeddable, Eurofast Connector

B




Q80 - Embeddable, Minifast Connector

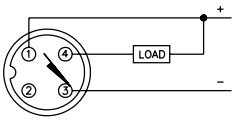
C




Q80 - Embeddable, Microfast Connector

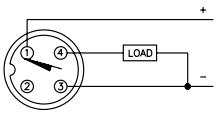
## Wiring Diagrams/Mating Cordsets

1



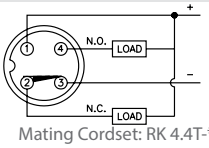

Mating Cordset: RK 4T-*

2



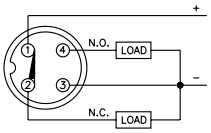

Mating Cordset: RK 4T-*

3



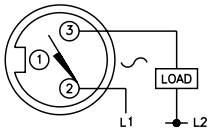

Mating Cordset: RK 4.4T-*

4



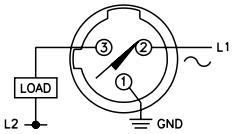

Mating Cordset: RK 4.4T-*

5




Mating Cordset: RKM 30-*M

6




Mating Cordset: KB 3T-*

## A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current |
| | ≥170 mA on 150 mA Load Current |
| | ≥120 mA on 100 mA Load Current |
| Off-State (Leakage) Current: | ≤0.1 mA |
| No-Load Current: | ≤15 mA (Ferrite, Uprox, Rectangular) |
| | ≤20 mA (Uprox+, Uprox 3) |
| Time Delay Before Availability: | ≤8 ms |
| Power-On Effect: | Per IEC 947-5-2 |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Transient Protection: | Per EN 60947-5-2 |
| Temperature Drift: | ≤±10% |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

## A5 — 2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA |
| | AC: ≥120 mA; DC: ≥120 mA |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA (AC) |
| | ≤1.5 mA (DC) |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤3.0 A (≤20 ms, max 5 Hz) |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | Q80

## Top Sensing with 3 and 4-Wire DC or AC/DC Outputs

| Part Number/ ID Number | Features | Embeddable | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Front Cap/Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi50U-Q80-AP6X2-H1141** 1608940 | Uprox+ | • | 50 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP68 | PBT | PBT | GN | YE | A | 2 | A4 |
| **Bi50U-Q80-VN4X2-H1141** 1562001 | Uprox+, Comp. Outputs | • | 50 | 4-wire DC NPN | 10-65 VDC | 250 | ≤200 | -25 to +70 | IP68 | PBT | PBT | GN | YE | A | 3 | A4 |
| **Bi50U-Q80-VP4X2-H1141** 15620 | Uprox+, Comp. Outputs | • | 50 | 4-wire DC PNP | 10-65 VDC | 250 | ≤200 | -25 to +70 | IP68 | PBT | PBT | GN | YE | A | 4 | A4 |
| **Bi50-Q80-ADZ30X2-B1131** 4200310 | | • | 50 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | B | 5 | A5 |
| **Bi50-Q80-ADZ30X2-B3131** 4200311 | | • | 50 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | C | 6 | A5 |
| **Ni75U-Q80-AN6X2-H1141** 1625856 | Uprox+ | | 75 | 3-wire DC NPN | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP68 | PBT | PBT | GN | YE | A | 1 | A4 |
| **Ni75U-Q80-AP6X2-H1141** 1625855 | Uprox+ | | 75 | 3-wire DC PNP | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP68 | PBT | PBT | GN | YE | A | 2 | A4 |
| **Ni75U-Q80-VP4X2-H1141** 1625857 | Uprox+, Comp. Outputs | | 75 | 4-wire DC PNP | 10-65 VDC | 250 | ≤200 | -25 to +70 | IP68 | PBT | PBT | GN | YE | A | 4 | A4 |



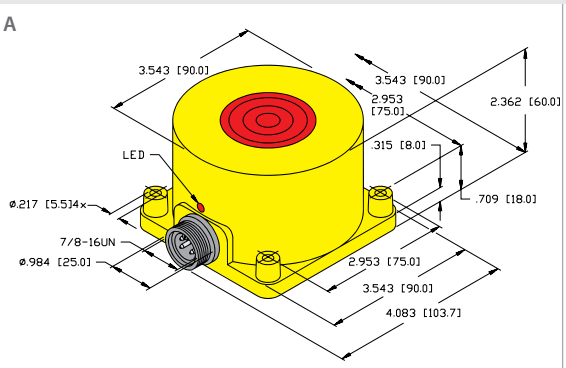
We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | K90 & K90SR

**Top Sensing with 4-Wire DC or AC/DC Outputs**

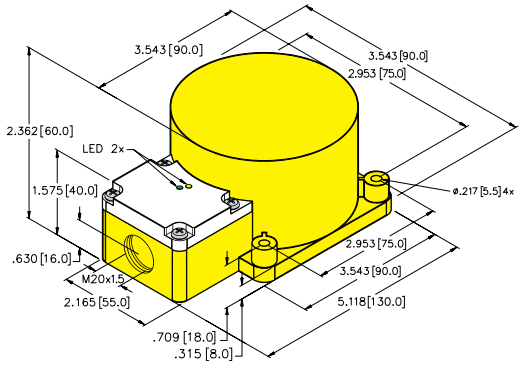
| Housing Style | Dimension Drawings |
|---|---|

A




K90 - Nonembeddable, Minifast Connector

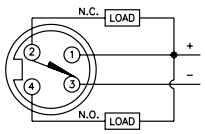
B




K90SR - Nonembeddable, Terminal Chamber

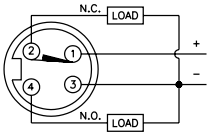
## Wiring Diagrams/Mating Cordsets

1



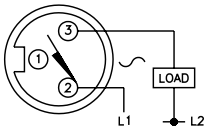

Mating Cordset: RK 40-*M

2



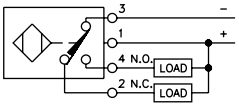

Mating Cordset: RK 40-*M

3

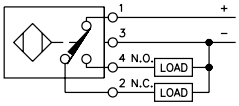



Mating Cordset: RK 30-*M

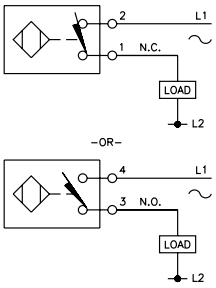
4




5




6




## A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current |
| | ≥170 mA on 150 mA Load Current |
| | ≥120 mA on 100 mA Load Current |
| Off-State (Leakage) Current: | ≤0.1 mA |
| No-Load Current: | ≤15 mA (Ferrite, Uprox, Rectangular) |
| | ≤20 mA (Uprox+, Uprox 3) |
| Time Delay Before Availability: | ≤8 ms |
| Power-On Effect: | Per IEC 947-5-2 |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Transient Protection: | Per EN 60947-5-2 |
| Temperature Drift: | ≤±10% |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

## A6 — 2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | K90 & K90SR

## Top Sensing with 4-Wire DC or AC/DC Outputs

| Part Number/ ID Number | Features | Embeddable | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Front Cap/Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni60-K90-VN4X-B2141** 15203 | Comp. Outputs | | 60 | 4-wire DC NPN | 10-65 VDC | 60 | ≤200 | -25 to +70 | IP67 | PUR | PUR | N/A | YE | A | 1 | A4 |
| **Ni60-K90-VP4X-B2141** 15103 | Comp. Outputs | | 60 | 4-wire DC PNP | 10-65 VDC | 60 | ≤200 | -25 to +70 | IP67 | PUR | PUR | N/A | YE | A | 2 | A4 |
| **Ni60-K90-AZ3X-B2131** 13542 | | | 60 | 2-wire AC | 20-250 VAC/10-300 VDC | 20 | ≤500 | -25 to +70 | IP67 | PBT | PBT | N/A | YE | A | 3 | A6 |
| **Ni60-K90SR-VN4X2** 15740 | Comp. Outputs | | 60 | 4-wire DC NPN | 10-65 VDC | 60 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | B | 4 | A4 |
| **Ni60-K90SR-VP4X2** 15640 | Comp. Outputs | | 60 | 4-wire DC PNP | 10-65 VDC | 250 | ≤200 | -30 to +85 | IP68 | PBT | PBT | GN | YE | B | 5 | A4 |
| **Ni60-K90SR-FZ3X2** 13429 | Prog. Outputs | | 60 | 2-wire AC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | B | 6 | A6 |
| **Ni100U-K90SR-VP4X2** 1625834 | Uprox+, Comp. Outputs | | 100 | 4-wire DC PNP | 10-65 VDC | 60 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | B | 5 | A4 |



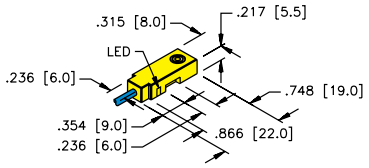
We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | Namur

**Intrinsically Safe**

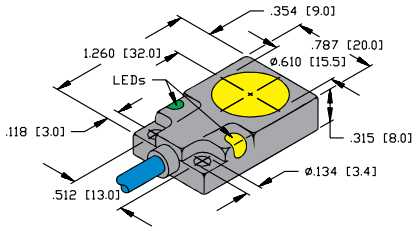
## Dimension Drawings

A



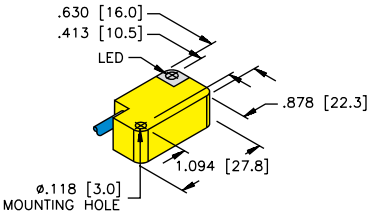

5.5 mm - Embeddable/Nonembeddable, Potted-In Cable

B



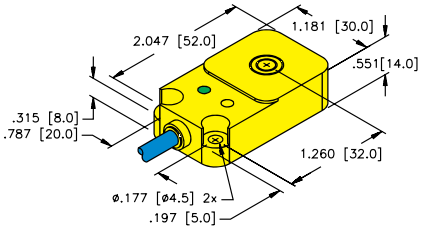

8.0 mm - Embeddable, Potted-In Cable

C



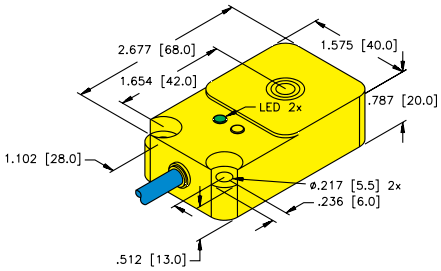

10 mm - Embeddable/Nonembeddable, Potted-In Cable

D



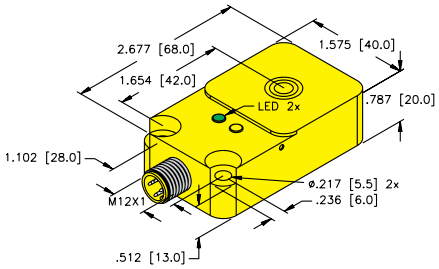

14 mm - Potted-In Cable

E




20 mm - Embeddable/Nonembeddable, Potted-In Cable

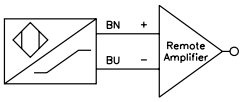
F



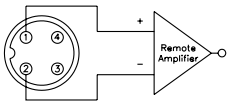

20 mm - Embeddable/Nonembeddable, Eurofast Connector

## Wiring Diagrams/Mating Cordsets

1




2




Mating Cordset: RK 4.21T-*

## A1 2-wire DC NAMUR - (Y0 and Y1)

| | |
|---|---|
| Differential Travel (Hysteresis): | 1-10% (5% typical) |
| Nominal Voltage: | 8.2 VDC (EN60947-5-6) |
| Load Resistance: | 1000 Ω |
| Non-activated Current Consumption: | ≥2.1 mA |
| Activated Current Consumption: | ≤1.2 mA |
| Recommended Switching Point for Remote Amplifier: | >1.2 to <2.1 mA, typ. 1.55 mA ON/1.75 mA OFF |
| Power-On Effect: | Realized in Amplifier |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Realized in Amplifier |
| Transient Protection: | Realized in Amplifier |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

**Amplifier Note:**
Inductive sensors with Namur outputs are typically used in hazardous locations and the approval agencies require the use of an amplifier to regulate the signals in the hazardous area. Due to the wide variety of approvals, output options, and amplifier designs, it is not possible to incorporate all of the choices in this catalog. For the most up to date information, please either search for these products under our interface technology product category (www.turck.us) or contact us by phone.

We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | Namur

**Intrinsically Safe** IS

| Part Number/ ID Number | Features | Embeddable | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Front Cap/Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi2-Q5.5K-Y1X** 4055300 | | • | 2 | 2-wire DC NAMUR | 8.2 VDC nominal | 2000 | Remote | -25 to +70 | IP67 | PP | PP | N/A | YE | 2M/TPU | A | 1 | A1 |
| **Bi5-Q08-Y1X** 4054000 | | • | 5 | 2-wire DC NAMUR | 8.2 VDC nominal | 1000 | Remote | -25 to +70 | IP67 | Zinc | PA 12 | N/A | YE | 2M/TPU | B | 1 | A1 |
| **Bi2-Q10S-Y1X** 4012130 | | • | 2 | 2-wire DC NAMUR | 8.2 VDC nominal | 1000 | Remote | -25 to +70 | IP67 | PP-GF20 | PP-GF20 | N/A | YE | 2M/PVC | C | 1 | A1 |
| **Bi10-Q14-Y1X** 1608730 | | • | 10 | 2-wire DC NAMUR | 8.2 VDC nominal | 1000 | Remote | -25 to +70 | IP67 | PBT | PBT | N/A | YE | 2M/TPU | D | 1 | A1 |
| **Bi15-Q20-Y1X** 1080020 | | • | 15 | 2-wire DC NAMUR | 8.2 VDC nominal | 1000 | Remote | -25 to +70 | IP67 | PBT | PBT | N/A | YE | 2M/TPU | E | 1 | A1 |
| **Bi15-Q20-Y1X-H1141** 1080025 | | • | 15 | 2-wire DC NAMUR | 8.2 VDC nominal | 1000 | Remote | -25 to +70 | IP67 | PBT | PBT | N/A | YE | - - | F | 2 | A1 |



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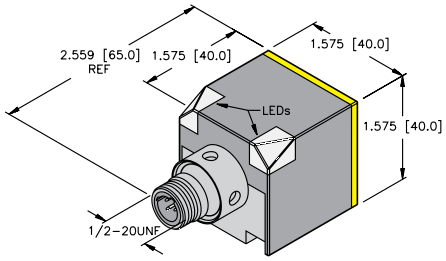
# Rectangular Inductive Sensors | Namur

**Intrinsically Safe**

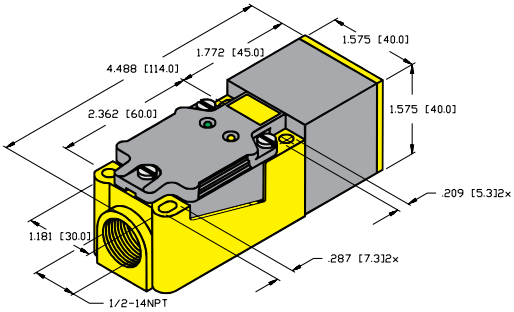
## Dimension Drawings

A



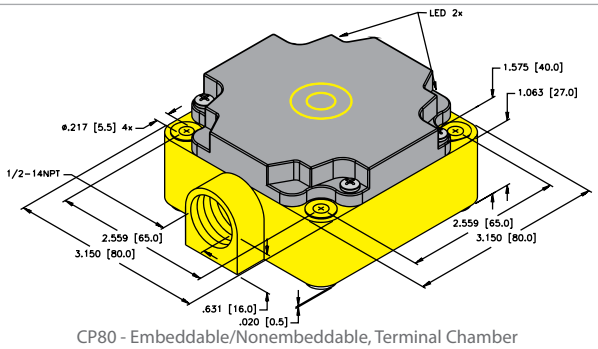

CK40 - Embeddable/Nonembeddable, Eurofast Connector

B



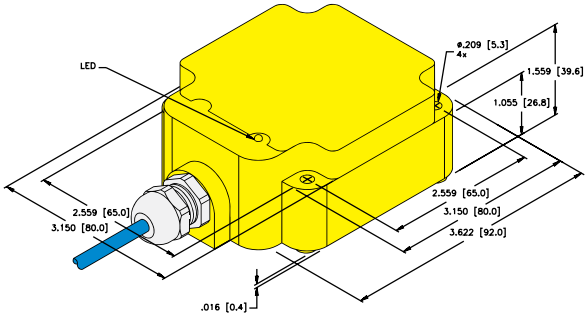

CP40 - Embeddable/Nonembeddable, Terminal Chamber

C



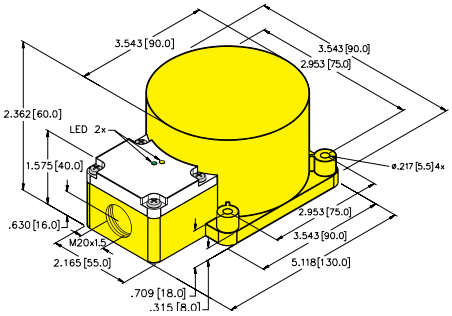

CP80 - Embeddable/Nonembeddable, Terminal Chamber

D




Q80 - Nonembeddable, Potted-In Cable

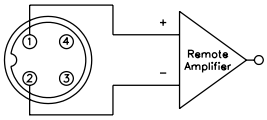
E




K90SR - Nonembeddable, Terminal Chamber

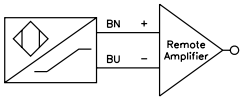
## Wiring Diagrams/Mating Cordsets

1

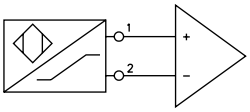



Mating Cordset: RK 4.21T-*

2




3




## A1 — 2-wire DC NAMUR - (Y0 and Y1)

| | |
|---|---|
| Differential Travel (Hysteresis): | 1-10% (5% typical) |
| Nominal Voltage: | 8.2 VDC (EN60947-5-6) |
| Load Resistance: | 1000 Ω |
| Non-activated current consumption: | ≥2.1 mA |
| Activated current consumption: | ≤1.2 mA |
| Recommended Switching Point for Remote Amplifier: | >1.2 to <2.1 mA, typ. 1.55 mA ON/1.75 mA OFF |
| Power-On Effect: | Realized in Amplifier |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Realized in Amplifier |
| Transient Protection: | Realized in Amplifier |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

**Amplifier Note:**
Inductive sensors with Namur outputs are typically used in hazardous locations and the approval agencies require the use of an amplifier to regulate the signals in the hazardous area. Due to the wide variety of approvals, output options, and amplifier designs, it is not possible to incorporate all of the choices in this catalog. For the most up to date information, please either search for these products under our interface technology product category (www.turck.us) or contact us by phone.

We reserve the right to make technical alterations without prior notice.

# Rectangular Inductive Sensors | Namur

**Intrinsically Safe** IS

| Part Number/ ID Number | Features | Embeddable | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Front Cap/Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi15-CK40-Y1X-H1141** 4065000 | | • | 15 | 2-wire DC NAMUR | 8.2 VDC nominal | 150 | Remote | -25 to +70 | IP67 | PBT | PBT | N/A | YE | - - | A | 1 | A1 |
| **Bi15-CP40-Y1X/S10** 10120 | | • | 15 | 2-wire DC NAMUR | 8.2 VDC nominal | 150 | Remote | -25 to +70 | IP67 | PBT | PBT | N/A | YE | - - | B | 3 | A1 |
| **Ni20-CP40-Y1X/S10** 10121 | | | 20 | 2-wire DC NAMUR | 8.2 VDC nominal | 150 | Remote | -25 to +70 | IP67 | PBT | PBT | N/A | YE | - - | B | 3 | A1 |
| **Ni35-CP40-Y1X/S100-S10** 1011126 | High Temp. 100 °C | | 35 | 2-wire DC NAMUR | 8.2 VDC nominal | 80 | Remote | -25 to +100 | IP67 | PBT | PBT | N/A | YE | - - | B | 3 | A1 |
| **Ni50-CP80-Y1/S10** 10401 | | | 50 | 2-wire DC NAMUR | 8.2 VDC nominal | 100 | Remote | -25 to +70 | IP67 | PBT | PBT | N/A | N/A | - - | C | 3 | A1 |
| **Ni60-Q80-Y1X** 1008700 | | | 60 | 2-wire DC NAMUR | 8.2 VDC nominal | 100 | Remote | -25 to +70 | IP67 | PBT | PBT | N/A | YE | 2M/ PVC | D | 2 | A1 |
| **Ni50-K90SR-Y1** 10074 | | | 50 | 2-wire DC NAMUR | 8.2 VDC nominal | 100 | Remote | -25 to +70 | IP67 | PBT | PBT | N/A | N/A | - - | E | 3 | A1 |



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Notes

Notes

# Inductive Barrel Sensor Selection Guide

| Embeddable/Nonembeddable Barrels | | | | | |
|---|---|---|---|---|---|
| | | | | | |
| **Housing** | 3 mm | 4 mm | 4 mm | 4 mm | 5 mm |
| **Sensing Range** | 1 mm | 1 mm | 1 mm | 1 mm | 1 mm |
| **Pages** | B9 | B9 | B9 | B11 | B11 |
| **Features** | | | | | |
| **2-wire** | | | | | |
| **3/4-wire** | • | • | • | • | • |
| **2-wire AC/DC** | | | | | |

| Embeddable/Nonembeddable Barrels | | | | |
|---|---|---|---|---|
| | | | | |
| **Housing** | 5 mm | 6.5 mm | 6.5 mm | 8 mm |
| **Sensing Range** | 1 mm | 1.5 - 6 mm | 1.5 - 6 mm | 1.5 - 2 mm |
| **Pages** | B11 | B13 - 16 | B13 - 16 | B17 |
| **Features** | | Uprox | Uprox | |
| **2-wire** | | | | |
| **3/4-wire** | • | • | • | • |
| **2-wire AC/DC** | | | | |

| Embeddable/Nonembeddable Barrels | | | | |
|---|---|---|---|---|
| | | | | |
| **Housing** | 8 mm | Side Sensing | Side Sensing | 8 mm |
| **Sensing Range** | 1.5 - 2 mm | 1 - 1.5 mm | 1.5 mm | 1.5 - 6 mm |
| **Pages** | B17 | B19 | B19 | B23 - 34 |
| **Features** | Uprox | | | Uprox |
| **2-wire** | | | | • |
| **3/4-wire** | • | • | • | • |
| **2-wire AC/DC** | | | | |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensor Selection Guide

| Embeddable/Nonembeddable Barrels | | | | |
|---|---|---|---|---|
| | | | | |
| **Housing** | 8 mm | 12 mm | 12 mm | 12 mm |
| **Sensing Range** | 1.5 - 6 mm | 2 - 10 mm | 2 - 8 mm | 2 - 10 mm |
| **Pages** | B35 - 42 | B43 - 64 | B59 | B65 - 72 |
| **Features** | | Uprox | Uprox | |
| **2-wire** | • | • | | • |
| **3/4-wire** | • | • | • | • |
| **2-wire AC/DC** | | • | | • |

| Embeddable/Nonembeddable Barrels | | | | | |
|---|---|---|---|---|---|
| | | | | | |
| **Housing** | 12 mm | 12 mm | 18 mm | 18 mm | |
| **Sensing Range** | 2 - 8 mm | 2 - 8 mm | 5 - 15 mm | 2 - 10 mm | |
| **Pages** | B73 | B75 | B77 - 104 | B95 | B103 |
| **Features** | Uprox | Uprox | Uprox | Uprox | |
| **2-wire** | | • | • | | |
| **3/4-wire** | • | • | • | • | |
| **2-wire AC/DC** | • | | • | | |

| Embeddable/Nonembeddable Barrels | | | | |
|---|---|---|---|---|
| | | | | |
| **Housing** | 18 mm | 18 mm | 18 mm | 18 mm |
| **Sensing Range** | 5 - 15 mm | 5 - 12 mm | 5 - 10 mm | 5 - 12 mm |
| **Pages** | B105 - 110 | B99 - 112 | B113 | B115 |
| **Features** | Uprox | Uprox | Uprox | Uprox |
| **2-wire** | • | • | | |
| **3/4-wire** | • | • | • | • |
| **2-wire AC/DC** | • | • | • | • |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensor Selection Guide

| Embeddable/Nonembeddable Barrels | | | | |
|---|---|---|---|---|
| | | | | |
| **Housing** | 30 mm | 30 mm | 30 mm | 30 mm |
| **Sensing Range** | 10 - 30 mm | 10 - 20 mm | 10 - 30 mm | 10 - 20 mm |
| **Pages** | B117 - 132 | B127 / B143 | B133 - 140 | B141 |
| **Features** | Uprox | Uprox | Uprox | Uprox |
| **2-wire** | • | • | • | • |
| **3/4-wire** | • | • | • | • |
| **2-wire AC/DC** | • | • | • | • |

| Embeddable/Nonembeddable Barrels | | | | |
|---|---|---|---|---|
| | | | | |
| **Housing** | 30 mm | 30 mm | 40 mm | 47 mm |
| **Sensing Range** | 10 - 20 mm | 10 - 20 mm | 30 mm | 20 - 25 mm |
| **Pages** | B145 | B145 | B147 | B147 |
| **Features** | Uprox | | | |
| **2-wire** | | | | |
| **3/4-wire** | • | • | • | • |
| **2-wire AC/DC** | • | • | • | • |

| Embeddable/Nonembeddable Barrels | | | | |
|---|---|---|---|---|
| | | | | IS |
| **Housing** | 47 mm | 40 mm | 47 mm | Variable |
| **Sensing Range** | 20 - 25 mm | 15 - 30 mm | 25 - 40 mm | 1 - 15 mm |
| **Pages** | B147 | B149 | B149 | B151 - 162 |
| **Features** | | | | |
| **2-wire** | | | | • |
| **3/4-wire** | • | • | • | |
| **2-wire AC/DC** | • | • | • | |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensor Part Number Key

| B | I | 10 | U | - | | G | T | 30 | | - | A | DZ | 30 | X2 | Wiring Option* | Special Option Code** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

**Mounting**
B = embeddable
N = nonembeddable

**Principle of Operation**
I = inductive

**Rated Operating Distance (mm)**

**Sensing Characteristics**
U = Uprox® sensor

**Housing Material Modifier**
E = stainless steel

**Housing Style**
**Barrel - Metal**
G = full threading, generally chrome plated brass
GS = threaded side sensor
H = smooth, chrome plated brass or stainless steel
HS = smooth side sensor
M = partial threading, chrome plated brass
**Barrel - Plastic**
K = smooth
P = full threading
S = partial threading
SK = side sensing/slot sensor, plastic housing

**Primary Barrel Modifier**
T = PTFE coated

**Housing Diameter or Height (mm)**

**Secondary Barrel Modifier**
CA = conduit adaptor
E = extended barrel length
EE = extra long barrel length
F = stainless steel face
FE = stainless steel face, extended barrel length
H = Stoneface®
K = short barrel length
M = medium barrel length
S = side sensing
SE = extended length
SK = right-angle terminal chamber
SR = straight terminal chamber
T = barb fitting at cable entry
TC = terminal chamber
WD = washdown IP68/IP69K

**Number of LEDs**
(blank) = no LEDs
X = 1 LED
X2 = 2 LEDs

**Voltage Range**
**AC/DC: (No SCP**)**
3 = 20-250 VAC, 10-300 VDC
14 = 20-132 VAC, 10-140 VDC
31 = 20-250 VAC, 10-300 VDC, plastic barrel
33 = 35-250 VAC, grounded metal barrel
**AC/DC: (Latched SCP)**
30 = 20-250 VAC, 10-300 VDC
32 = 20-250 VAC, 10-300 VDC
40 = 20-140 VAC/DC, high off-state current
**DC:**
4 = 10-65 VDC, polarity protected, pulsed SCP**
6 = 10-30 VDC, polarity protected, pulsed SCP
7 = 10-30 VDC, TTL compatible
8 = 20-30 VDC, polarity protected, pulsed SCP
41 = 10-55 VDC, polarity protected, pulsed SCP
44 = 10-55 VDC
45 = 8.4-64 Volts
**SCP = short-circuit and overload protection

**Output**
D = 2-wire DC (transistor output)
DZ = 2-wire AC/DC, (power MOSFET output)
G = 2-wire DC, low voltage drop
N = NPN transistor (current sinking)
P = PNP transistor (current sourcing)
Z = 2-wire AC or 2-wire AC/DC

**Output Function**
A = normally open (N.O.)
DA = dynamic output (ring sensor), normally open
F = connection programmable (N.O or N.C.)
R = normally closed (N.C.)
V = complementary outputs: one N.O., one N.C.
Y0 = NAMUR output, requires switching amplifier
Y1 = NAMUR output, requires switching amplifier, ATEX Approved

**NOTE:**
Part number keys are to assist in identification only.
Verify new part numbers with factory; some configurations are not possible.

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensor Part Number Key

## Wiring Options*

**A. Connectorized Sensor**

**Bi2-M12-AN6X - H1 1 4 1**

**Connector Family**

B1 = Minifast®, 7/8"-16UN, metal, male
B2 = Minifast®, 7/8"-16UN, plastic, male
B3 = Microfast®, 1/2"-20UNF, metal, male
H1 = Eurofast®, M12x1, metal or plastic, male
V1 = Picofast®, snap and M8x1, metal, male (Q08 snap only)
V2 = Picofast®, snap and M8x1, male (Q08 only)

**Connector/Sensor Transition**

1 = straight
3 = straight with adapter
4 = right-angle with adapter

**Factory Code**

**Example:**
0 = non-standard wiring
1 = standard wiring
3 = N.C. DC output on pin 4
4 = N.O. 2-wire DC output on pin 4

**Number of Pins**

**B. Potted Cable**

**Bi2-G12-AN6X 7M**

**Cable Length**

(blank) = 2 meter cable
7M = 7 meter cable
*M = custom cable lengths available

**C. Potted Cable with Molded Connector**

**Bi2-G12-Y0X - 0.2M - RS 4.21T**

**Cable Length**

**examples:**
0.2M = 0.2 meters (minimum)
2M = 2 meter cable
7M = 7 meter cable

**Standard Cordset Connector**

**AC:** RSM 30 = Minifast, 7/8"-16UN, metal, male, 3-conductor
SB 3T = Microfast, 1/2"-20UNF, metal , male, 30 conductor
**DC:** RS 4T = Eurofast, M12x1, metal or plastic, male, 3-conductor
RS 4.2T = Eurofast, M12x1, metal or plastic, male, 2-conductor
RS 4.21T = Eurofast, M12x1, metal or plastic, male, NAMUR, 2-conductor
RS 4.4T = Eurofast, M12x1, metal or plastic, male, 4-conductor
RSM 40 = Minifast, 7/8"-16UN, metal, male, 4-conductor
PSG 3 = Picofast, snap, plastic, male, 3-conductor
PSG 3M = Picofast, M8x1, male, 3-conductor

## Option Codes for Special or Custom-Built Sensors**

**Bi 2-S12-AN7X /S100 or Bi10-M30-AN6X-H1141 /F2**

**examples:**
/S34 = weld field immune
/S90 = TPU cable
/S97 = -40 °C (-40 °F) operating temperature
/S100 = +100 °C (+212 °F) operating temperature
/S1589 = barrel sensors with Weldguard® laminate
/S1610 = barrel sensors with tool steel sleeve and Weldguard® laminate

**example:**
/F2 = alternate oscillator frequency

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors

## Mounting

Turck inductive proximity sensors are manufactured with a shielded coil, designated by "Bi" in the part number, and a nonshielded coil, designated by "Ni" in the part number. Embeddable (shielded) units may be safely flush-mounted in metal. Nonembeddable (nonshielded) units require a metal free area around the sensing face. Because of possible interference of the electromagnetic fields generated by the oscillators, minimum spacing is required between adjacent or opposing sensors.

It is good engineering practice to mount sensors horizontally or with the sensing face looking down. Avoid sensors that look up wherever considered, especially if metal filings and chips are present.

## Maximum Locknut Torque Specifications

The locknut torque should be considered for all threaded sensors to prevent the housing from being over stressed. The values below pertain to the locknut provided with each sensor. Liquid thread sealants of an anaerobic base, such as Loctite, are recommended if strong vibrations are likely.

Caution: Sensor barrels are typically brass. Consider break torque when selecting grade of thread sealant.

| Barrel Size | Metal Barrel | Plastic Barrel |
|---|---|---|
| 5 mm | 5 Nm (3.7 ft-lb) | - - - - |
| 8 mm | 5 Nm (3.7 ft-lb) | - - - - |
| 8 mm (M08 Ferrite) | 7 Nm (5.2 ft-lb) | - - - - |
| 12 mm | 10 Nm (7.4 ft-lb) | 1 Nm (0.7 ft-lb) |
| 18 mm | 25 Nm (18 ft-lb) | 2 Nm (1.4 ft-lb) |
| 30 mm | 75 Nm (55 ft-lb) | 5 Nm (3.7 ft-lb) |
| 47 mm | 90 Nm (66 ft-lb) | - - - - |

## Drill Hole Sizes for Metric Threads

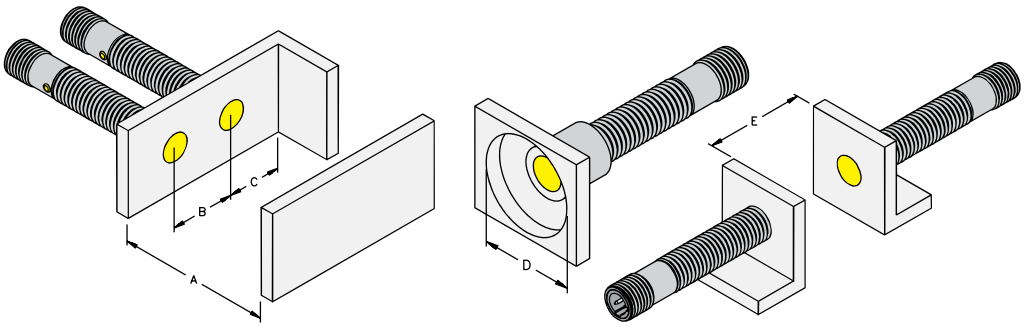
| Thread Size | Pitch | Thru Hole (mm) | Tap Hole Dia. (mm) | Thru Hole (in) | Tap Hole Dia. (in) |
|---|---|---|---|---|---|
| M5 x 0.5 | 0.5 | 5.0 | 4.5 | 13/64 | 5/32 |
| M8 x 1 | 1.0 | 8.0 | 7 | 21/64 | 1/4 |
| M12 x 1 | 1.0 | 12.0 | 11 | 31/64 | 13/32 |
| M18 x 1 | 1.0 | 18.0 | 17 | 23/32 | 41/64 |
| M30 x 1.5 | 1.5 | 30.0 | 28 | 1-3/16 | 1-5/64 |
| PG 9 | 1.41 | 15.2 | 14 | 5/8 | 1/2 |
| PG 13.5 | 1.41 | 20.4 | 19 | 13/16 | 23/32 |
| PG 36 | 1.59 | 47.0 | 45.5 | 1-7/8 | 1-47/64 |



We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors

## Embeddable Mounting Considerations




### Flush Mountable

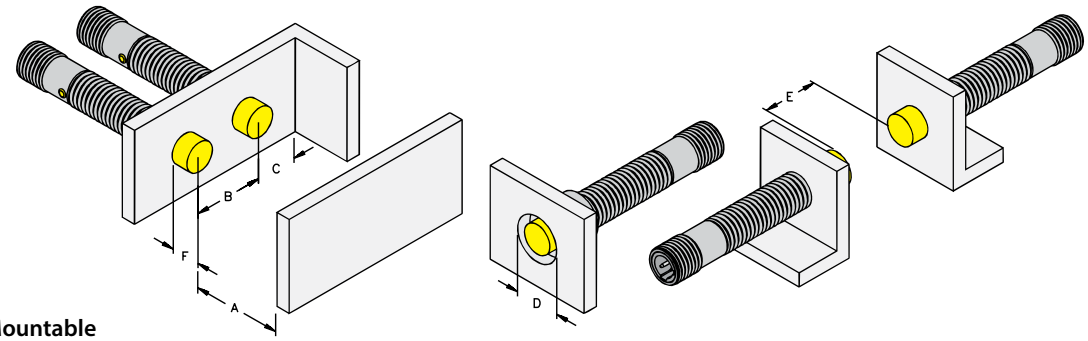
| Sensor Type | Barrel Diameter | A | B | C | D | E |
|---|---|---|---|---|---|---|
| Bi1 | 3.00 | 3.00 | 6.00 | 4.50 | 9.00 | 9.00 |
| Bi1U | 4.00 | 3.00 | 8.00 | 6.00 | 12.00 | 6.00 |
| Bi1 | 4.00 | 3.00 | 8.00 | 6.00 | 12.00 | 6.00 |
| Bi1 | 5.00 | 3.00 | 10.00 | 8.00 | 15.00 | 6.00 |
| Bi1U | 5.00 | 3.00 | 10.00 | 7.50 | 15.00 | 6.00 |
| Bi1.5U | 6.50 | 5.00 | 13.00 | 10.00 | 20.00 | 9.00 |
| Bi1.5 | 6.50 | 5.00 | 13.00 | 10.00 | 20.00 | 9.00 |
| Bi2 | 6.50 | 6.00 | 13.00 | 10.00 | 20.00 | 12.00 |
| Bi1.5U | 8.00 | 5.00 | 16.00 | 12.00 | 24.00 | 9.00 |
| Bi1.5 | 8.00 | 5.00 | 16.00 | 12.00 | 24.00 | 9.00 |
| Bi2 | 8.00 | 6.00 | 16.00 | 12.00 | 24.00 | 12.00 |
| Bi2U | 8.00 | 6.00 | 16.00 | 12.00 | 24.00 | 12.00 |
| Bi3U | 8.00 | 9.00 | 16.00 | 12.00 | 24.00 | 18.00 |
| Bi2 | 11.00 | 6.00 | 22.00 | 17.00 | 33.00 | 12.00 |
| Bi2 | 12.00 | 6.00 | 24.00 | 18.00 | 36.00 | 12.00 |
| Bi3U | 12.00 | 9.00 | 24.00 | 18.00 | 36.00 | 18.00 |
| Bi3 | 12.00 | 9.00 | 24.00 | 18.00 | 36.00 | 18.00 |
| Bi4 | 12.00 | 12.00 | 24.00 | 18.00 | 36.00 | 24.00 |
| Bi4U | 12.00 | 12.00 | 24.00 | 18.00 | 36.00 | 24.00 |
| Bi6U | 12.00 | 18.00 | 24.00 | 18.00 | 36.00 | 36.00 |
| Bi5U | 18.00 | 15.00 | 36.00 | 27.00 | 54.00 | 30.00 |
| Bi5 | 18.00 | 15.00 | 36.00 | 27.00 | 54.00 | 30.00 |
| Bi7 | 18.00 | 21.00 | 36.00 | 27.00 | 54.00 | 42.00 |
| Bi8U | 18.00 | 24.00 | 36.00 | 27.00 | 54.00 | 48.00 |
| Bi8 | 18.00 | 24.00 | 36.00 | 27.00 | 54.00 | 48.00 |
| Bi10U | 18.00 | 30.00 | 36.00 | 27.00 | 54.00 | 60.00 |
| Bi10U | 30.00 | 27.00 | 60.00 | 45.00 | 90.00 | 54.00 |
| Bi10 | 30.00 | 30.00 | 60.00 | 45.00 | 90.00 | 60.00 |
| Bi12 | 30.00 | 36.00 | 60.00 | 45.00 | 90.00 | 72.00 |
| Bi15 | 30.00 | 45.00 | 60.00 | 45.00 | 90.00 | 90.00 |
| Bi15U | 30.00 | 45.00 | 60.00 | 45.00 | 90.00 | 90.00 |
| Bi 20U | 30.00 | 60.00 | 60.00 | 45.00 | 90.00 | 120.00 |
| Bi 20 | 47.00 | 60.00 | 94.00 | 71.00 | 141.00 | 120.00 |
| Bi 25 | 47.00 | 75.00 | 94.00 | 71.00 | 141.00 | 150.00 |

Dimensions are in mm.

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors

## Nonembeddable Mounting Characteristics

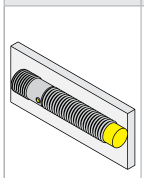
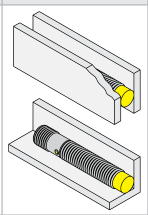
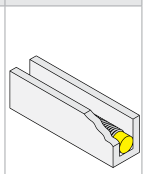



### Non-Flush Mountable

| Sensor Type | Barrel Diameter | A | B | C | D | E | F | 1 Side | 2 Side | 3 Side |
|---|---|---|---|---|---|---|---|---|---|---|
| Ni3 | 6.50 | 9.00 | 20.00 | 10.00 | 20.00 | 18.00 | 6.00 | | | |
| Ni3 | 8.00 | 9.00 | 24.00 | 12.00 | 24.00 | 18.00 | 6.00 | | | |
| Ni4U | 8.00 | 12.00 | 32.00 | 12.00 | 32.00 | 24.00 | 8.00 | | | |
| Ni4 | 8.00 | 12.00 | 24.00 | 12.00 | 24.00 | 24.00 | 8.00 | | | |
| Ni6U | 8.00 | 18.00 | 32.00 | 12.00 | 36.00 | 36.00 | 12.00 | | | |
| Ni5 | 11.00 | 15.00 | 33.00 | 17.00 | 33.00 | 30.00 | 10.00 | | | |
| Ni4 | 12.00 | 12.00 | 36.00 | 18.00 | 36.00 | 24.00 | 8.00 | | | |
| Ni5 | 12.00 | 15.00 | 36.00 | 18.00 | 36.00 | 30.00 | 10.00 | | | |
| Ni8U | 12.00 | 24.00 | 48.00 | 18.00 | 45.00 | 48.00 | 16.00 | Sr=6 mm* | | |
| Ni8 | 12.00 | 24.00 | 36.00 | 18.00 | 36.00 | 48.00 | 16.00 | | | |
| Ni10U | 12.00 | 30.00 | 48.00 | 18.00 | 36.00 | 60.00 | 20.00 | | | |
| Ni8 | 18.00 | 24.00 | 54.00 | 27.00 | 54.00 | 48.00 | 16.00 | | | |
| Ni10 | 18.00 | 30.00 | 54.00 | 27.00 | 54.00 | 60.00 | 20.00 | | | |
| Ni12U | 18.00 | 36.00 | 70.00 | 27.00 | 54.00 | 72.00 | 24.00 | | | |
| Ni14 | 18.00 | 42.00 | 54.00 | 27.00 | 54.00 | 84.00 | 20.00 | | | |
| Ni15U | 18.00 | 45.00 | 70.00 | 27.00 | 54.00 | 90.00 | 30.00 | | | |
| Ni10 | 20.00 | 30.00 | 60.00 | 30.00 | 60.00 | 60.00 | 20.00 | | | |
| Ni15 | 30.00 | 45.00 | 90.00 | 45.00 | 90.00 | 90.00 | 20.00 | | | |
| Ni20U | 30.00 | 60.00 | 90.00 | 45.00 | 90.00 | 120.00 | 40.00 | Sr=15 mm* | Sr=12 mm* | Sr=11 mm* |
| Ni20 | 30.00 | 60.00 | 90.00 | 45.00 | 90.00 | 120.00 | 20.00 | | | |
| Ni30U | 30.00 | 135.00 | 90.00 | 45.00 | 90.00 | 180.00 | 60.00 | | | |
| Ni20 | 40.00 | 60.00 | 120.00 | 60.00 | 120.00 | 120.00 | 40.00 | | | |
| Ni30 | 40.00 | 90.00 | 120.00 | 60.00 | 120.00 | 180.00 | 40.00 | | | |
| Ni25 | 47.00 | 75.00 | 141.00 | 71.00 | 141.00 | 150.00 | 40.00 | | | |
| Ni40 | 47.00 | 120.00 | 141.00 | 71.00 | 141.00 | 240.00 | 40.00 | | | |

Dimensions are in mm.

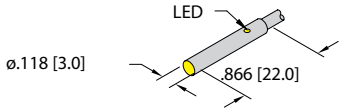
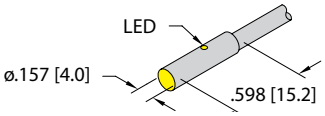
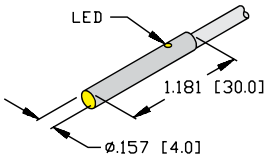
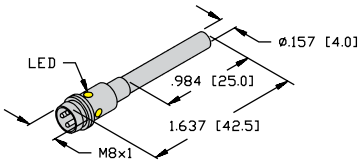
* The above Uprox Ni sensors with DC outputs and Stainless barrels can be flush mounted because the sensor automatically compensates for metal alongside its sensing face by decreasing the sensing range, preventing the output from locking on.

| 1 Side | 2 Side | 3 Side |
|---|---|---|
|  |  |  |

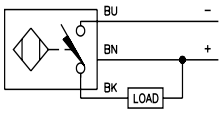
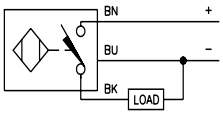
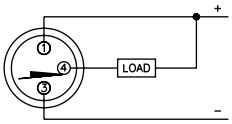
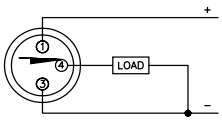
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 3 mm, 4 mm

**Embeddable Smooth Metal Barrels with DC Outputs**

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   3 mm - Embeddable, Miniature Smooth Barrel, Potted-In Cable | B   4 mm - Embeddable, Miniature Smooth Barrel, Potted-In Cable |
| C   4 mm - Embeddable, Miniature Smooth Barrel, Potted-In Cable | D   4 mm - Embeddable, Miniature Smooth, M8 Picofast Quick Disconnect | |

**Wiring Diagrams/Mating Cordsets**

| 1 | 2 | 3 | 4 |
|---|---|---|---|
|   |   |   Mating Cordset: PKG 3M-* |   Mating Cordset: PKG 3M-* |

**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 3 mm, 4 mm

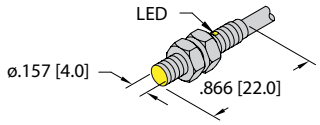
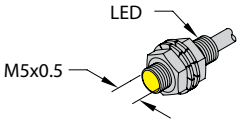
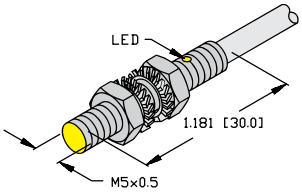
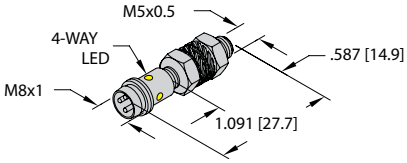
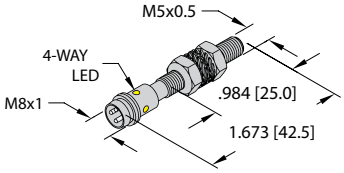
**Embeddable Smooth Metal Barrels with DC Outputs**

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi1U-EH04-AN6X** 4602114 | Uprox3 | 1 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | C | 1 | A4 |
| **Bi1U-EH04-AP6X** 4602112 | Uprox3 | 1 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | C | 2 | A4 |
| **Bi1-EH04-AN6X** 4609640 | | 1 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | C | 1 | A4 |
| **Bi1-EH04-AP6X** 4609540 | | 1 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | C | 2 | A4 |
| **Bi1-EH04K-AN6X** 4609768 | Short Barrel | 1 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | B | 1 | A4 |
| **Bi1-EH04K-AP6X** 4609767 | Short Barrel | 1 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | B | 2 | A4 |
| **Bi1-EH03-AN6X** 1619326 | | 1 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | A | 1 | A4 |
| **Bi1-EH03-AP6X** 1619325 | | 1 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | A | 2 | A4 |
| **Bi1U-EH04-AN6X-V1331** 4602115 | Uprox3 | 1 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | -- | D | 3 | A4 |
| **Bi1U-EH04-AP6X-V1331** 4602113 | Uprox3 | 1 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | -- | D | 4 | A4 |
| **Bi1-EH04-AN6X-V1331** 4608540 | | 1 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | -- | D | 3 | A4 |
| **Bi1-EH04-AP6X-V1331** 4608440 | | 1 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | -- | D | 4 | A4 |

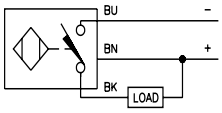
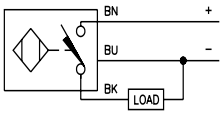
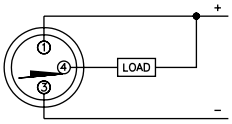
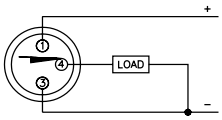
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 4 mm, 5 mm

**Embeddable Threaded Metal Barrels with DC Outputs**

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   4 mm - Embeddable, Miniature Threaded Barrel, Potted-In Cable | B   5 mm - Embeddable, Miniature Threaded Barrel, Potted-In Cable |
| C   5 mm - Embeddable, Miniature Threaded Barrel, Potted-In Cable | D   5 mm - Embeddable, Miniature Threaded, M8 Picofast Quick Disconnect | E   5 mm - Embeddable, Miniature Threaded, M8 Picofast Quick Disconnect |

**Wiring Diagrams/Mating Cordsets**

| 1 | 2 | 3 | 4 |
|---|---|---|---|
|   |   |   Mating Cordset: PKG 3M-* |   Mating Cordset: PKG 3M-* |

**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 4 mm, 5 mm

## Embeddable Threaded Metal Barrels with DC Outputs

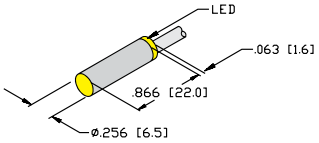
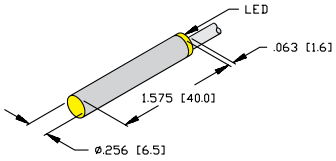
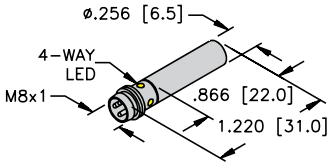
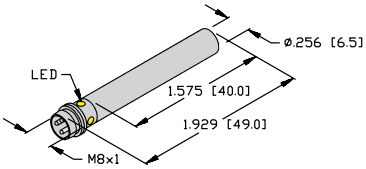
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi1U-EG05-AN6X** 4602118 | Uprox3 | 1 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | C | 1 | A4 |
| **Bi1U-EG05-AP6X** 4602116 | Uprox3 | 1 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | C | 2 | A4 |
| **Bi1-EG05-AN6X** 4609840 | | 1 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | C | 1 | A4 |
| **Bi1-EG05-AP6X** 4609740 | | 1 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | C | 2 | A4 |
| **Bi1-EG05K-AN6X** 4609764 | Short Barrel | 1 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | B | 1 | A4 |
| **Bi1-EG05K-AP6X** 4609765 | Short Barrel | 1 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | B | 2 | A4 |
| **Bi1-EG04-AN6X** 1619328 | | 1 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | A | 1 | A4 |
| **Bi1-EG04-AP6X** 1619327 | | 1 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | A | 2 | A4 |
| **Bi1U-EG05-AN6X-V1331** 4602119 | Uprox3 | 1 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | -- | E | 3 | A4 |
| **Bi1U-EG05-AP6X-V1331** 4602117 | Uprox3 | 1 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | -- | E | 4 | A4 |
| **Bi1-EG05-AN6X-V1331** 4608740 | | 1 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | -- | E | 3 | A4 |
| **Bi1-EG05-AP6X-V1331** 4608640 | | 1 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | -- | E | 4 | A4 |
| **Bi1-EG05K-AP6X-V1331** 4609766 | Short Barrel | 1 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | -- | D | 4 | A4 |



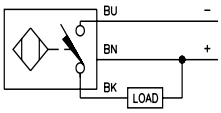
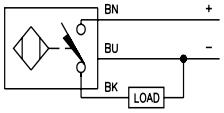
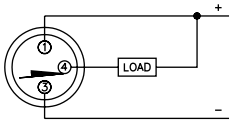
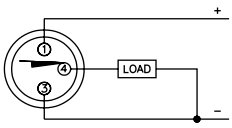
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 6.5 mm

## Embeddable Smooth Metal Barrels with DC Outputs

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   6.5 mm - Embeddable, Miniature Smooth Barrel, Potted-In Cable | B   6.5 mm - Embeddable, Miniature Smooth Barrel, Potted-In Cable |
| C   6.5 mm - Embeddable, Miniature Smooth, M8 Picofast Quick Disconnect | D   6.5 mm - Embeddable, Miniature Smooth, M8 Picofast Quick Disconnect | |

### Wiring Diagrams/Mating Cordsets

| 1 | 2 | 3 | 4 |
|---|---|---|---|
|   |   |   Mating Cordset: PKG 3M-* |   Mating Cordset: PKG 3M-* |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 6.5 mm

**Embeddable Smooth Metal Barrels with DC Outputs**

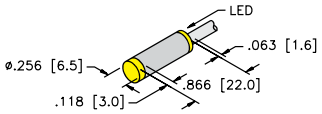
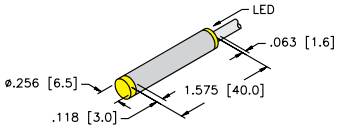
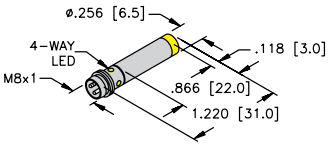
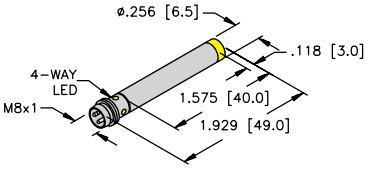
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi2U-EH6.5-AN6X** 4281170 | Uprox | 2 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤150 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | 2M/ TPU | B | 1 | A4 |
| **Bi2U-EH6.5-AP6X** 4281150 | Uprox | 2 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤150 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | 2M/ TPU | B | 2 | A4 |
| **Bi2-EH6.5-AN6X** 4612300 | | 2 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/ TPU | B | 1 | A4 |
| **Bi2-EH6.5-AP6X** 4612200 | | 2 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/ TPU | B | 2 | A4 |
| **Bi2-EH6.5K-AN6X** 4610100 | Short Barrel | 2 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/ TPU | A | 1 | A4 |
| **Bi2-EH6.5K-AP6X** 4610000 | Short Barrel | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/ TPU | A | 2 | A4 |
| **Bi1.5-EH6.5-AN6X** 4612100 | | 1.5 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/ TPU | B | 1 | A4 |
| **Bi1.5-EH6.5-AP6X** 4612000 | | 1.5 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/ TPU | B | 2 | A4 |
| **Bi1.5-EH6.5-AP6X/S100** 4612001 | High Temp. 100 °C | 1.5 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +100 | IP67 | SS | PA 12 | N/A | YE | 2M/ TPU | B | 2 | A4 |
| **Bi1.5-EH6.5K-AN6X** 4610640 | Short Barrel | 1.5 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/ TPU | A | 1 | A4 |
| **Bi1.5-EH6.5K-AP6X** 4610540 | Short Barrel | 1.5 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/ TPU | A | 2 | A4 |
| **Bi2U-EH6.5-AN6X-V1131** 4281180 | Uprox | 2 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤150 | -25 to +70 | IP68 | SS | PA 12 | N/A | YE | -- | D | 3 | A4 |
| **Bi2U-EH6.5-AP6X-V1131** 4281160 | Uprox | 2 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤150 | -25 to +70 | IP68 | SS | PA 12 | N/A | YE | -- | D | 4 | A4 |
| **Bi2-EH6.5-AN6X-V1131** 4612320 | | 2 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | -- | D | 3 | A4 |
| **Bi2-EH6.5-AP6X-V1131** 4612220 | | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | -- | D | 4 | A4 |
| **Bi2-EH6.5K-AN6X-V1131** 4610120 | Short Barrel | 2 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | -- | C | 3 | A4 |
| **Bi2-EH6.5K-AP6X-V1131** 4610020 | Short Barrel | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | -- | C | 4 | A4 |
| **Bi1.5-EH6.5-AN6X-V1131** 4612120 | | 1.5 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | -- | D | 3 | A4 |
| **Bi1.5-EH6.5-AP6X-V1131** 4612020 | | 1.5 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | -- | D | 4 | A4 |
| **Bi1.5-EH6.5K-AN6X-V1131** 4610840 | Short Barrel | 1.5 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | -- | C | 3 | A4 |
| **Bi1.5-EH6.5K-AP6X-V1131** 4610740 | Short Barrel | 1.5 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | -- | C | 4 | A4 |



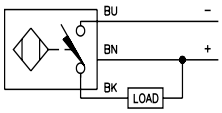
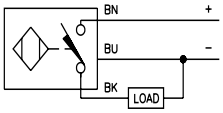
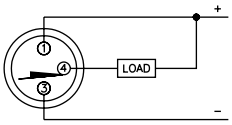
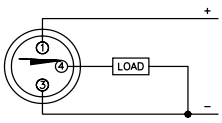
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 6.5 mm

## Nonembeddable Smooth Metal Barrels with DC Outputs

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   6.5 mm - Nonembeddable, Miniature Smooth Barrel, Potted-In Cable | B   6.5 mm - Nonembeddable, Miniature Smooth Barrel, Potted-In Cable |
| C   6.5 mm - Nonembeddable, Miniature Smooth, M8 Picofast Quick Disconnect | D   6.5 mm - Nonembeddable, Miniature Smooth, M8 Picofast Quick Disconnect | |

### Wiring Diagrams/Mating Cordsets

| 1 | 2 | 3 | 4 |
|---|---|---|---|
|   |   |   Mating Cordset: PKG 3M-* |   Mating Cordset: PKG 3M-* |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 6.5 mm

**Nonembeddable Smooth Metal Barrels with DC Outputs**

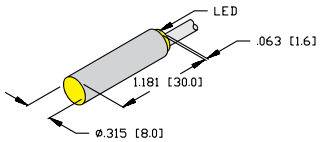
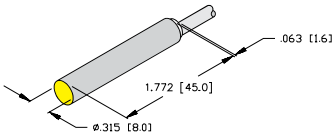
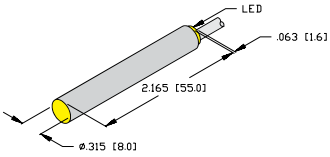
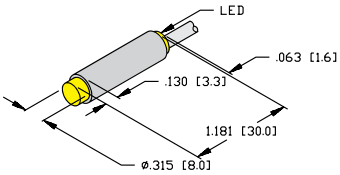
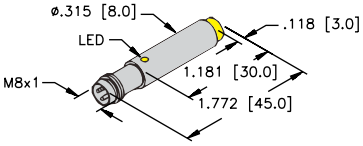
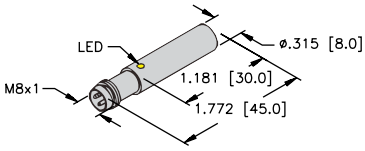
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni4U-EH6.5-AP6X** 4600680 | Uprox | 4 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | 2M/TPU | B | 2 | A4 |
| **Ni3-EH6.5-AN6X** 4612500 | | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | B | 1 | A4 |
| **Ni3-EH6.5-AP6X** 4612400 | | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | B | 2 | A4 |
| **Ni3-EH6.5K-AN6X** 4610300 | Short Barrel | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | A | 1 | A4 |
| **Ni3-EH6.5K-AP6X** 4610200 | Short Barrel | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | A | 2 | A4 |
| **Ni6U-EH6.5-AP6X-V1131** 4631510 | Uprox+ | 6 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤150 | 0 to +70 | IP68 | SS | PA 12 | N/A | YE | -- | D | 4 | A4 |
| **Ni4U-EH6.5-AN6X-V1131** 4600683 | Uprox | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤150 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | -- | D | 3 | A4 |
| **Ni4U-EH6.5-AP6X-V1131** 4600681 | Uprox | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤150 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | -- | D | 4 | A4 |
| **Ni3-EH6.5-AN6X-V1131** 4612520 | | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | -- | D | 3 | A4 |
| **Ni3-EH6.5-AP6X-V1131** 4612420 | | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | -- | D | 4 | A4 |
| **Ni3-EH6.5K-AN6X-V1131** 4610320 | Short Barrel | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | -- | C | 3 | A4 |
| **Ni3-EH6.5K-AP6X-V1131** 4610220 | Short Barrel | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | -- | C | 4 | A4 |



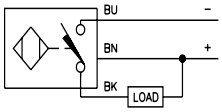
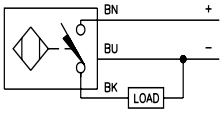
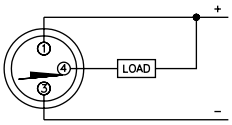
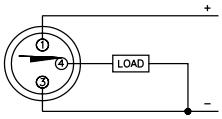
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 8 mm

**Embeddable and Nonembeddable Smooth Metal Barrels with DC Outputs**

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   8 mm - Embeddable, Miniature Smooth Barrel, Potted-In Cable | B   8 mm - Embeddable, Miniature Smooth Barrel, Potted-In Cable |
| C   8 mm - Embeddable, Miniature Smooth Barrel, Potted-In Cable | D   8 mm - Nonembeddable, Miniature Smooth Barrel, Potted-In Cable | E   8 mm - Nonembeddable, Miniature Smooth, M8 Picofast Quick Disconnect |
| F   8 mm - Embeddable, Miniature Smooth, M8 Picofast Quick Disconnect | | |

**Wiring Diagrams/Mating Cordsets**

| 1 | 2 | 3 | 4 |
|---|---|---|---|
|   |   |   Mating Cordset: PKG 3M-* |   Mating Cordset: PKG 3M-* |

**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 8 mm

**Embeddable and Nonembeddable Smooth Metal Barrels with DC Outputs**

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi1.5-H08K-AN6X** 1604341 | Short Barrel | 1.5 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | A | 1 | A4 |
| **Bi1.5-H08K-AP6X** 1604331 | Short Barrel | 1.5 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | A | 2 | A4 |
| **Bi1.5-H08M-AP6X** 1604301 | | 1.5 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | B | 2 | A4 |
| **Bi1.5-H08-AN6X** 16143 | | 1.5 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | C | 1 | A4 |
| **Bi1.5-H08-AP6X** 16043 | | 1.5 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | C | 2 | A4 |
| **Ni2-H08K-AN6X** 16147 | Short Barrel | 2 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | D | 1 | A4 |
| **Ni2-H08K-AP6X** 16047 | Short Barrel | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | D | 2 | A4 |
| **Bi1.5-H08K-AN6X-V1131** 1604340 | Short Barrel | 1.5 | 3-wire DC NPN | 10-30 VDC | 5000 | ≤150 | -25 to +70 | IP67 | SS | PBT | N/A | YE | -- | F | 3 | A4 |
| **Bi1.5-H08K-AP6X-V1131** 1604330 | Short Barrel | 1.5 | 3-wire DC PNP | 10-30 VDC | 5000 | ≤150 | -25 to +70 | IP67 | SS | PBT | N/A | YE | -- | F | 4 | A4 |
| **Ni2-H08K-AN6X-V1131** 16148 | Short Barrel | 2 | 3-wire DC NPN | 10-30 VDC | 5000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | -- | E | 3 | A4 |
| **Ni2-H08K-AP6X-V1131** 16048 | Short Barrel | 2 | 3-wire DC PNP | 10-30 VDC | 5000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | -- | E | 4 | A4 |



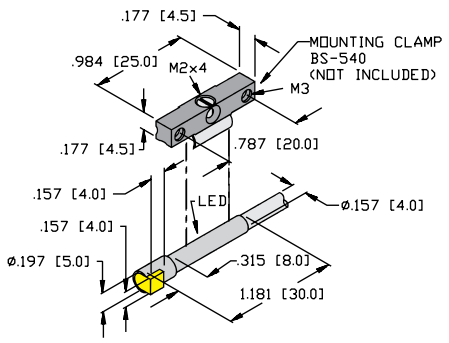
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 5 mm, 8 mm

**Embeddable Side Sensing Metal Barrels with Cable and DC Outputs**

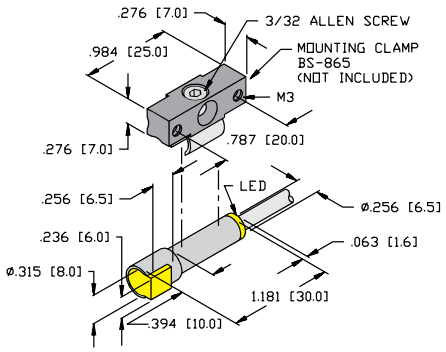
| Housing Style | Dimension Drawings |
|---|---|

A



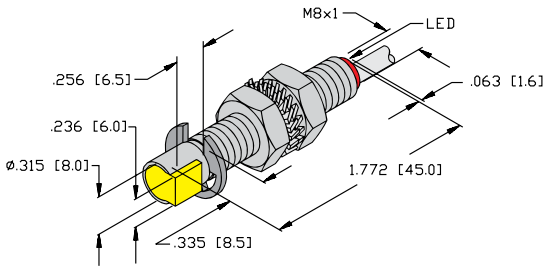

5 mm - Embeddable, Side Sensing, Miniature Smooth Barrel, Potted-In Cable

B




8 mm - Embeddable, Side Sensing, Miniature Smooth Barrel, Potted-In Cable

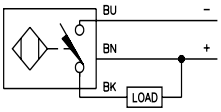
C



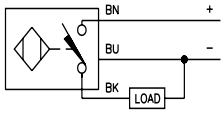

8 mm - Embeddable, Miniature Threaded Barrel, Side Sensing, Potted-In Cable

**Wiring Diagrams/Mating Cordsets**

1




2




**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 5 mm, 8 mm

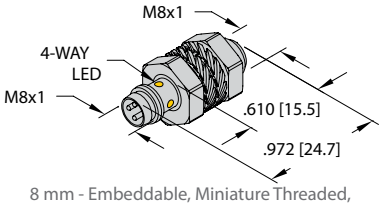
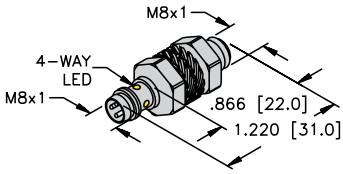
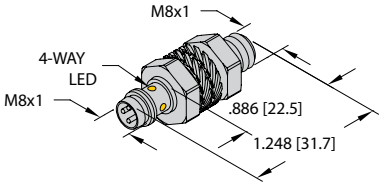
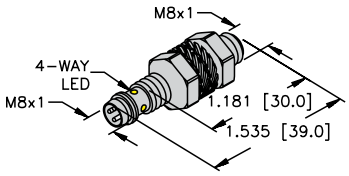
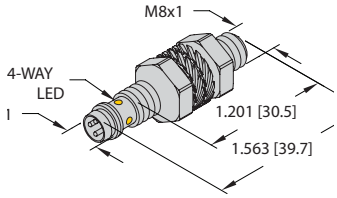
**Embeddable Side Sensing Metal Barrels with Cable and DC Outputs**

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi1.5-HS865-AN6X** 4604301 | Side Sensing | 1.5 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | B | 1 | A4 |
| **Bi1.5-HS865-AP6X** 4604201 | Side Sensing | 1.5 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | B | 2 | A4 |
| **Bi1.5-GS880-AN6X** 4604501 | Side Sensing | 1.5 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | C | 1 | A4 |
| **Bi1.5-GS880-AP6X** 4604401 | Side Sensing | 1.5 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | C | 2 | A4 |
| **Bi1-HS540-AN6X** 4604101 | Side Sensing | 1 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | A | 1 | A4 |
| **Bi1-HS540-AP6X** 4604001 | Side Sensing | 1 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | A | 2 | A4 |

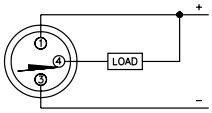
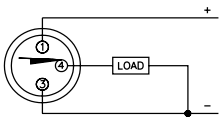
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 8 mm

**Embeddable Threaded Metal Barrels with Connector and DC Outputs**

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   8 mm - Embeddable, Miniature Threaded, M8 Picofast Quick Disconnect | B   8 mm - Embeddable, Miniature Threaded, M8 Picofast Quick Disconnect |
| C   8 mm - Embeddable, Miniature Threaded, M8 Picofast Quick Disconnect | D   8 mm - Embeddable, Miniature Threaded, M8 Picofast Quick Disconnect | E   8 mm - Embeddable, Miniature Threaded, M8 Picofast Quick Disconnect |

**Wiring Diagrams/Mating Cordsets**

| 1 | 2 |
|---|---|
|   Mating Cordset: PKG 3M-* |   Mating Cordset: PKG 3M-* |

**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 8 mm

## Embeddable Threaded Metal Barrels with Connector and DC Outputs

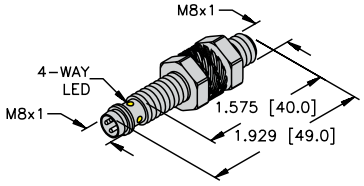
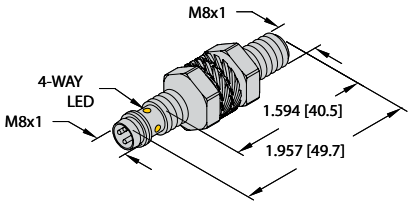
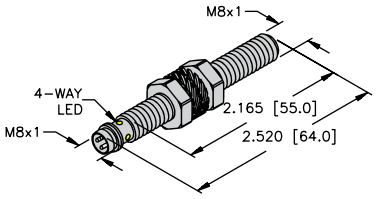
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi3U-EM08-AN6X-V1131** 4602423 | Uprox3 | 3 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤150 | 0 to +60 | IP68 | SS | PA 12 | N/A | YE | D | 1 | A4 |
| **Bi3U-EMT08-AN6X-V1131** 4602157 | Uprox3, PTFE | 3 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤150 | 0 to +60 | IP68 | SS | TC | N/A | YE | D | 1 | A4 |
| **Bi3U-EM08-AP6X-V1131** 4602413 | Uprox3 | 3 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤150 | 0 to +60 | IP68 | SS | PA 12 | N/A | YE | D | 2 | A4 |
| **Bi3U-EMT08-AP6X-V1131** 4602156 | Uprox3, PTFE | 3 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤150 | 0 to +60 | IP68 | SS | TC | N/A | YE | D | 2 | A4 |
| **Bi3-M08-AN6X-V1131** 4602914 | | 3 | 3-wire DC NPN | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | E | 1 | A4 |
| **Bi3-M08-AP6X-V1131** 4602911 | | 3 | 3-wire DC PNP | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | E | 2 | A4 |
| **Bi3-M08KK-AN6X-V1131** 4602942 | Short Barrel | 3 | 3-wire DC NPN | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | A | 1 | A4 |
| **Bi3-M08KK-AP6X-V1131** 4602939 | Short Barrel | 3 | 3-wire DC PNP | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | A | 2 | A4 |
| **Bi2-EG08K-AN6X-V1131** 4669550 | | 2 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | D | 1 | A4 |
| **Bi2-EG08K-AP6X-V1131** 4669450 | | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | D | 2 | A4 |
| **Bi2-G08K-AP6X-V1131** 4672803 | | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PBT | N/A | YE | D | 2 | A4 |
| **Bi2-M08K-AN6X-V1131** 4602965 | | 2 | 3-wire DC NPN | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | C | 1 | A4 |
| **Bi2-M08K-AP6X-V1131** 4602968 | | 2 | 3-wire DC PNP | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | C | 2 | A4 |
| **Bi1.5-EG08K-AN6X-V1131** 4672540 | | 1.5 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | B | 1 | A4 |
| **Bi1.5-EG08K-AP6X-V1131** 4672440 | | 1.5 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | B | 2 | A4 |

**Note:** Reference sensor data sheet for considerations if mounting a BI3-M08 sensor flush in steel.

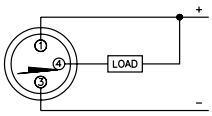
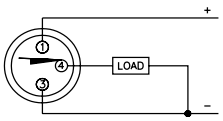
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 8 mm

**Embeddable Threaded Metal Barrels with Connector and DC Outputs**

| Housing Style | Dimension Drawings |
|---|---|
| | A   8 mm - Embeddable, Miniature Threaded, M8 Picofast Quick Disconnect |
| B   8 mm - Embeddable, Miniature Threaded, M8 Picofast Quick Disconnect | C   8 mm - Embeddable, Miniature Threaded, M8 Picofast Quick Disconnect |

**Wiring Diagrams/Mating Cordsets**

| | |
|---|---|
| 1   Mating Cordset: PKG 3M-* | 2   Mating Cordset: PKG 3M-*; PKG 3M-*/S1587 |

**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 8 mm

**Embeddable Threaded Metal Barrels with Connector and DC Outputs**

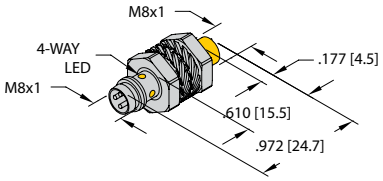
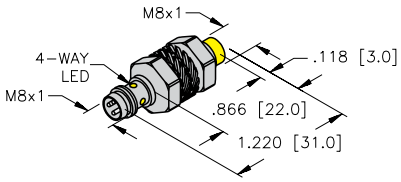
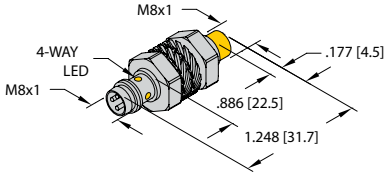
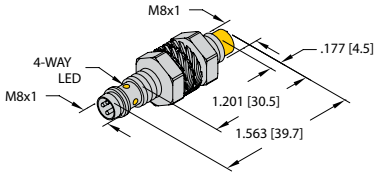
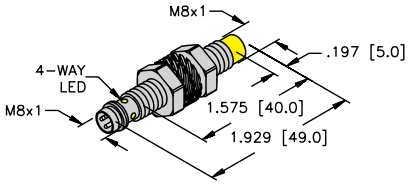
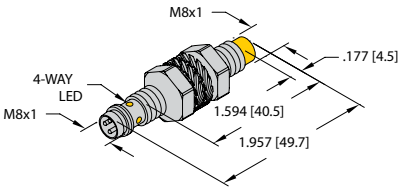
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi2U-EG08-AN6X-V1131** 4602036 | Uprox | 2 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤150 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | C | 1 | A4 |
| **Bi2U-EG08-AP6X-V1131** 4602033 | Uprox | 2 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤150 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | C | 2 | A4 |
| **Bi2-EG08-AN6X-V1131** 4602150 | | 2 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | C | 1 | A4 |
| **Bi2-EG08-AP6X-V1131** 4602050 | | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | C | 2 | A4 |
| **Bi2-EG08-AP6X-V1131/S1589** 46020501 | Weldguard | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | WG | N/A | YE | C | 2 | A4 |
| **Bi2-EGT08-AP6X-V1131/S100** 4602263 | PTFE, High Temp. 100 °C | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +100 | IP67 | SS | TC | N/A | YE | C | 2 | A4 |
| **Bi2-EGT08-AP6X-V1131/S100/S1589** 4602072 | PTFE, High Temp. 100 °C, Weldguard | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +100 | IP67 | SS | WG | N/A | YE | C | 2 | A4 |
| **Bi2-G08-AP6X-V1131** 4602002 | | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | C | 2 | A4 |
| **Bi2-M08E-AN6X-V1131** 4602953 | | 2 | 3-wire DC NPN | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | B | 1 | A4 |
| **Bi2-M08E-AP6X-V1131** 4602956 | | 2 | 3-wire DC PNP | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | B | 2 | A4 |
| **Bi1.5U-EG08-AN6X-V1131** 4600530 | Uprox | 1.5 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤150 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | A | 1 | A4 |
| **Bi1.5U-EG08-AP6X-V1131** 4600520 | Uprox | 1.5 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤150 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | A | 2 | A4 |
| **Bi1.5-EG08-AN6X-V1131** 4602350 | | 1.5 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 1 | A4 |
| **Bi1.5-EG08-AP6X-V1131** 4602220 | | 1.5 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 2 | A4 |



We reserve the right to make technical alterations without prior notice.

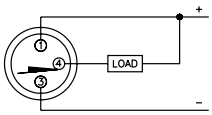
# Inductive Barrel Sensors | 8 mm

## Nonembeddable Threaded Metal Barrels with Connector and DC Outputs

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   8 mm - Nonembeddable, Miniature Threaded, M8 Picofast Quick Disconnect | B   8 mm - Nonembeddable, Miniature Threaded, M8 Picofast Quick Disconnect |
| C   8 mm - Nonembeddable, Miniature Threaded, M8 Picofast Quick Disconnect | D   8 mm - Nonembeddable, Miniature Threaded, M8 Picofast Quick Disconnect | E   8 mm - Nonembeddable, Miniature Threaded, M8 Picofast Quick Disconnect |
| F   8 mm - Nonembeddable, Miniature Threaded, M8 Picofast Quick Disconnect | | |

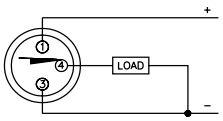
### Wiring Diagrams/Mating Cordsets

1




Mating Cordset: PKG 3M-*

2




Mating Cordset: PKG 3M-*

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 8 mm

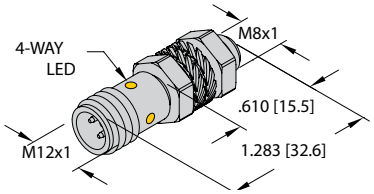
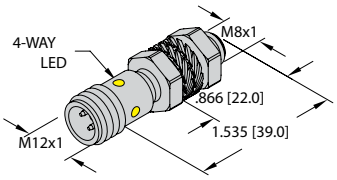
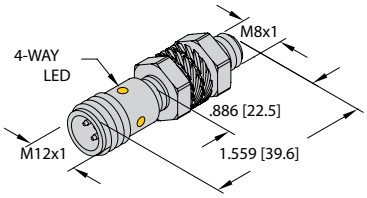
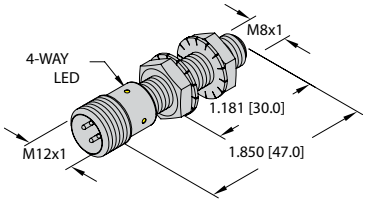
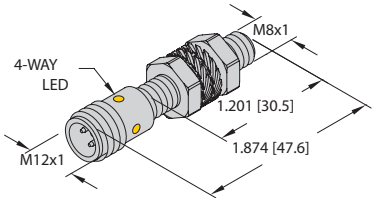
## Nonembeddable Threaded Metal Barrels with Connector and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni6U-EG08-AN6X-V1131** 4635804 | Uprox+ | 6 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤150 | 0 to +70 | IP68 | SS | LCP | N/A | YE | E | 1 | A4 |
| **Ni6U-EG08-AP6X-V1131** 4635801 | Uprox+ | 6 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤150 | 0 to +70 | IP68 | SS | LCP | N/A | YE | E | 2 | A4 |
| **Ni5-M08-AN6X-V1131** 4602924 | | 5 | 3-wire DC NPN | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CBP | PP-GF20 | N/A | YE | D | 1 | A4 |
| **Ni5-M08-AP6X-V1131** 4602921 | | 5 | 3-wire DC PNP | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CBP | PP-GF20 | N/A | YE | D | 2 | A4 |
| **Ni5-M08KK-AN6X-V1131** 4602949 | Short Barrel | 5 | 3-wire DC NPN | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CBP | PP-GF20 | N/A | YE | A | 1 | A4 |
| **Ni5-M08KK-AP6X-V1131** 4602946 | Short Barrel | 5 | 3-wire DC PNP | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CBP | PP-GF20 | N/A | YE | A | 2 | A4 |
| **Ni4U-EG08-AN6X-V1131** 4600630 | Uprox | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤150 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | E | 1 | A4 |
| **Ni4U-EG08-AP6X-V1131** 4600620 | Uprox | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤150 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | E | 2 | A4 |
| **Ni3-M08E-AN6X-V1131** 4602833 | | 3 | 3-wire DC NPN | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CBP | PP-GF20 | N/A | YE | F | 1 | A4 |
| **Ni3-M08E-AP6X-V1131** 4602836 | | 3 | 3-wire DC PNP | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CBP | PP-GF20 | N/A | YE | F | 2 | A4 |
| **Ni3-M08K-AN6X-V1131** 4602849 | | 3 | 3-wire DC NPN | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CBP | PP-GF20 | N/A | YE | C | 1 | A4 |
| **Ni3-M08K-AP6X-V1131** 4602853 | | 3 | 3-wire DC PNP | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CBP | PP-GF20 | N/A | YE | C | 2 | A4 |
| **Ni3-EG08-AN6X-V1131** 4602850 | | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | E | 1 | A4 |
| **Ni3-EG08-AP6X-V1131** 4602750 | | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | E | 2 | A4 |
| **Ni3-EG08K-AN6X-V1131** 4669750 | | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | B | 1 | A4 |
| **Ni3-EG08K-AP6X-V1131** 4669650 | | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | B | 2 | A4 |

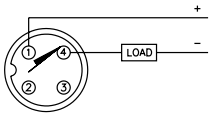
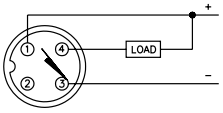
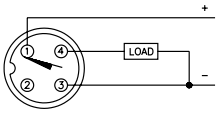
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 8 mm

## Embeddable Threaded Metal Barrels with Connector and DC Outputs

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   8 mm - Embeddable, Miniature Threaded, M12 Eurofast Quick Disconnect | B   8 mm - Embeddable, Miniature Threaded, M12 Eurofast Quick Disconnect |
| C   8 mm - Embeddable, Miniature Threaded, M12 Eurofast Quick Disconnect | D   8 mm - Embeddable, Miniature Threaded, M12 Eurofast Quick Disconnect | E   8 mm - Embeddable, Miniature Threaded, M12 Eurofast Quick Disconnect |

**Wiring Diagrams/Mating Cordsets**

| 1 | 2 | 3 |
|---|---|---|
|   |   |   |
| Mating Cordset: RK 4.23T-* | Mating Cordset: RK 4T-* | Mating Cordset: RK 4T-*; RK 4T-*/S1587 |

**A2 — 2-wire DC - (AD, RD, AG)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

**A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 8 mm

## Embeddable Threaded Metal Barrels with Connector and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi3U-EM08-AN6X-H1341** 4602422 | Uprox3 | 3 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤150 | 0 to +60 | IP68 | SS | PA 12 | N/A | YE | D | 2 | A4 |
| **Bi3U-EMT08-AN6X-H1341** 4602158 | Uprox3, PTFE | 3 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤150 | 0 to +60 | IP68 | SS | TC | N/A | YE | D | 2 | A4 |
| **Bi3U-EM08-AP6X-H1341** 4602412 | Uprox3 | 3 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤150 | 0 to +60 | IP68 | SS | PA 12 | N/A | YE | D | 3 | A4 |
| **Bi3U-EMT08-AP6X-H1341** 4602156 | Uprox3, PTFE | 3 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤150 | 0 to +60 | IP68 | SS | TC | N/A | YE | D | 3 | A4 |
| **Bi3-M08-AN6X-H1341** 4602915 | | 3 | 3-wire DC NPN | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | E | 2 | A4 |
| **Bi3-M08-AP6X-H1341** 4602912 | | 3 | 3-wire DC PNP | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | E | 3 | A4 |
| **Bi3-M08KK-AN6X-H1341** 4602943 | Short Barrel | 3 | 3-wire DC NPN | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | A | 2 | A4 |
| **Bi3-M08KK-AP6X-H1341** 4602940 | Short Barrel | 3 | 3-wire DC PNP | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | A | 3 | A4 |
| **Bi2-EG08K-AG41X-H1341** 4562011 | | 2 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | B | 1 | A2 |
| **Bi2-EG08K-AG41X-H1341/S1589** 4562090 | Weldguard | 2 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | SS | WG | N/A | YE | B | 1 | A2 |
| **Bi2-EGT08K-AG41X-H1341/S1589** 4602599 | PTFE, Short barrel, Weldguard | 2 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | SS | WG | N/A | YE | B | 1 | A2 |
| **Bi2-EG08K-AN6X-H1341** 4669560 | | 2 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | B | 2 | A4 |
| **Bi2-EG08K-AP6X-H1341** 4669460 | | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | B | 3 | A4 |
| **Bi2-EG08K-AP6X-H1341/S1589** 4669486 | Weldguard | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | WG | N/A | YE | B | 3 | A4 |
| **Bi2-M08K-AN6X-H1341** 4602964 | | 2 | 3-wire DC NPN | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | C | 2 | A4 |
| **Bi2-M08K-AP6X-H1341** 4602967 | | 2 | 3-wire DC PNP | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | C | 3 | A4 |
| **Bi1.5-EG08K-AN6X-H1341** 4669150 | | 1.5 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | B | 2 | A4 |
| **Bi1.5-EG08K-AP6X-H1341** 4669050 | | 1.5 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | B | 3 | A4 |

**Note:** Reference sensor data sheet for considerations if mounting a BI3-M08 sensor flush in steel.

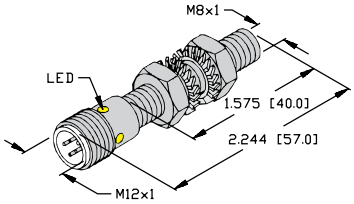
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 8 mm

## Embeddable Threaded Metal Barrels with Connector and DC Outputs

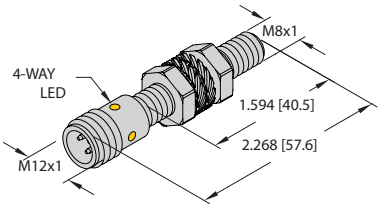
| Housing Style | Dimension Drawings |
|---|---|

A



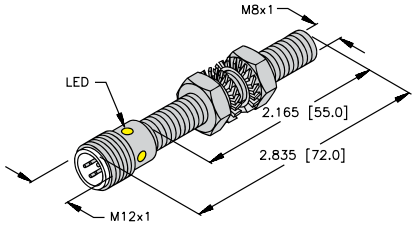

8 mm - Embeddable, Miniature Threaded, M12 Eurofast Quick Disconnect

B




8 mm - Embeddable, Miniature Threaded, M12 Eurofast Quick Disconnect

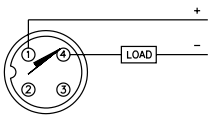
C




8 mm - Embeddable, Miniature Threaded, M12 Eurofast Quick Disconnect

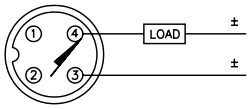
### Wiring Diagrams/Mating Cordsets

1



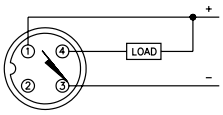

Mating Cordset: RK 4.23T-*

2



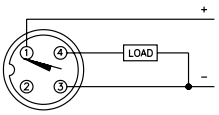

Mating Cordset: RK 4.23T-*

3




Mating Cordset: RK 4T-*; RK 4T-*/S1587

4




Mating Cordset: RK 4T-*; RK 4T-*/S1587

### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 8 mm

## Embeddable Threaded Metal Barrels with Connector and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi2U-EG08-AN6X-H1341** 4602037 | Uprox | 2 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤150 | -35 to +85 | IP68 | SS | PA 12 | N/A | YE | A | 3 | A4 |
| **Bi2U-EG08-AP6X-H1341** 4602034 | Uprox | 2 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤150 | -35 to +85 | IP68 | SS | PA 12 | N/A | YE | A | 4 | A4 |
| **Bi2-EG08-AG41X-H1341** 4562001 | | 2 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 1 | A2 |
| **Bi2-EG08-AG41X-H1341/S1589** 4562095 | Weldguard | 2 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | SS | WG | N/A | YE | A | 1 | A2 |
| **Bi2-EG08-AN6X-H1341** 4602160 | | 2 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 3 | A4 |
| **Bi2-EG08-AN6X-H1341/S1589** 4602182 | Weldguard | 2 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | WG | N/A | YE | A | 3 | A4 |
| **Bi2-EG08-AP6X-H1341** 4602060 | | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 4 | A4 |
| **Bi2-EG08-AP6X-H1341/S1589** 4602086 | Weldguard | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | WG | N/A | YE | A | 4 | A4 |
| **Bi2-EGT08-AP6X-H1341/S100** 4602257 | PTFE, High Temp. 100 °C | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +100 | IP67 | TC | TC | N/A | YE | A | 4 | A4 |
| **Bi2-EG08-VN6X-H1341** 4602521 | Comp. Outputs | 2 | 4-wire DC NPN | 10-30 VDC | 3000 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 5 | A4 |
| **Bi2-EG08-VP6X-H1341** S4602522 | Comp. Outputs | 2 | 4-wire DC PNP | 10-30 VDC | 3000 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 6 | A4 |
| **Bi2-G08-AN6X-H1341** 46026 | | 2 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | C | 3 | A4 |
| **Bi2-G08-AP6X-H1341** 46025 | | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | C | 4 | A4 |
| **Bi2-M08E-AN6X-H1341** 4602952 | | 2 | 3-wire DC NPN | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CBP | PP-GF20 | N/A | YE | B | 3 | A4 |
| **Bi2-M08E-AP6X-H1341** 4602955 | | 2 | 3-wire DC PNP | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CBP | PP-GF20 | N/A | YE | B | 4 | A4 |
| **Bi1.5U-EG08-AN6X-H1341** 4600550 | Uprox | 1.5 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤150 | -30 to +85 | IP67 | SS | PA 12 | N/A | YE | A | 3 | A4 |
| **Bi1.5U-EG08-AP6X-H1341** 4600540 | Uprox | 1.5 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤150 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | A | 4 | A4 |
| **Bi1.5U-EG08-AP6X-H1341/S1589** 46005401 | Uprox, Weldguard | 1.5 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤150 | -30 to +85 | IP67 | SS | WG | N/A | YE | A | 4 | A4 |
| **Bi1.5U-EGT08-AP6X-H1341** 4600555 | Uprox, PTFE | 1.5 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤150 | -30 to +85 | IP67 | TC | TC | N/A | YE | A | 4 | A4 |
| **Bi1.5-EG08-AD6X-H1341** 4600203 | | 1.5 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 2 | A2 |
| **Bi1.5-EG08-AN6X-H1341** 4602360 | | 1.5 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 3 | A4 |
| **Bi1.5-EG08-AP6X-H1341** 4602260 | | 1.5 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 4 | A4 |
| **Bi1.5-G08-AN6X-H1341** 4603700 | | 1.5 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | C | 3 | A4 |
| **Bi1.5-G08-AN7X-H1341** 4701126 | TTL Compatible | 1.5 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | C | 3 | A4 |
| **Bi1.5-G08-AP6X-H1341** 4603600 | | 1.5 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | C | 4 | A4 |



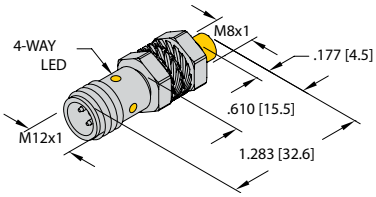
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 8 mm

## Nonembeddable Threaded Metal Barrels with Connector and DC Outputs

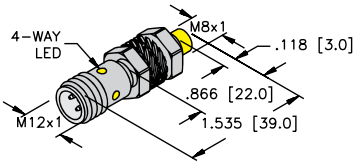
| Housing Style | Dimension Drawings |
|---|---|

A



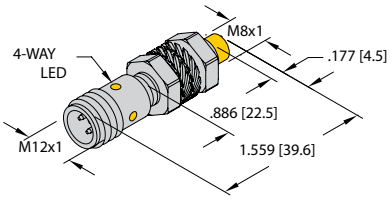

8 mm - Nonembeddable, Miniature Threaded, M12 Eurofast Quick Disconnect

B



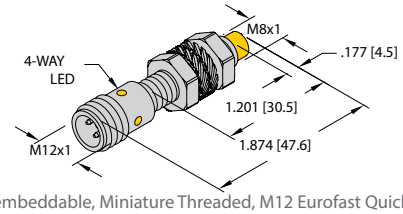

8 mm - Nonembeddable, Miniature Threaded, M12 Eurofast Quick Disconnect

C




8 mm - Nonembeddable, Miniature Threaded, M12 Eurofast Quick Disconnect

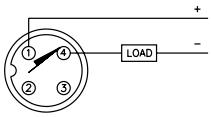
D




8 mm - Nonembeddable, Miniature Threaded, M12 Eurofast Quick Disconnect

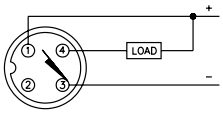
### Wiring Diagrams/Mating Cordsets

1



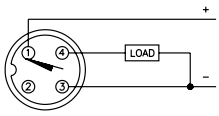

Mating Cordset: RK 4.23T-*

2




Mating Cordset: RK 4T-*

3




Mating Cordset: RK 4T-*

### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 8 mm

## Nonembeddable Threaded Metal Barrels with Connector and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni5-M08-AN6X-H1341** 4602925 | | 5 | 3-wire DC NPN | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | D | 2 | A4 |
| **Ni5-M08-AP6X-H1341** 4602922 | | 5 | 3-wire DC PNP | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | D | 3 | A4 |
| **Ni5-M08KK-AN6X-H1341** 4602950 | Short Barrel | 5 | 3-wire DC NPN | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | A | 2 | A4 |
| **Ni5-M08KK-AP6X-H1341** 4602947 | Short Barrel | 5 | 3-wire DC PNP | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | A | 3 | A4 |
| **Ni4-EG08K-AG41X-H1341** 4561011 | | 4 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | B | 1 | A2 |
| **Ni4-EG08K-AG41X-H1341/S1589** 4561090 | Weldguard | 4 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | SS | WG | N/A | YE | B | 1 | A2 |
| **Ni3-EG08K-AN6X-H1341** 4669760 | | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | B | 2 | A4 |
| **Ni3-EG08K-AP6X-H1341** 4669660 | | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | B | 3 | A4 |
| **Ni3-M08K-AN6X-H1341** 4602848 | | 3 | 3-wire DC NPN | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | C | 2 | A4 |
| **Ni3-M08K-AP6X-H1341** 4602852 | | 3 | 3-wire DC PNP | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | C | 3 | A4 |



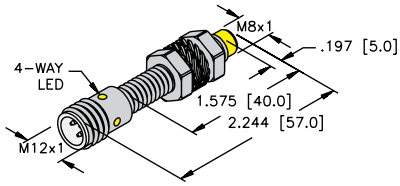
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 8 mm

## Nonembeddable Threaded Metal Barrels with Connector and DC Outputs

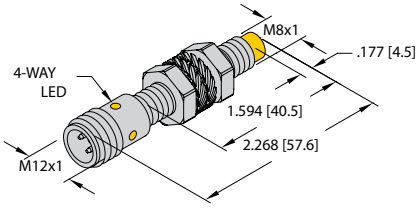
| Housing Style | Dimension Drawings |
|---|---|

A



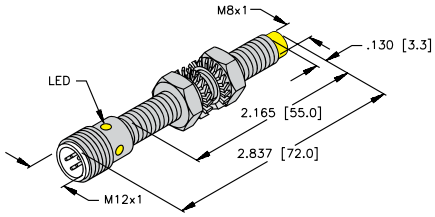

8 mm - Nonembeddable, Miniature Threaded, M12 Eurofast Quick Disconnect

B




8 mm - Nonembeddable, Miniature Threaded, M12 Eurofast Quick Disconnect

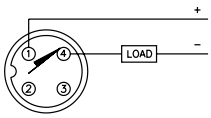
C




8 mm - Nonembeddable, Miniature Threaded, M12 Eurofast Quick Disconnect

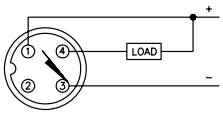
### Wiring Diagrams/Mating Cordsets

1



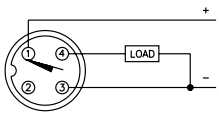

Mating Cordset: RK 4.23T-*; RK 4.23T-*/S1587

2




Mating Cordset: RK 4T-*;

3




Mating Cordset: RK 4T-*; RK 4T-*/S1587

### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 8 mm

## Nonembeddable Threaded Metal Barrels with Connector and DC Outputs

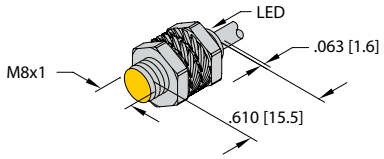
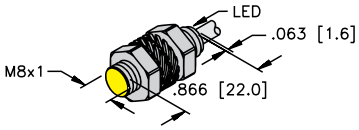
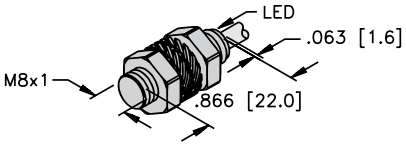
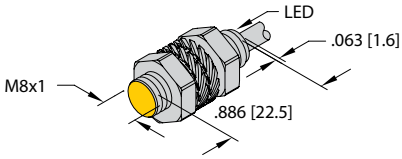
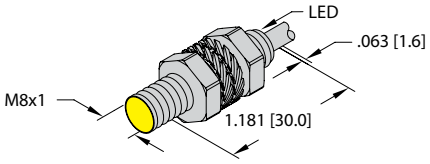
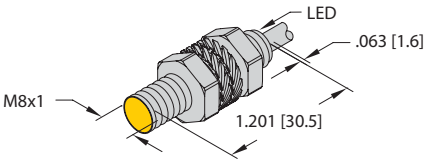
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni6U-EG08-AN6X-H1341** 4635805 | Uprox+ | 6 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤150 | 0 to +70 | IP68 | SS | LCP | N/A | YE | A | 2 | A4 |
| **Ni6U-EG08-AP6X-H1341** 4635802 | Uprox+ | 6 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤150 | 0 to +70 | IP68 | SS | LCP | N/A | YE | A | 3 | A4 |
| **Ni4U-EG08-AN6X-H1341** 4600650 | Uprox | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤150 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | A | 2 | A4 |
| **Ni4U-EG08-AP6X-H1341** 4600640 | Uprox | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤150 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | A | 3 | A4 |
| **Ni4U-EG08-AP6X-H1341/S1589** 4600641 | Uprox, Weldguard | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤150 | -30 to +85 | IP67 | SS | WG | N/A | YE | A | 3 | A4 |
| **Ni4-EG08-AG41X-H1341** 4561001 | | 4 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 1 | A2 |
| **Ni4-EG08-AG41X-H1341/S1589** 4561091 | Weldguard | 4 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | SS | WG | N/A | YE | A | 1 | A2 |
| **Ni3-EG08-AN6X-H1341** 4602860 | | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 2 | A4 |
| **Ni3-EG08-AN7X-H1341** 4669761 | TTL Compatible | 3 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 2 | A4 |
| **Ni3-EG08-AP6X-H1341** 4602760 | | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 3 | A4 |
| **Ni3-EG08-AP6X-H1341/S1589** 4602799 | Weldguard | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | WG | N/A | YE | A | 3 | A4 |
| **Ni3-M08E-AN6X-H1341** 4602832 | | 3 | 3-wire DC NPN | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | B | 2 | A4 |
| **Ni3-M08E-AP6X-H1341** 4602835 | | 3 | 3-wire DC PNP | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | B | 3 | A4 |
| **Ni3-G08-AN6X-H1341** 4602704 | | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | C | 2 | A4 |
| **Ni3-G08-AP6X-H1341** 4602705 | | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | C | 3 | A4 |
| **Ni2-G08-AN6X-H1341** 46033 | | 2 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | C | 2 | A4 |
| **Ni2-G08-AP6X-H1341** 46032 | | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | C | 3 | A4 |



We reserve the right to make technical alterations without prior notice.

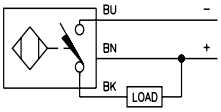
# Inductive Barrel Sensors | 8 mm

**Embeddable Threaded Metal Barrels with Cable and DC Outputs**

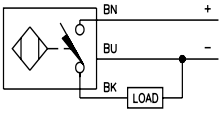
| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   8 mm - Embeddable, Miniature Threaded Barrel, Potted-In Cable | B   8 mm - Embeddable, Miniature Threaded Barrel, Potted-In Cable |
| C   8 mm - Embeddable, Miniature Threaded Barrel, Potted-In Cable, PTFE Coated | D   8 mm - Embeddable, Miniature Threaded Barrel, Potted-In Cable | E   8 mm - Embeddable, Miniature Threaded Barrel, Potted-In Cable |
| F   8 mm - Embeddable, Miniature Threaded Barrel, Potted-In Cable | | |

**Wiring Diagrams/Mating Cordsets**

1




2




**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 8 mm

## Embeddable Threaded Metal Barrels with Cable and DC Outputs

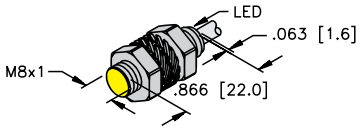
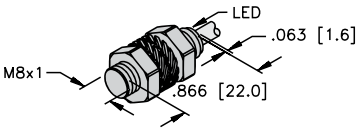
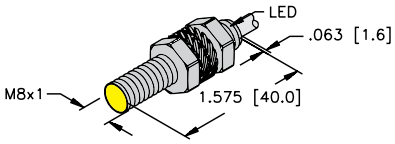
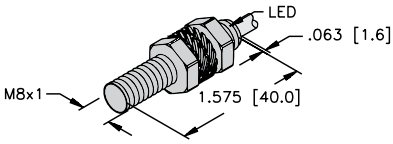
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi3U-EM08-AN6X** 4602421 | Uprox3 | 3 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤150 | 0 to +60 | IP68 | SS | PA 12 | N/A | YE | 2M/TPU | E | 1 | A4 |
| **Bi3U-EM08-AP6X** 4602411 | Uprox3 | 3 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤150 | 0 to +60 | IP68 | SS | PA 12 | N/A | YE | 2M/TPU | E | 2 | A4 |
| **Bi3-M08-AN6X** 4602913 | | 3 | 3-wire DC NPN | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CBP | PP-GF20 | N/A | YE | 2M/TPU | F | 1 | A4 |
| **Bi3-M08-AP6X** 4602910 | | 3 | 3-wire DC PNP | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CBP | PP-GF20 | N/A | YE | 2M/TPU | F | 2 | A4 |
| **Bi3-M08KK-AN6X** 4602941 | Short Barrel | 3 | 3-wire DC NPN | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CBP | PP-GF20 | N/A | YE | 2M/TPU | A | 1 | A4 |
| **Bi3-M08KK-AP6X** 4602938 | Short Barrel | 3 | 3-wire DC PNP | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CBP | PP-GF20 | N/A | YE | 2M/TPU | A | 2 | A4 |
| **Bi2-EG08K-AN6X** 4669500 | | 2 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | B | 1 | A4 |
| **Bi2-EG08K-AN6X/S1589** 4669587 | Weldguard | 2 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | WG | N/A | YE | 2M/TPU | B | 1 | A4 |
| **Bi2-EG08K-AP6X** 4669400 | | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | B | 2 | A4 |
| **Bi2-EG08K-AP6X/S97** 4669413 | Low Temp. -40 °C | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -40 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | B | 2 | A4 |
| **Bi2-EGT08K-AP6X** 4602541 | PTFE | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | TC | TC | N/A | YE | 2M/TPU | C | 2 | A4 |
| **Bi2-EGT08K-AP6X/S100** 4602544 | PTFE, High Temp. 100 °C | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +100 | IP67 | TC | TC | N/A | YE | 2M/TPU | C | 2 | A4 |
| **Bi2-EGT08K-AP6X/S1589** 46025413 | PTFE, Weldguard | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | TC | WG | N/A | YE | 2M/TPU | C | 2 | A4 |
| **Bi2-M08K-AN6X** 4602963 | | 2 | 3-wire DC NPN | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CBP | PP-GF20 | N/A | YE | 2M/TPU | D | 1 | A4 |
| **Bi2-M08K-AP6X** 4602966 | | 2 | 3-wire DC PNP | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CBP | PP-GF20 | N/A | YE | 2M/TPU | D | 2 | A4 |
| **Bi1.5-EG08K-AN6X** 4669140 | | 1.5 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | B | 1 | A4 |
| **Bi1.5-EG08K-AP6X** 4669040 | | 1.5 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | B | 2 | A4 |
| **Bi1.5-EG08K-AP6/S100** 4669016 | High Temp. 100 °C | 1.5 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +100 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | B | 2 | A4 |

**Note:** Reference sensor data sheet for considerations if mounting a BI3-M08 sensor flush in steel.

We reserve the right to make technical alterations without prior notice.

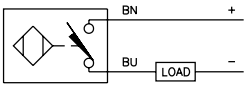
# Inductive Barrel Sensors | 8 mm

## Embeddable Threaded Metal Barrels with Cable and 2-Wire Outputs

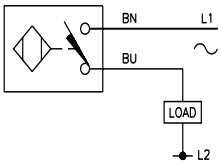
| Housing Style | Dimension Drawings | |
|---|---|---|
| | A<br>  <br><br>8 mm - Embeddable, Miniature Threaded Barrel, Potted-In Cable | B<br>  <br><br>8 mm - Embeddable, Miniature Threaded Barrel, Potted-In Cable, PTFE Coated |
| C<br>  <br><br>8 mm - Embeddable, Miniature Threaded Barrel, Potted-In Cable | D<br>  <br><br>8 mm - Embeddable, Miniature Threaded Barrel, Potted-In Cable, PTFE Coated | |

### Wiring Diagrams/Mating Cordsets

1




2




### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A6 — 2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Inrush Current: | ≤8 A (≤10 ms max. 5 Hz) |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Power-On Effect: | Per IEC 947-5-2 |
| | AC: ≤100 mA; DC: ≤100 mA | Transient Protection: | Per EN 60947-5-2 |
| Off-State (Leakage) Current: | ≤1.7 mA | Shock: | 30 g, 11 ms |
| Minimum Load Current: | ≥3.0 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 8 mm

## Embeddable Threaded Metal Barrels with Cable and 2-Wire Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi2-EG08-AG41X** 4562000 | | 2 | 2-wire DC | 10-55 VDC | 1000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | C | 1 | A2 |
| **Bi2-EG08-AG41X/S1589** 4562088 | Weldguard | 2 | 2-wire DC | 10-55 VDC | 1000 | ≤100 | -25 to +70 | IP67 | SS | WG | N/A | YE | 2M/TPU | C | 1 | A2 |
| **Bi2-EG08-AZ14X** 4100001 | | 2 | 2-wire AC/DC | 20-132 VAC/10-140 VDC | 20 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | C | 2 | A6 |
| **Bi2-EGT08-AG41X** 4602540 | PTFE | 2 | 2-wire DC | 10-55 VDC | 1000 | ≤100 | -25 to +70 | IP67 | TC | PA 12 | N/A | YE | 2M/TPU | D | 1 | A2 |
| **Bi2-EGT08-AG41X/S1589** 46020003 | PTFE, Weldguard | 2 | 2-wire DC | 10-55 VDC | 1000 | ≤100 | -25 to +70 | IP67 | TC | WG | N/A | YE | 2M/TPU | D | 1 | A2 |
| **Bi2-EG08K-AG41X** 4562010 | | 2 | 2-wire DC | 10-55 VDC | 1000 | ≤100 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | A | 1 | A2 |
| **Bi2-EG08K-AG41X/S1589** 4562091 | Weldguard | 2 | 2-wire DC | 10-55 VDC | 1000 | ≤100 | -25 to +70 | IP67 | SS | WG | N/A | YE | 2M/TPU | A | 1 | A2 |
| **Bi2-EGT08K-AG41X** 4602545 | PTFE | 2 | 2-wire DC | 10-55 VDC | 1000 | ≤100 | -25 to +70 | IP67 | TC | PA 12 | N/A | YE | 2M/TPU | B | 1 | A2 |



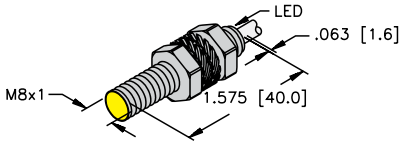
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 8 mm

## Embeddable Threaded Metal Barrels with Cable and DC Outputs

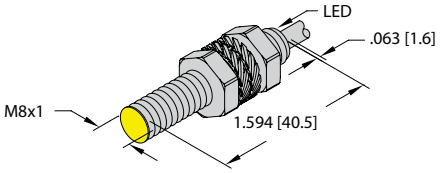
| Housing Style | Dimension Drawings |
|---|---|

A



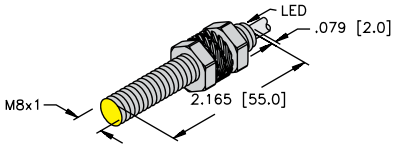

8 mm - Embeddable, Miniature Threaded Barrel, Potted-In Cable

B




8 mm - Embeddable, Miniature Threaded Barrel, Potted-In Cable

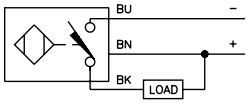
C



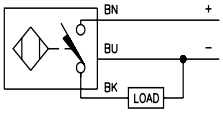

8 mm - Embeddable, Miniature Threaded Barrel, Potted-In Cable

### Wiring Diagrams/Mating Cordsets

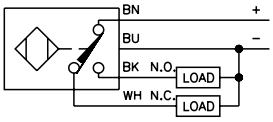
1




2




3




### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current |
| | ≥170 mA on 150 mA Load Current |
| | ≥120 mA on 100 mA Load Current |
| Off-State (Leakage) Current: | ≤0.1 mA |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) |
| | ≤20 mA (Uprox+, Uprox3) |
| Time Delay Before Availability: | ≤8 ms |
| Power-On Effect: | Per IEC 947-5-2 |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Transient Protection: | Per EN 60947-5-2 |
| Temperature Drift: | ≤±10% |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 8 mm

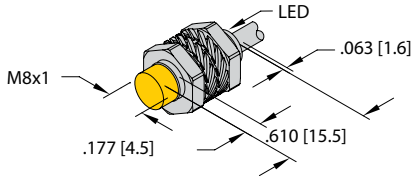
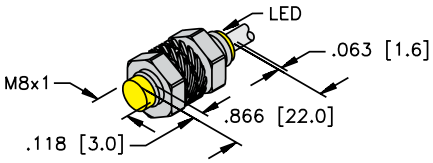
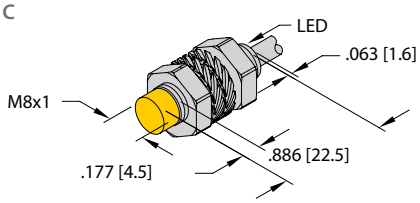
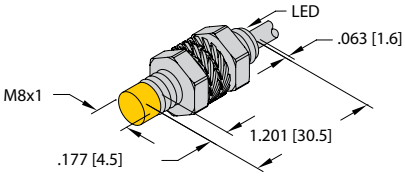
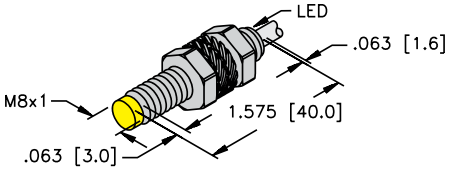
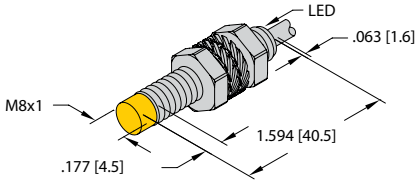
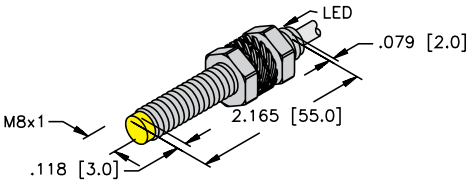
## Embeddable Threaded Metal Barrels with Cable and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi2U-EG08-AN6X** 4602035 | Uprox | 2 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤150 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | 2M/TPU | A | 1 | A4 |
| **Bi2U-EG08-AP6X** 4602032 | Uprox | 2 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤150 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | 2M/TPU | A | 2 | A4 |
| **Bi2-EG08-AN6X** 4602140 | Extended Range | 2 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | A | 1 | A4 |
| **Bi2-EG08-AP6X** 4602040 | Extended Range | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | A | 2 | A4 |
| **Bi2-EG08-AP6X/S100** 4602047 | High Temp. 100 °C | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +100 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | A | 2 | A4 |
| **Bi2-EG08-AP6X/S1589** 4602085 | Weldguard | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | WG | N/A | YE | 2M/TPU | A | 2 | A4 |
| **Bi2-EG08-VP6X** 1604610 | Comp. Outputs | 2 | 4-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | A | 3 | A4 |
| **Bi2-G08-AN6X** 46021 | Extended Range | 2 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | C | 1 | A4 |
| **Bi2-G08-AP6X** 46020 | Extended Range | 2 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | C | 2 | A4 |
| **Bi2-M08E-AN6X** 4602951 | | 2 | 3-wire DC NPN | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CBP | PP-GF20 | N/A | YE | 2M/TPU | B | 1 | A4 |
| **Bi2-M08E-AP6X** 4602954 | | 2 | 3-wire DC PNP | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CBP | PP-GF20 | N/A | YE | 2M/TPU | B | 2 | A4 |
| **Bi1.5U-EG08-AN6X** 4600510 | Uprox | 1.5 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤150 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | 2M/TPU | A | 1 | A4 |
| **Bi1.5U-EG08-AP6X** 4600500 | Uprox | 1.5 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤150 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | 2M/TPU | A | 2 | A4 |
| **Bi1.5-EG08-AN6X** 4602340 | | 1.5 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | A | 1 | A4 |
| **Bi1.5-EG08-AN7X** 1766110 | TTL Compatible | 1.5 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | A | 1 | A4 |
| **Bi1.5-EG08-AP6X** 4602240 | | 1.5 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | A | 2 | A4 |
| **Bi1.5-G08-AN6X** 46023 | | 1.5 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | C | 1 | A4 |
| **Bi1.5-G08-AP6X** 46022 | | 1.5 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | C | 2 | A4 |

We reserve the right to make technical alterations without prior notice.

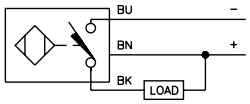
# Inductive Barrel Sensors | 8 mm

## Nonembeddable Threaded Metal Barrels with Cable and DC Outputs

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   8 mm - Nonembeddable, Miniature Threaded Barrel, Potted-In Cable | B   8 mm - Nonembeddable, Miniature Threaded Barrel, Potted-In Cable |
| C   8 mm - Nonembeddable, Miniature Threaded Barrel, Potted-In Cable | D   8 mm - Nonembeddable, Miniature Threaded Barrel, Potted-In Cable | E   8 mm - Nonembeddable, Miniature Threaded Barrel, Potted-In Cable |
| F   8 mm - Nonembeddable, Miniature Threaded Barrel, Potted-In Cable | G   8 mm - Nonembeddable, Miniature Threaded Barrel, Potted-In Cable | |

### Wiring Diagrams/Mating Cordsets

1

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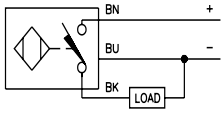



### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current |
| | ≥170 mA on 150 mA Load Current |
| | ≥120 mA on 100 mA Load Current |
| Off-State (Leakage) Current: | ≤0.1 mA |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) |
| | ≤20 mA (Uprox+, Uprox3) |
| Time Delay Before Availability: | ≤8 ms |
| Power-On Effect: | Per IEC 947-5-2 |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Transient Protection: | Per EN 60947-5-2 |
| Temperature Drift: | ≤±10% |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 8 mm

## Nonembeddable Threaded Metal Barrels with Cable and DC Outputs

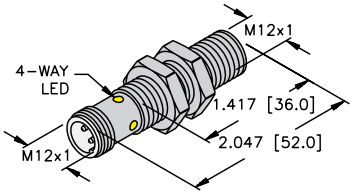
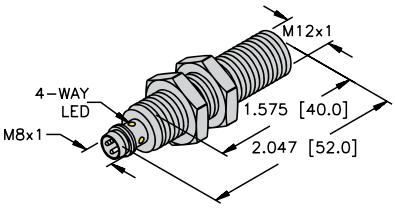
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni6U-EG08-AN6X** 4635803 | Uprox+ | 6 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤150 | 0 to +70 | IP68 | SS | LCP | N/A | YE | 2M/TPU | E | 1 | A4 |
| **Ni6U-EG08-AP6X** 4635800 | Uprox+ | 6 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤150 | 0 to +70 | IP68 | SS | LCP | N/A | YE | 2M/TPU | E | 2 | A4 |
| **Ni5-M08-AN6X** 4602923 | | 5 | 3-wire DC NPN | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | 2M/TPU | D | 1 | A4 |
| **Ni5-M08-AP6X** 4602920 | | 5 | 3-wire DC PNP | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | 2M/TPU | D | 2 | A4 |
| **Ni5-M08KK-AN6X** 4602948 | Short Barrel | 5 | 3-wire DC NPN | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | 2M/TPU | A | 1 | A4 |
| **Ni5-M08KK-AP6X** 4602944 | Short Barrel | 5 | 3-wire DC PNP | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | 2M/TPU | A | 2 | A4 |
| **Ni4U-EG08-AN6X** 4600610 | Uprox | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤150 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | 2M/TPU | E | 1 | A4 |
| **Ni4U-EG08-AP6X** 4600600 | Uprox | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤150 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | 2M/TPU | E | 2 | A4 |
| **Ni3-EG08-AN6X** 4602840 | | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | E | 1 | A4 |
| **Ni3-EG08-AN6X/S1589** 4602888 | Weldguard | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | WG | N/A | YE | 2M/TPU | E | 1 | A4 |
| **Ni3-EG08-AN7X** 4669759 | TTL Compatible | 3 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | E | 1 | A4 |
| **Ni3-EG08-AP6X** 4602740 | | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | E | 2 | A4 |
| **Ni3-EG08-AP6X/S1589** 4602789 | Weldguard | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | WG | N/A | YE | 2M/TPU | E | 2 | A4 |
| **Ni3-EG08K-AN6X** 4669700 | | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | B | 1 | A4 |
| **Ni3-EG08K-AP6X** 4669600 | | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | B | 2 | A4 |
| **Ni3-G08-AN6X** 46028 | | 3 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | G | 1 | A4 |
| **Ni3-G08-AP6X** 46027 | | 3 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | G | 2 | A4 |
| **Ni3-M08E-AN6X** 4602831 | | 3 | 3-wire DC NPN | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | 2M/TPU | F | 1 | A4 |
| **Ni3-M08E-AP6X** 4602834 | | 3 | 3-wire DC PNP | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | 2M/TPU | F | 2 | A4 |
| **Ni3-M08K-AN6X** 4602847 | | 3 | 3-wire DC NPN | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | 2M/TPU | C | 1 | A4 |
| **Ni3-M08K-AP6X** 4602851 | | 3 | 3-wire DC PNP | 10-30 VDC | 2800 | ≤150 | -25 to +70 | IP67 | CPB | PP-GF20 | N/A | YE | 2M/TPU | C | 2 | A4 |
| **Ni2-G08-AN6X** 4601300 | | 2 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | G | 1 | A4 |
| **Ni2-G08-AP6X** 46012 | | 2 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | G | 2 | A4 |



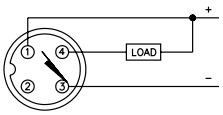
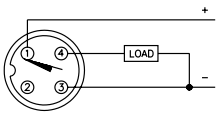
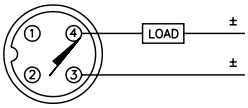
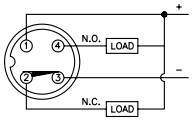
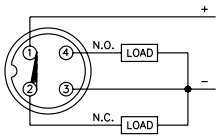
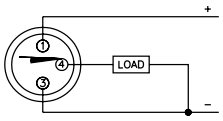
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

## Embeddable Threaded Metal Barrels with Connector and DC Outputs

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   12 mm - Embeddable, M12 Eurofast Connection | B   12 mm - Embeddable, M8 Picofast Connection |

**Wiring Diagrams/Mating Cordsets**

| | | |
|---|---|---|
| 1   Mating Cordset: RK 4T-*; RKV 4T-* | 2   Mating Cordset: RK 4T-*; RKV 4T-* | 3   Mating Cordset: RK 4.2T-* |
| 4   Mating Cordset: RK 4.4T-* | 5   Mating Cordset: RK 4.4T-*; RKV 4.4T-* | 6   Mating Cordset: PKG 3M-* |

**A2 — 2-wire DC - (AD, RD, AG)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

**A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

## Embeddable Threaded Metal Barrels with Connector and DC Outputs

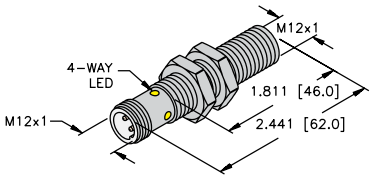
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi6U-M12-AN6X-H1141** 1644808 | Uprox3 | 6 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP68 | CPB | LCP | N/A | YE | A | 1 | A4 |
| **Bi6U-M12-AP6X-H1141** 1644810 | Uprox3 | 6 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP68 | CPB | LCP | N/A | YE | A | 2 | A4 |
| **Bi6U-M12-VP6X-H1141** 1644805 | Uprox3, Comp. Outputs | 6 | 4-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP68 | CPB | LCP | N/A | YE | A | 5 | A4 |
| **Bi4U-EM12-AN6X-H1141** 1634827 | Uprox+ | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | SS | LCP | N/A | YE | A | 1 | A4 |
| **Bi4U-M12-AN6X-H1141** 1634824 | Uprox+ | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | A | 1 | A4 |
| **Bi4U-EM12-AP6X-H1141** 1634807 | Uprox+ | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | SS | LCP | N/A | YE | A | 2 | A4 |
| **Bi4U-M12-AP6X-H1141** 1634804 | Uprox+ | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | A | 2 | A4 |
| **Bi4U-M12-AP6X-V1131** 1634780 | Uprox+ | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | B | 6 | A4 |
| **Bi4-M12-AN6X-H1141** 4607100 | Extended Range | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A4 |
| **Bi4-M12-AP6X-H1141** 46070 | Extended Range | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 2 | A4 |
| **Bi4-M12-VN6X-H1141** 1643200 | Ext. Range, Comp. Outputs | 4 | 4-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 4 | A4 |
| **Bi4-M12-VP6X-H1141** 1633200 | Ext. Range, Comp. Outputs | 4 | 4-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 5 | A4 |
| **Bi4-EM12-VP6X-H1141** 1633201 | Ext. Range, Comp. Outputs | 4 | 4-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 5 | A4 |
| **Bi3U-EM12-AN6X-H1141** 1634350 | Uprox | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | A | 1 | A4 |
| **Bi3U-M12-AN6X-H1141** 1634150 | Uprox | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A4 |
| **Bi3U-EM12-AP6X-H1141** 1634340 | Uprox | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | A | 2 | A4 |
| **Bi3U-M12-AP6X-H1141** 1634140 | Uprox | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP67 | CPB | PA 12 | N/A | YE | A | 2 | A4 |
| **Bi3-M12-AD4X-H1141** 4405041 | | 3 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 3 | A2 |
| **Bi2-M12-AD4X-H1141** 44065 | | 2 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 3 | A2 |
| **Bi2-EM12-AN6X-H1141** 4606601 | | 2 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 1 | A4 |
| **Bi2-M12-AN6X-H1141** 46066 | | 2 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A4 |
| **Bi2-EM12-AP6X-H1141** 4606501 | | 2 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 2 | A4 |
| **Bi2-M12-AP6X-H1141** 46065 | | 2 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 2 | A4 |
| **Bi2-M12-VN6X-H1141** 16430 | Comp. Outputs | 2 | 4-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 4 | A4 |
| **Bi2-M12-VP6X-H1141** 16330 | Comp. Outputs | 2 | 4-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 5 | A4 |



We reserve the right to make technical alterations without prior notice.

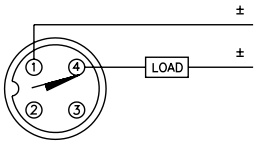
# Inductive Barrel Sensors | 12 mm

## Embeddable Threaded Metal Barrels with Connector and DC Outputs

| Housing Style | Dimension Drawings |
|---|---|
| | A   12 mm - Embeddable, M12 Eurofast Connection, Extended Barrel Length |

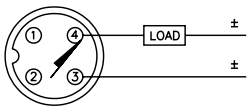
### Wiring Diagrams/Mating Cordsets

1



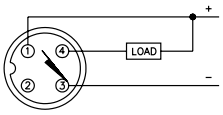

Mating Cordset: RK 4.23T-*

2



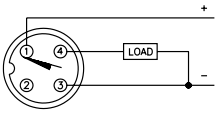

Mating Cordset: RK 4.2T-*

3



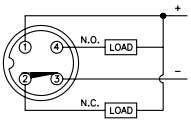

Mating Cordset: RK 4T-*; RKC 4T-*/S1587

4



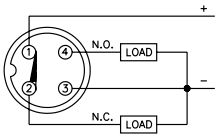

Mating Cordset: RK 4T-*; RKC 4T-*/S1587

5




Mating Cordset: RK 4.4T-*

6




Mating Cordset: RK 4.4T-*

### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

## Embeddable Threaded Metal Barrels with Connector and DC Outputs

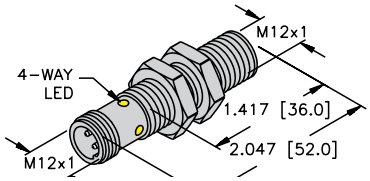
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi4-M12E-AN6X-H1141** 4607193 | Extended Range | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 3 | A4 |
| **Bi4-EM12E-AN6X-H1141/S1589** 4607185 | Ext. Range, Weldguard | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | SS | WG | N/A | YE | A | 3 | A4 |
| **Bi4-M12E-AP6X-H1141** 4608030 | Extended Range | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 4 | A4 |
| **Bi4-EM12E-AP6X-H1141/S1589** 4607184 | Ext. Range, Weldguard | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | SS | WG | N/A | YE | A | 4 | A4 |
| **Bi4-M12E-VN6X-H1141** 1643201 | Extended Range | 4 | 4-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 5 | A4 |
| **Bi4-M12E-VP6X-H1141** 4608092 | Extended Range | 4 | 4-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 6 | A4 |
| **Bi3U-EM12E-AN6X-H1141** 1634351 | Uprox | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | A | 3 | A4 |
| **Bi3U-EM12HE-AN6X2-H1141** 1634311 | Uprox, Stoneface | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP68 | SS | PA 12 | GN | YE | A | 3 | A4 |
| **Bi3U-EM12E-AN6X2-H1141/S1589** 1634397 | Uprox, Weldguard | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP68 | SS | WG | GN | YE | A | 3 | A4 |
| **Bi3U-M12E-AP6X-H1141** 1634148 | Uprox | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP67 | CPB | PA 12 | N/A | YE | A | 4 | A4 |
| **Bi3U-EM12HE-AP6X2-H1141** 1634310 | Uprox, Stoneface | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP68 | SS | SF | GN | YE | A | 4 | A4 |
| **Bi3U-EM12E-AP6X2-H1141/S1589** 1634398 | Uprox, Weldguard | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP68 | SS | WG | GN | YE | A | 4 | A4 |
| **Bi3U-M12E-AN6X-H1141** 1634151 | Uprox | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP67 | CPB | PA 12 | N/A | YE | A | 3 | A4 |
| **Bi3U-EM12E-AP6X-H1141** 1634343 | Uprox | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | A | 4 | A4 |
| **Bi3U-M12E-VN4X-H1141** 1580354 | Uprox | 3 | 4-wire DC NPN | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP67 | CPB | PA 12 | N/A | YE | A | 5 | A4 |
| **Bi3U-M12E-VP4X-H1141** 1580252 | Uprox | 3 | 4-wire DC PNP | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP67 | CPB | PA 12 | N/A | YE | A | 6 | A4 |
| **Bi3-M12E-AD4X-H1141** 4405080 | | 3 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 2 | A2 |
| **Bi2U-M12E-AD4X-H1144** 4405060 | Uprox | 2 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | A | 1 | A2 |
| **Bi2-M12E-AN6X-H1141** 4606602 | | 2 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 3 | A4 |



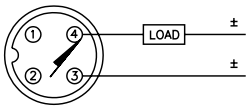
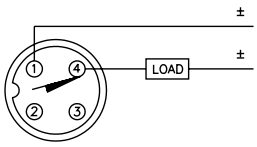
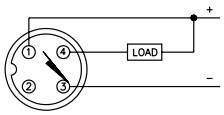
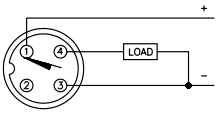
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

**Embeddable Threaded PTFE Coated Metal Barrels with Connector and DC Outputs**

| Housing Style | Dimension Drawings |
|---|---|
| | A   12 mm - Embeddable, M12 Eurofast Connection, PTFE Coated Sensors |

**Wiring Diagrams s/Mating Cordset**

| | |
|---|---|
| 1   Mating Cordset: RK 4.2T-* | 2   Mating Cordset: RK 4.23T-* |
| 3   Mating Cordset: RK 4T-*; RKC 4T-*/S1587 | 4   Mating Cordset: RK 4T-*; RKC 4T-*/S1587 |

**A2 — 2-wire DC - (AD, RD, AG)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

**A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

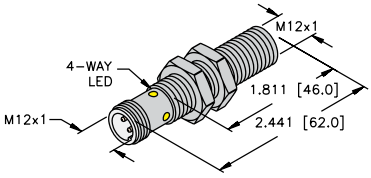
## Embeddable Threaded PTFE Coated Metal Barrels with Connector and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi6U-MT12-AN6X-H1141** 1644858 | Uprox3, PTFE | 6 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP68 | TC | TC | N/A | YE | A | 3 | A4 |
| **Bi6U-MT12-AP6X-H1141** 1644831 | Uprox3, PTFE | 6 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP68 | TC | TC | N/A | YE | A | 4 | A4 |
| **Bi6U-MT12-AP6X2-H1141** 1644904 | Uprox3, PTFE | 6 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP68 | TC | TC | GN | YE | A | 4 | A4 |
| **Bi4U-MT12-AN6X-H1141** 1634829 | Uprox+, PTFE | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | TC | TC | N/A | YE | A | 3 | A4 |
| **Bi4U-MT12-AN6X-H1141/S1589** 16348290 | Uprox+, PTFE, Weldguard | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | TC | WG | N/A | YE | A | 3 | A4 |
| **Bi4U-MT12-AP6X-H1141** 1634809 | Uprox+, PTFE | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | TC | TC | N/A | YE | A | 4 | A4 |
| **Bi4-MT12H-AN6X-H1141** 4607194 | Ext. Range, PTFE, Stoneface | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | TC | SF | N/A | YE | A | 3 | A4 |
| **Bi4-MT12-AN6X-H1141/S1589** 4607188 | Ext. Range, PTFE, Weldguard | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | TC | WG | N/A | YE | A | 3 | A4 |
| **Bi4-MT12H-AP6X-H1141** 4607093 | Ext. Range, PTFE, Stoneface | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | TC | SF | N/A | YE | A | 4 | A4 |
| **Bi4-MT12-AP6X-H1141/S1589** 4607099 | Ext. Range, PTFE, Weldguard | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | TC | WG | N/A | YE | A | 4 | A4 |
| **Bi3U-MT12-AN6X-H1141** 1634250 | Uprox, PTFE | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP67 | TC | TC | N/A | YE | A | 3 | A4 |
| **Bi3U-MT12-AP6X-H1141** 1634240 | Uprox, PTFE | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP67 | TC | TC | N/A | YE | A | 4 | A4 |
| **Bi3U-MT12-AP6X2-H1141** 1634245 | Uprox, PTFE | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP67 | TC | TC | GN | YE | A | 4 | A4 |
| **Bi3U-MT12H-AP6X-H1141** 1634212 | Uprox, PTFE, Stoneface | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP67 | TC | TC | N/A | YE | A | 4 | A4 |
| **Bi3U-MT12-AP6X2-H1141/S1589** 1634293 | Uprox, PTFE, Weldguard | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP67 | TC | WG | GN | YE | A | 4 | A4 |
| **Bi3-MT12-AD4X-H1141/S1589** 4405082 | PTFE, Weldguard | 3 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | TC | WG | N/A | YE | A | 1 | A2 |
| **Bi3-MT12-AD4X-H1144/S1589** 4405084 | PTFE, Weldguard | 3 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | TC | WG | N/A | YE | A | 2 | A2 |

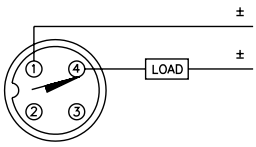
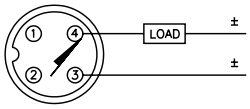
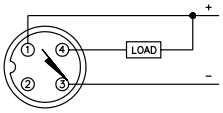
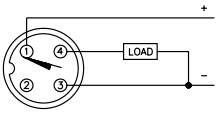
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

## Embeddable Threaded PTFE Coated Metal Barrels with Connector and DC Outputs

| Housing Style | Dimension Drawings |
|---|---|
| | A   12 mm - Embeddable, M12 Eurofast Connection, Extended Barrel Length, PTFE Coated Sensors |

### Wiring Diagrams/Mating Cordset

| | |
|---|---|
| 1   Mating Cordset: RK 4.23T-* | 2   Mating Cordset: RK 4.2T-* |
| 3   Mating Cordset: RK 4T-*; RKC 4T-*/S1587 | 4   Mating Cordset: RK 4T-*; RKC 4T-*/S1587 |

### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

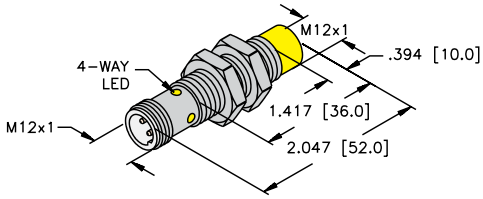
## Embeddable Threaded PTFE Coated Metal Barrels with Connector and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi4U-MT12E-AP6X2-H1141** 1644742 | Uprox+ | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | TC | TC | GN | YE | A | 4 | A4 |
| **Bi4U-MT12E-AP6X2-H1141/S1589** 1644797 | Uprox+, PTFE, Weldguard | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | TC | WG | N/A | YE | A | 4 | A4 |
| **Bi4-MT12E-AP6X-H1141** 46080932 | Ext. Range, PTFE | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | TC | TC | N/A | YE | A | 4 | A4 |
| **Bi4-MT12HE-AN6X-H1141** 4607197 | Ext. Range, PTFE | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | TC | TC | N/A | YE | A | 3 | A4 |
| **Bi4-MT12HE-AP6X-H1141** 4608093 | Ext. Range, Stoneface | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | TC | TC | N/A | YE | A | 4 | A4 |
| **Bi4-MT12E-AN6X-H1141/S1589** 4607187 | Ext. Range, Weldguard | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | TC | WG | N/A | YE | A | 3 | A4 |
| **Bi4-MT12E-AP6X-H1141/S1589** 4608094 | Ext. Range, Weldguard | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | TC | WG | N/A | YE | A | 4 | A4 |
| **Bi3U-MT12HE-AN6X2-H1141** 1634230 | Uprox, PTFE, Stoneface | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP67 | TC | TC | GN | YE | A | 3 | A4 |
| **Bi3U-MT12E-AN6X2-H1141/S1589** 1634290 | Uprox, Weldguard | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP67 | TC | WG | GN | YE | A | 3 | A4 |
| **Bi3U-MT12HE-AP6X2-H1141** 1634220 | Uprox, PTFE, Stoneface | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP67 | TC | TC | GN | YE | A | 4 | A4 |
| **Bi3U-MT12E-AP6X2-H1141/S1589** 1634291 | Uprox, Weldguard | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP67 | TC | WG | GN | YE | A | 4 | A4 |
| **Bi3-MT12E-AD4X-H1141** 44050882 | PTFE | 3 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | TC | TC | N/A | YE | A | 2 | A2 |
| **Bi3-MT12HE-AD4X-H1141** 4405088 | Stoneface | 3 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | TC | TC | N/A | YE | A | 2 | A2 |
| **Bi3-MT12E-AD4X-H1141/S1589** 4405086 | PTFE, Weldguard | 3 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | TC | WG | N/A | YE | A | 2 | A2 |
| **Bi3-MT12E-AD4X-H1144/S1589** 4405087 | PTFE, Weldguard | 3 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | TC | WG | N/A | YE | A | 2 | A2 |
| **Bi2U-MT12E-AD4X-H1144** 4405061 | Uprox+, PTFE | 2 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -30 to +85 | IP68 | TC | TC | N/A | YE | A | 1 | A2 |

We reserve the right to make technical alterations without prior notice.

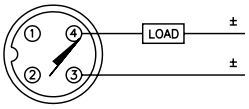
# Inductive Barrel Sensors | 12 mm

## Nonembeddable Threaded Metal Barrels with Connector and DC Outputs

| Housing Style | Dimension Drawings |
|---|---|
| | A   12 mm - Nonembeddable, M12 Eurofast Connection |

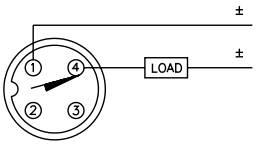
### Wiring Diagrams/Mating Cordsets

1



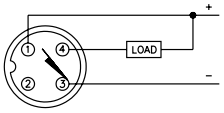

Mating Cordset: RK 4.2T-*

2



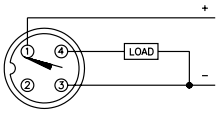

Mating Cordset: RK 4.23T-*

3



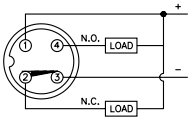

Mating Cordset: RK 4T-*; RKV 4T-*

4



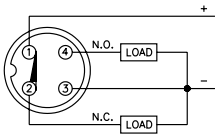

Mating Cordset: RK 4T-*; RKV 4T-*

5




Mating Cordset: RK 4.4T-*

6




Mating Cordset: RK 4.4T-*RKV 4.4T-*

### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

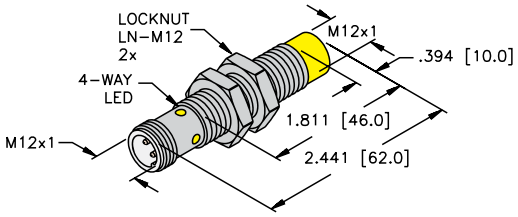
## Nonembeddable Threaded Metal Barrels with Connector and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni10U-M12-AN6X-H1141** 1634826 | Uprox+ | 10 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | A | 3 | A4 |
| **Ni10U-M12-AP6X-H1141** 1634806 | Uprox+ | 10 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | A | 4 | A4 |
| **Ni10U-EM12-AN6X-H1141** 1634828 | Uprox+ | 10 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | SS | LCP | N/A | YE | A | 3 | A4 |
| **Ni10U-EM12-AP6X-H1141** 1634808 | Uprox+ | 10 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | SS | LCP | N/A | YE | A | 4 | A4 |
| **Ni8U-M12-AN6X-H1141** 1644150 | Uprox | 8 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP67 | CPB | LCP | N/A | YE | A | 3 | A4 |
| **Ni8U-M12-AN6X2-H1141** 1644155 | Uprox | 8 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP67 | CPB | LCP | GN | YE | A | 3 | A4 |
| **Ni8U-M12-AP6X-H1141** 1644140 | Uprox | 8 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP67 | CPB | LCP | N/A | YE | A | 4 | A4 |
| **Ni8U-M12-AP6X2-H1141** 1644145 | Uprox | 8 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP67 | CPB | LCP | GN | YE | A | 4 | A4 |
| **Ni8U-EM12-AN6X-H1141** 1644350 | Uprox | 8 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | SS | LCP | N/A | YE | A | 3 | A4 |
| **Ni8U-EM12-AP6X-H1141** 1644340 | Uprox | 8 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | SS | PBT | N/A | YE | A | 4 | A4 |
| **Ni8-M12-AD4X-H1141** 4411241 | Extended Range | 8 | 2-wire DC | 10-65 VDC | 2000 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A2 |
| **Ni8-M12-AD4X-H1144** 4411289 | Extended Range | 8 | 2-wire DC | 10-65 VDC | 2000 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 2 | A2 |
| **Ni8-M12-AN6X-H1141** 4611315 | Extended Range | 8 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 3 | A4 |
| **Ni8-M12-AP6X-H1141** 4611310 | Extended Range | 8 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 4 | A4 |
| **Ni8-M12-VN6X-H1141** 4611323 | Ext. Range, Comp. Outputs | 8 | 4-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 5 | A4 |
| **Ni8-M12-VP6X-H1141** 4611324 | Ext. Range, Comp. Outputs | 8 | 4-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 6 | A4 |
| **Ni5-M12-AN6X-H1141** 4671390 | | 5 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 3 | A4 |
| **Ni5-M12-AP6X-H1141** 4653400 | | 5 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 4 | A4 |
| **Ni4-M12-AD4X-H1141** 44067 | | 4 | 2-wire DC | 10-65 VDC | 2000 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A2 |
| **Ni4-M12-AN6X-H1141** 46068 | | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 3 | A4 |
| **Ni4-M12-AP6X-H1141** 46067 | | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 4 | A4 |
| **Ni4-EM12-AN7X-H1141** 4606893 | TTL Compatible | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 3 | A4 |
| **Ni4-M12-VN6X-H1141** 16431 | Comp. Outputs | 4 | 4-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 5 | A4 |
| **Ni4-M12-VP6X-H1141** 16331 | Comp. Outputs | 4 | 4-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 6 | A4 |
| **Ni4-EM12-VP6X-H1141** 1633101 | Comp. Outputs | 4 | 4-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 6 | A4 |

We reserve the right to make technical alterations without prior notice.

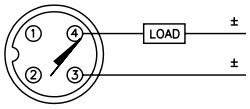
# Inductive Barrel Sensors | 12 mm

## Nonembeddable Threaded Metal Barrels with Connector and DC Outputs

| Housing Style | Dimension Drawings |
|---|---|
| | A   12 mm - Nonembeddable, Extended Barrel Length, M12 Eurofast Connection |

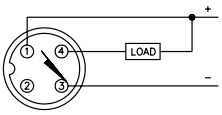
### Wiring Diagrams/Mating Cordsets

1



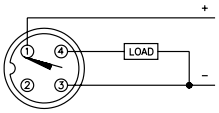

Mating Cordset: RK 4.23T-*

2



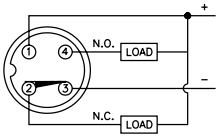

Mating Cordset: RK 4T-*; RKC 4T-*/S1587

3



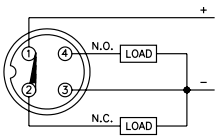

Mating Cordset: RK 4T-*; RKC 4T-*/S1587

4




Mating Cordset: RK 4.4T-*

5




Mating Cordset: RK 4.4T-*; RKV 4.4T-*

### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

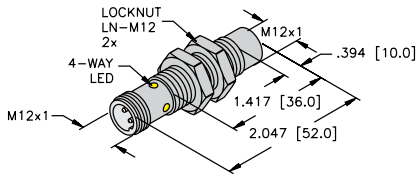
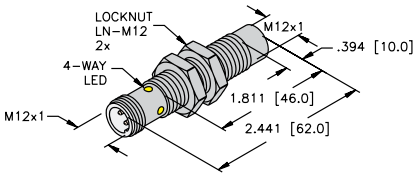
## Nonembeddable Threaded Metal Barrels with Connector and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni8U-M12E-AN6X-H1141** 1644151 | Uprox | 8 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | A | 2 | A4 |
| **Ni8U-EM12E-AN6X2-H1141** 1644315 | Uprox | 8 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | SS | PA 12 | GN | YE | A | 2 | A4 |
| **Ni8U-EM12E-AN6X2-H1141/S1589** 1644391 | Uprox, Weldguard | 8 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | WG | WG | GN | YE | A | 2 | A4 |
| **Ni8U-M12E-AP6X-H1141** 1644144 | Uprox | 8 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP67 | CPB | PA 12 | N/A | YE | A | 3 | A4 |
| **Ni8U-EM12E-AP6X-H1141** 1644342 | Uprox | 8 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | SS | PBT | N/A | YE | A | 3 | A4 |
| **Ni8U-EM12E-AP6X2-H1141** 1644314 | Uprox | 8 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | SS | PBT | GN | YE | A | 3 | A4 |
| **Ni8U-EM12E-AP6X2-H1141/S1589** 1644392 | Uprox, Weldguard | 8 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | WG | WG | GN | YE | A | 3 | A4 |
| **Ni8U-M12E-VN4X-H1141** 1580552 | Uprox, Comp. Outputs | 8 | 4-wire DC NPN | 10-65 VDC | 2000 | ≤200 | -30 to +85 | IP67 | SS | PA 12 | N/A | YE | A | 4 | A4 |
| **Ni8U-M12E-VP4X-H1141** 1580454 | Uprox | 8 | 4-wire DC PNP | 10-65 VDC | 2000 | ≤200 | -30 to +85 | IP67 | SS | PA 12 | N/A | YE | A | 5 | A4 |
| **Ni8U-EM12E-VP4X-H1141** 1580463 | Uprox | 8 | 4-wire DC PNP | 10-65 VDC | 2000 | ≤200 | -30 to +85 | IP67 | SS | PA 12 | N/A | YE | A | 5 | A4 |
| **Ni8-M12E-AN6X-H1141** 4611325 | Extended Range | 8 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 2 | A4 |
| **Ni8-EM12E-AN6X-H1141/S1589** 4611395 | Ext. Range, Weldguard | 8 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | WG | WG | N/A | YE | A | 2 | A4 |
| **Ni8-M12E-AP6X-H1141** 46113981 | Extended Range | 8 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 3 | A4 |
| **Ni8-EM12E-AP6X-H1141/S1589** 4611396 | Weldguard | 8 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | WG | WG | N/A | YE | A | 3 | A4 |
| **Ni8-M12E-VP6X-H1141** 4611389 | Ext. Range, Comp. Outputs | 8 | 4-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 5 | A4 |
| **Ni4-M12E-AD4X-H1144** 4406792 | | 4 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A2 |
| **Ni4-EM12E-VP6X-H1141** 1633191 | Comp. Outputs | 4 | 4-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 5 | A4 |

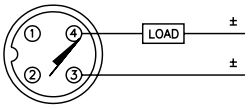
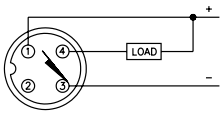
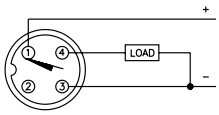
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

## Nonembeddable Threaded PTFE Coated Metal Barrels with Connector and DC Outputs

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   12 mm - Nonembeddable, M12 Eurofast Connection, PTFE Coated | B   12 mm - Nonembeddable, Extended Barrel Length, M12 Eurofast Connection, PTFE Coated |

### Wiring Diagrams/Mating Cordsets

| 1 | 2 | 3 |
|---|---|---|
|   |   |   |
| Mating Cordset: RKC 4.2T-* | Mating Cordset: RK 4T-*; RKC 4T-*/S1587 | Mating Cordset: RK 4T-*; RKC 4T-*/S1587 |

### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

## Nonembeddable Threaded PTFE Coated Metal Barrels with Connector and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni10U-MT12-AN6X-H1141** 1634830 | Uprox+, PTFE | 10 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | TC | LCP | N/A | YE | A | 2 | A4 |
| **Ni10U-MT12-AP6X-H1141** 1634810 | Uprox+, PTFE | 10 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | TC | LCP | N/A | YE | A | 3 | A4 |
| **Ni10U-MT12-AP6X-H1141/S1589** 16348101 | Uprox+, PTFE, Weldguard | 10 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | TC | WG | N/A | YE | A | 3 | A4 |
| **Ni10U-MT12E-AP6X2-H1141** 1634844 | Uprox+, PTFE | 10 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | TC | LCP | GN | YE | B | 3 | A4 |
| **Ni10U-MT12E-AP6X2-H1141/S1589** 1634994 | Uprox+, PTFE, Weldguard | 10 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | TC | WG | N/A | YE | B | 3 | A4 |
| **Ni8U-MT12-AP6X-H1141** 1644240 | Uprox, PTFE | 8 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP67 | TC | TC | N/A | YE | A | 3 | A4 |
| **Ni8U-MT12-AP6X2-H1141** 1644245 | Uprox, PTFE | 8 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP67 | TC | TC | GN | YE | A | 3 | A4 |
| **Ni8U-MT12-AP6X2-H1141/S1589** 1644292 | Uprox, PTFE, Weldguard | 8 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP67 | TC | WG | GN | YE | A | 3 | A4 |
| **Ni8U-MT12E-AN6X2-H1141** 1644248 | Uprox | 8 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP67 | TC | TC | N/A | YE | B | 2 | A4 |
| **Ni8U-MT12E-AP6X2-H1141** 1644247 | Uprox | 8 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP67 | TC | TC | N/A | YE | B | 3 | A4 |
| **Ni8-MT12-AD4X-H1141/S1589** 4411291 | PTFE, Weldguard | 8 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | TC | WG | N/A | YE | A | 1 | A2 |
| **Ni8-MT12E-AN6X-H1141/S1589** 4611397 | Ext. Range, Weldguard | 8 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | WG | WG | N/A | YE | B | 2 | A4 |
| **Ni8-MT12E-AP6X-H1141/S1589** 4611398 | Ext. Range, Weldguard | 8 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | WG | WG | N/A | YE | B | 3 | A4 |



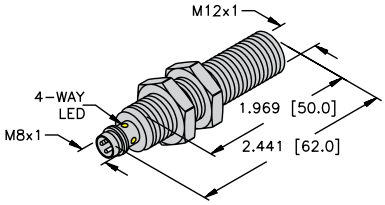
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

## Fully Threaded Metal Barrels with Connector and DC Outputs

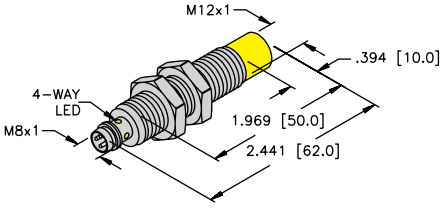
| Housing Style | Dimension Drawings |
|---|---|

A



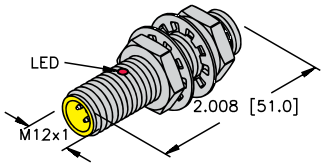

12 mm - Embeddable, M8 Picofast Connection

B



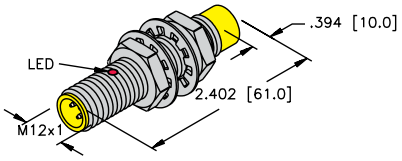

12 mm - Embeddable, M8 Picofast Connection

C




12 mm - Embeddable, M12 Eurofast Connection

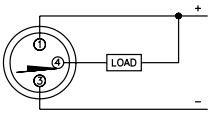
D




12 mm - Nonembeddable, M12 Eurofast Connection

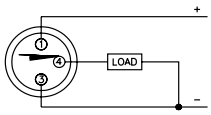
### Wiring Diagrams/Mating Cordsets

1



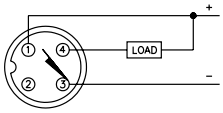

Mating Cordset: PKG 3M-*

2



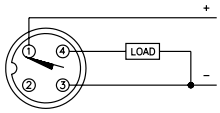

Mating Cordset: PKG 3M-*

3




Mating Cordset: RK 4T-*

4




Mating Cordset: RK 4T-*; RKV 4T-*

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

**Fully Threaded Metal Barrels with Connector and DC Outputs**

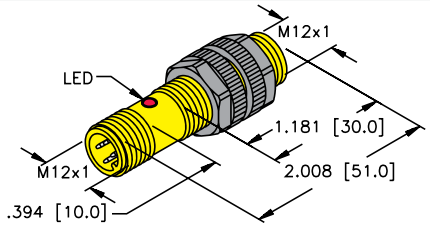
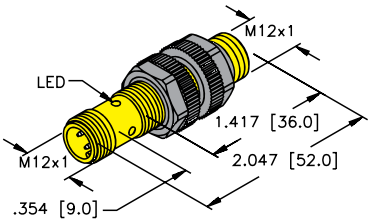
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi4-G12-AN6X-V1131** 1690707 | Extended Range | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A4 |
| **Bi4-G12-AP6X-V1131** 1690703 | Extended Range | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 2 | A4 |
| **Bi4-EG12-AP6X-H1141** 4607091 | Extended Range | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | RD | C | 4 | A4 |
| **Bi2-G12-AN6X-V1131** 4635583 | | 2 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A4 |
| **Bi2-G12-AN6X-H1141** 4606693 | | 2 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | C | 3 | A4 |
| **Bi2-G12-AP6X-H1141** 4606595 | | 2 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | C | 4 | A4 |
| **Bi2-G12-AP6X-V1131** 4606597 | | 2 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | B | 2 | A4 |
| **Ni8-G12-AN6X-H1141** 4611383 | Extended Range | 8 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | D | 3 | A4 |
| **Ni5-G12-AN6X-V1131** 4635721 | | 5 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | B | 1 | A4 |
| **Ni5-G12-AN6X-H1141** 4635793 | | 5 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | D | 3 | A4 |
| **Ni5-G12-AN7X-H1141** 1714593 | TTL Compatible | 5 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | D | 3 | A4 |
| **Ni5-G12-AP6X-V1131** 4635690 | | 5 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | B | 2 | A4 |
| **Ni5-G12-AP6X-H1141** 4635692 | | 5 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | D | 4 | A4 |



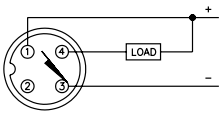
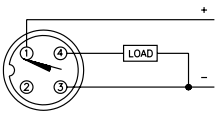
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

## Threaded Plastic Barrels with Connector and DC Outputs

| Housing Style | Dimension Drawings |
|---|---|
| | A   12 mm - Embeddable/Nonembeddable, Plastic, M12 Eurofast Connection |
| B   12 mm - Embeddable/Nonembeddable, Plastic, M12 Eurofast Connection | |

### Wiring Diagrams/Mating Cordsets

| 1 | 2 |
|---|---|
|   Mating Cordset: RKK 4T-* |   Mating Cordset: RKK 4T-* |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

## Threaded Plastic Barrels with Connector and DC Outputs

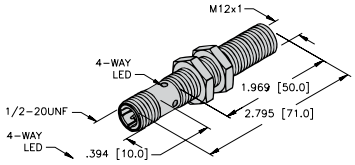
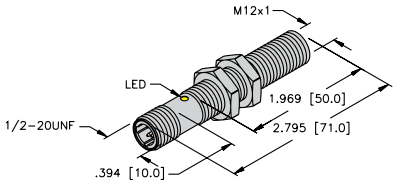
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi3U-S12-AN6X-H1141** 1634620 | Uprox | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP68 | PBT | PBT | N/A | YE | B | 1 | A4 |
| **Bi3U-S12-AP6X-H1141** 16346 | Uprox | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP68 | PBT | PBT | N/A | YE | B | 2 | A4 |
| **Bi2-S12-AN6X-H1141** 46521 | | 2 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | RD | A | 1 | A4 |
| **Bi2-S12-AP6X-H1141** 46520 | | 2 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | RD | A | 2 | A4 |
| **Ni8U-S12-AN6X-H1141** 1644620 | Uprox | 8 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | PBT | PBT | N/A | YE | B | 1 | A4 |
| **Ni8U-S12-AP6X-H1141** 1644600 | Uprox | 8 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | PBT | PBT | N/A | YE | B | 2 | A4 |
| **Ni4-S12-AN6X-H1141** 46523 | | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | RD | A | 1 | A4 |
| **Ni4-S12-AP6X-H1141** 46522 | | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | RD | A | 2 | A4 |



We reserve the right to make technical alterations without prior notice.

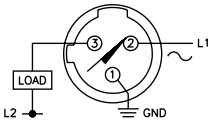
# Inductive Barrel Sensors | 12 mm

## Embeddable Threaded Metal Barrels with Connector and AC/DC Outputs

| Housing Style | Dimension Drawings |
|---|---|
| | A   12 mm - Embeddable, 1/2" Microfast Connection |
| B   12 mm - Embeddable, 1/2" Microfast Connection, PTFE Coated | |

### Wiring Diagrams/Mating Cordsets

1




Mating Cordset: KB 3T-*

### A5 — 2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA<br>AC: ≥120 mA; DC: ≥120 mA |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA<br>AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA (AC)<br>≤1.5 mA (DC) |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤3 A (≤20 ms, max 5 Hz) |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

### A6 — 2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA<br>AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤8 A (≤10ms max. 5 Hz)<br>≤1 A (≤10 ms max. 5 Hz) 12 mm<br>≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

## Embeddable Threaded Metal Barrels with Connector and AC/DC Outputs

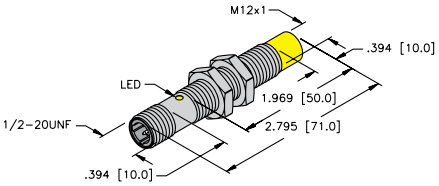
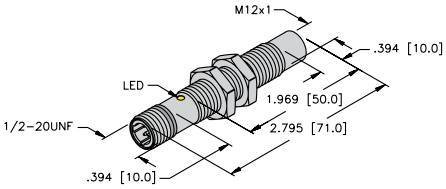
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi4-G12-ADZ32X-B3131** 4205031 | Extended Range | 4 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A5 |
| **Bi4-GT12H-ADZ32X-B3131** 4205097 | Stoneface | 4 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | TC | TC | N/A | YE | B | 1 | A5 |
| **Bi4-GT12-ADZ32X-B3131/S1589** 4205087 | PTFE, Weldguard | 4 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | TC | WG | N/A | YE | B | 1 | A5 |
| **Bi2U-G12-ADZ32X-B3131** 4281005 | Uprox | 2 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 10 | ≤100 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | A | 1 | A5 |
| **Bi2U-GT12-ADZ32X-B3131** 4281015 | Uprox | 2 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 10 | ≤100 | -30 to +85 | IP67 | TC | TC | N/A | YE | B | 1 | A5 |
| **Bi2-G12-AZ33X-B3131** 1304032 | | 2 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A6 |
| **Bi2-G12-ADZ32X-B3131** 4205001 | | 2 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A5 |
| **Bi2-GT12H-ADZ32X-B3131/S34** 4205093 | PTFE, WFI, Stoneface | 2 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | TC | TC | N/A | YE | B | 1 | A5 |
| **Bi2-GT12-ADZ32X-B3131/S34** 4205005 | PTFE, WFI | 2 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | TC | TC | N/A | YE | B | 1 | A5 |
| **Bi2-GT12-AZ33X-B3131/S34** 1304082 | PTFE, WFI | 2 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | TC | TC | N/A | YE | B | 1 | A6 |



We reserve the right to make technical alterations without prior notice.

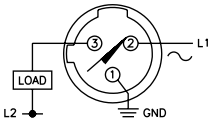
# Inductive Barrel Sensors | 12 mm

## Nonembeddable Threaded Metal Barrels with Connector and AC/DC Outputs

| Housing Style | Dimension Drawings |
|---|---|
| | A   12 mm - Nonembeddable, 1/2" Microfast Connection |
| B   12 mm - Nonembeddable, 1/2" Microfast Connection, PTFE Coated | |

### Wiring Diagrams/Mating Cordsets

1




Mating Cordset: KB 3T-*

### A5 — 2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA |
| | AC: ≥120 mA; DC: ≥120 mA |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA (AC) |
| | ≤1.5 mA (DC) |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤3 A (≤20 ms, max 5 Hz) |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

### A6 — 2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

## Nonembeddable Threaded Metal Barrels with Connector and AC/DC Outputs

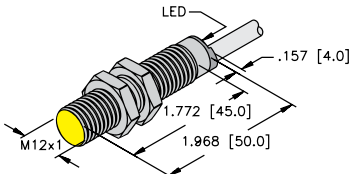
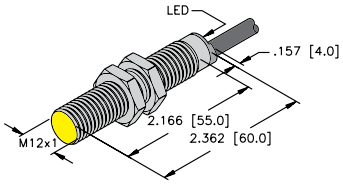
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni8U-G12-ADZ32X-B3131** 4281105 | Uprox | 8 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 10 | ≤100 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | A | 1 | A5 |
| **Ni8U-GT12-ADZ32X-B3131** 4281115 | Uprox | 8 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 10 | ≤100 | -30 to +85 | IP67 | TC | PA 12 | N/A | YE | B | 1 | A5 |
| **Ni4-G12-ADZ32X-B3131** 4205201 | | 4 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A5 |
| **Ni4-G12-AZ33X-B3131** 1304232 | | 4 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A6 |
| **Ni4-GT12-ADZ32X-B3131/S34** 4205205 | PTFE, WFI | 4 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | TC | PA 12 | N/A | YE | B | 1 | A5 |
| **Ni4-GT12-AZ33X-B3131/S34** 1304292 | PTFE, WFI | 4 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | TC | PA 12 | N/A | YE | B | 1 | A6 |
| **Ni4-GT12-ADZ32X-B3131/S34/S1589** 4205293 | PTFE, Weldguard | 4 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | TC | WG | N/A | YE | B | 1 | A5 |



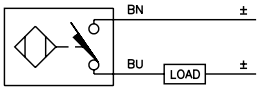
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

**Embeddable Threaded Metal Barrels with Cable and DC Outputs**

| Housing Style | Dimension Drawings |
|---|---|
| | A   12 mm - Embeddable, Potted-in Cable |
| B   12 mm - Embeddable, Extended Length Barrel, Potted-in Cable | |

**Wiring Diagrams/Mating Cordsets**

1
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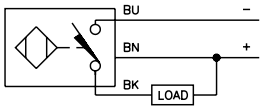


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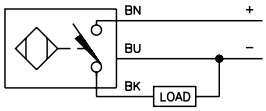


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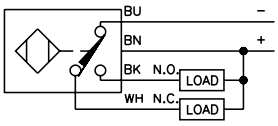
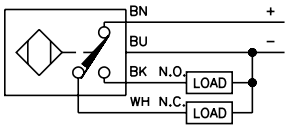



5



**A2 — 2-wire DC - (AD, RD, AG)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

**A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

## Embeddable Threaded Metal Barrels with Cable and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi6U-M12-AN6X** 1644806 | Uprox3 | 6 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP68 | CPB | LCP | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Bi6U-M12-AP6X** 1644801 | Uprox3 | 6 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP68 | CPB | LCP | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Bi6U-M12-VP6X** 1644803 | Uprox3, Comp. Outputs | 6 | 4-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP68 | CPB | LCP | N/A | YE | 2M/PVC | A | 5 | A4 |
| **Bi4U-M12-AN6X** 1634823 | Uprox+ | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Bi4U-M12-AP6X** 1634803 | Uprox+ | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Bi4-M12-AN6X** 4607130 | Extended Range | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Bi4-M12-AP6X** 4607006 | Extended Range | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Bi4-M12-VN6X** 1643300 | Ext. Range, Comp. Outputs | 4 | 4-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 4 | A4 |
| **Bi4-M12-VP6X** 1633300 | Ext. Range, Comp. Outputs | 4 | 4-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 5 | A4 |
| **Bi4-M12E-VN6X** 1643290 | Ext. Range, Comp. Outputs | 4 | 4-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | B | 4 | A4 |
| **Bi4-M12E-VP6X** 1633391 | Ext. Range, Comp. Outputs | 4 | 4-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | B | 5 | A4 |
| **Bi3U-M12-AN6X** 1634120 | Uprox | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Bi3U-M12-AP6X** 1634100 | Uprox | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Bi3U-M12E-AP6X** 1634108 | Uprox | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | 2M/PVC | B | 3 | A4 |
| **Bi3U-EM12-AN6X** 1634320 | Uprox | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP68 | SS | PBT | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Bi3U-EM12-AP6X** 1634300 | Uprox | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP68 | SS | PBT | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Bi3-M12-AD4X** 4405035 | Extended Range | 3 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 1 | A2 |
| **Bi2U-M12E-AD4X** 4405062 | Uprox | 2 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | 2M/PVC | B | 1 | A2 |
| **Bi2-M12-AD4X** 44050 | | 2 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 1 | A2 |
| **Bi2-M12-AP6X** 46050 | | 2 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Bi2-M12-VN6X** 16402 | Comp. Outputs | 2 | 4-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 4 | A4 |
| **Bi2-M12-VP6X** 16302 | Comp. Outputs | 2 | 4-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 5 | A4 |

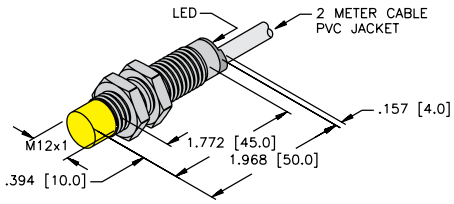
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

## Nonembeddable Threaded Metal Barrels with Cable and DC Outputs

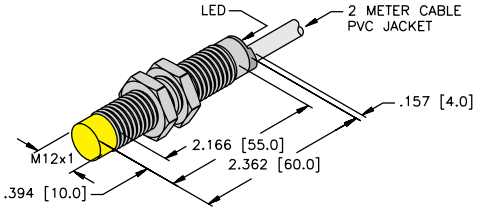
| Housing Style | Dimension Drawings |
|---|---|

A




12 mm - Nonembeddable, Potted-in Cable

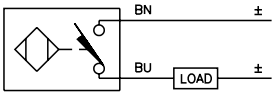
B




12 mm - Nonembeddable, Potted-In Cable, Extended Barrel Length

### Wiring Diagrams/Mating Cordsets

1

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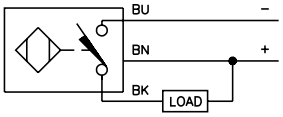


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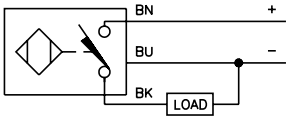


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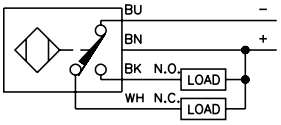


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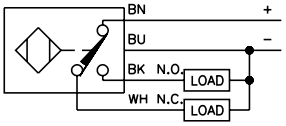



### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

## Nonembeddable Threaded Metal Barrels with Cable and DC Outputs

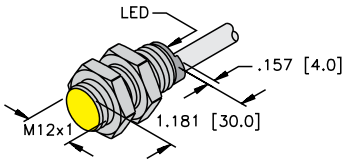
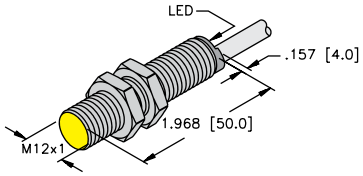
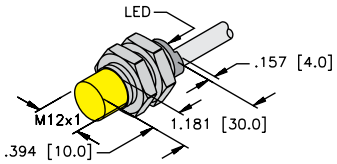
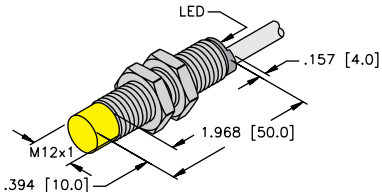
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni10U-M12-AN6X** 1634825 | Uprox | 10 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Ni10U-M12-AP6X** 1634805 | Uprox | 10 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Ni8U-M12-AN6X** 1644120 | Uprox | 8 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP67 | CPB | LCP | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Ni8U-M12-AP6X** 1644100 | Uprox | 8 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP67 | CPB | LCP | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Ni8U-M12E-AP6X** 1644102 | Uprox | 8 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP67 | CPB | LCP | N/A | YE | 2M/PVC | B | 3 | A4 |
| **Ni8U-EM12-AP6X** 1644300 | Uprox | 8 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | SS | LCP | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Ni8-M12-AD4X** 4411235 | Extended Range | 8 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 1 | A2 |
| **Ni8-M12-AN6X** 4611318 | Extended Range | 8 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Ni8-M12E-AN6X** 4611326 | | 8 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | B | 2 | A4 |
| **Ni8-M12-AP6X** 4611319 | Extended Range | 8 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Ni8-M12-VN6X** 4611321 | Ext. Range, Comp. Outputs | 8 | 4-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 4 | A4 |
| **Ni8-M12-VP6X** 4611322 | Ext. Range, Comp. Outputs | 8 | 4-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 5 | A4 |
| **Ni4-M12-AD4X** 44052 | | 4 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 1 | A2 |
| **Ni4-M12E-AD4X** 4405298 | | 4 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | B | 1 | A2 |
| **Ni4-M12-AP6X** 46052 | | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 3 | A4 |



We reserve the right to make technical alterations without prior notice.

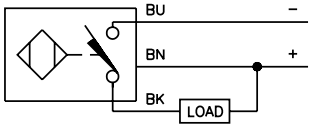
# Inductive Barrel Sensors | 12 mm

**Fully Threaded Metal Barrels with Cable and DC Outputs**

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   12 mm - Embeddable, Potted-In Cable | B   12 mm - Embeddable, Potted-In Cable |
| C   12 mm - Nonembeddable, Potted-In Cable | D   12 mm - Nonembeddable, Potted-In Cable | |

**Wiring Diagrams/Mating Cordsets**

1

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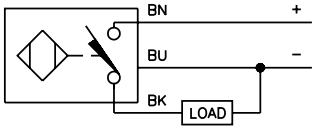


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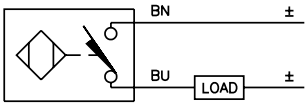



**A2 — 2-wire DC - (AD, RD, AG)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

**A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

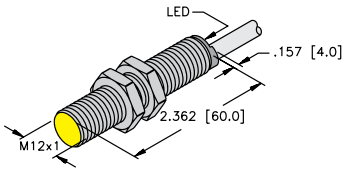
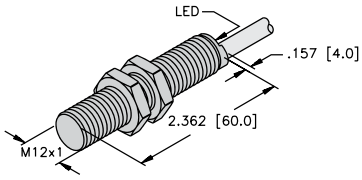
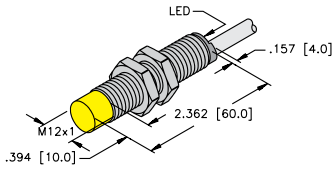
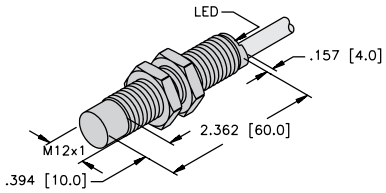
**Fully Threaded Metal Barrels with Cable and DC Outputs**

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi4-G12-AN6X** 1690706 | Extended Range | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | B | 1 | A4 |
| **Bi4-G12K-AN6X** 4670251 | Ext. Range, Short Barrel | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 1 | A4 |
| **Bi4-G12K-AP6X** 4670250 | Ext. Range, Short Barrel | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Bi2-G12-AN6X** 4635500 | | 2 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | B | 1 | A4 |
| **Bi2-G12-AN7X** 4730500 | TTL Compatible | 2 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤150 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | B | 1 | A4 |
| **Bi2-EG12-AP6X** 4605001 | | 2 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/PVC | B | 2 | A4 |
| **Bi2-G12-AP6X** 4635400 | | 2 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | B | 2 | A4 |
| **Bi2-G12K-AN6X** 46712 | Short Barrel | 2 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 1 | A4 |
| **Bi2-G12K-AP6X** 46702 | Short Barrel | 2 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Ni8-G12-AN6X** 4611327 | Extended Range | 8 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | D | 1 | A4 |
| **Ni8-G12K-AD4X** 4411230 | Short Barrel | 8 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | C | 3 | A2 |
| **Ni5-G12K-AN6X** 46713 | Short Barrel | 5 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | C | 2 | A4 |
| **Ni5-G12K-AP6X** 46703 | Short Barrel | 5 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | C | 2 | A4 |
| **Ni5-G12-AN6X** 4635700 | | 5 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | D | 1 | A4 |
| **Ni5-G12-AN7X** 1714500 | TTL Compatible | 5 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤150 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | D | 1 | A4 |
| **Ni5-G12-AP6X** 46356 | | 5 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | D | 2 | A4 |

We reserve the right to make technical alterations without prior notice.

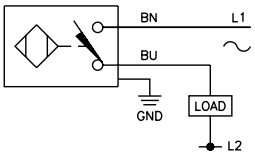
# Inductive Barrel Sensors | 12 mm

## Fully Threaded Metal Barrels with Cable and AC/DC Outputs

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   12 mm - Embeddable, Potted-In Cable | B   12 mm - Embeddable, Potted-In Cable, PTFE Coated |
| C   12 mm - Nonembeddable, Potted-In Cable | D   12 mm - Nonembeddable, Potted-In Cable, PTFE Coated | |

### Wiring Diagrams/Mating Cordsets

1




### A5 — 2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Minimum Load Current: | ≥3.0 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Inrush Current: | ≤3 A (≤20 ms, max 5 Hz) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | Power-On Effect: | Per IEC 947-5-2 |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA | Transient Protection: | Per EN 60947-5-2 |
| | AC: ≥120 mA; DC: ≥120 mA | Shock: | 30 g, 11 ms |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | AC: ≤100 mA; DC: ≤100 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Off-State (Leakage) Current: | ≤1.7 mA (AC) | | |
| | ≤1.5 mA (DC) | | |

### A6 — 2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Power-On Effect: | Per IEC 947-5-2 |
| | AC: ≤100 mA; DC: ≤100 mA | Transient Protection: | Per EN 60947-5-2 |
| Off-State (Leakage) Current: | ≤1.7 mA | Shock: | 30 g, 11 ms |
| Minimum Load Current: | ≥3.0 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

## Fully Threaded Metal Barrels with Cable and AC/DC Outputs

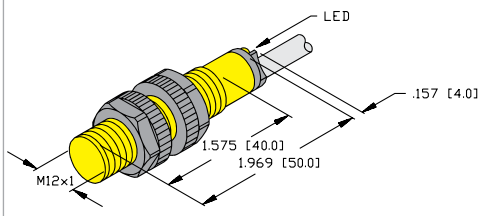
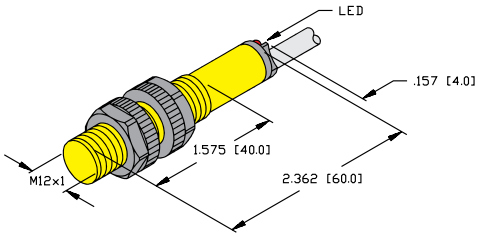
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi4-G12-ADZ32X** 4205030 | Extended Range | 4 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 1 | A5 |
| **Bi2-G12-ADZ32X** 4205000 | | 2 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 1 | A5 |
| **Bi2-G12-AZ33X** 1304002 | | 2 | 2-wire AC/DC | 35-250 VAC | 20 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 1 | A6 |
| **Bi2-GT12-ADZ32X/S34** 4205210 | PTFE, WFI | 2 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | TC | TC | N/A | YE | 2M/PVC | B | 1 | A5 |
| **Bi2-GT12-AZ33X/S34** 1304052 | PTFE, WFI | 2 | 2-wire AC/DC | 35-250 VAC | 20 | ≤200 | -25 to +70 | IP67 | TC | TC | N/A | YE | 2M/PVC | B | 1 | A6 |
| **Ni8-G12-ADZ32X** 4205400 | Extended Range | 8 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | C | 1 | A5 |
| **Ni4-G12-AZ33X** 1304202 | | 4 | 2-wire AC/DC | 35-250 VAC | 20 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | C | 1 | A6 |
| **Ni4-G12-ADZ32X** 4205200 | | 4 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | C | 1 | A5 |
| **Ni4-GT12-ADZ32X/S34** 4205210 | PTFE, WFI | 4 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | TC | TC | N/A | YE | 2M/PVC | D | 1 | A5 |
| **Ni4-GT12-AZ33X/S34** 1304294 | PTFE, WFI | 4 | 2-wire AC/DC | 35-250 VAC | 20 | ≤100 | -25 to +70 | IP67 | TC | TC | N/A | YE | 2M/PVC | D | 1 | A6 |



We reserve the right to make technical alterations without prior notice.

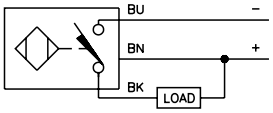
# Inductive Barrel Sensors | 12 mm

## Threaded Plastic Barrels with Cable and AC/DC Outputs

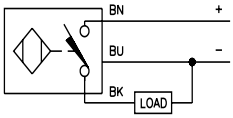
| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   12 mm - Embeddable/Nonembeddable, Plastic, Potted-In Cable | B   12 mm - Embeddable/Nonembeddable, Plastic, Potted-In Cable |

**Wiring Diagrams/Mating Cordsets**

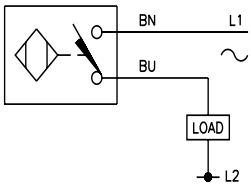
1




2




3




**A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

**A6 — 2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)**

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Power-On Effect: | Per IEC 947-5-2 |
| | AC: ≤100 mA; DC: ≤100 mA | Transient Protection: | Per EN 60947-5-2 |
| Off-State (Leakage) Current: | ≤1.7 mA | Shock: | 30 g, 11 ms |
| Minimum Load Current: | ≥3.0 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

## Threaded Plastic Barrels with Cable and AC/DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi3U-S12-AN6X** 1634520 | Uprox | 3 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP68 | PBT | PBT | N/A | YE | 2M/PVC | A | 1 | A4 |
| **Bi3U-S12-AP6X** 1634500 | Uprox | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP68 | PBT | PBT | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Bi2-S12-AN6X** 46531 | | 2 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | 2M/PVC | B | 1 | A4 |
| **Bi2-S12-AN7X** 1713800 | TTL Compatible | 2 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | 2M/PVC | B | 1 | A4 |
| **Bi2-S12-AP6X** 46530 | | 2 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | 2M/PVC | B | 2 | A4 |
| **Bi2-S12-AP7X/S100** 17555 | TTL Compatible, High Temp. 100 °C | 2 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +100 | IP67 | PA 12 | PA 12 | N/A | YE | 2M/PVC | B | 2 | A4 |
| **Bi2-S12-AZ31X** 13020 | | 2 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | RD | 2M/PVC | B | 3 | A6 |
| **Bi2-S12-AZ31X/S100** 1302001 | High Temp. 100 °C | 2 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +100 | IP67 | PA 12 | PA 12 | N/A | RD | 2M/PVC | B | 3 | A6 |
| **Ni8U-S12-AN6X** 1644520 | Uprox | 8 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | PBT | PBT | N/A | YE | 2M/PVC | A | 1 | A4 |
| **Ni8U-S12-AP6X** 1644500 | Uprox | 8 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | PBT | PBT | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Ni4-S12-AN6X** 46533 | | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | 2M/PVC | B | 1 | A4 |
| **Ni4-S12-AN7X** 1713900 | TTL Compatible | 4 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | 2M/PVC | B | 1 | A4 |
| **Ni4-S12-AP6X** 46532 | | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | 2M/PVC | B | 2 | A4 |
| **Ni4-S12-AZ31X** 13022 | | 4 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | RD | 2M/PVC | B | 3 | A6 |
| **Ni4-S12-AZ31X/S100** 1302201 | High Temp. 100 °C | 4 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤100 | -25 to +100 | IP67 | PA 12 | PA 12 | N/A | RD | 2M/PVC | B | 3 | A6 |

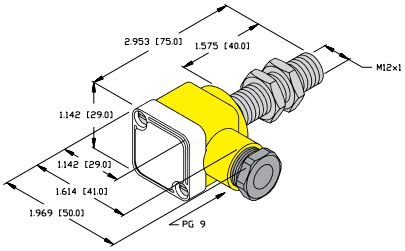
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

## Threaded Barrels with Terminal Chamber and DC Outputs

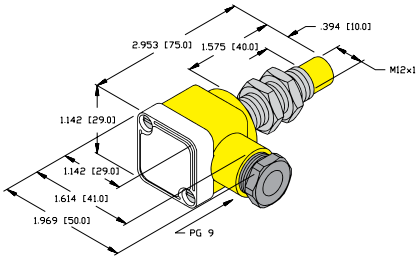
| Housing Style | Dimension Drawings |
|---|---|

A



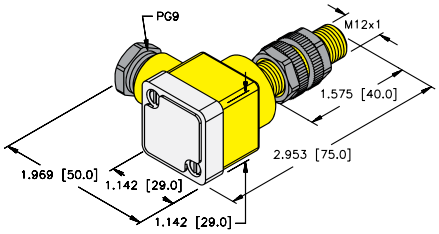

12 mm - Embeddable, Terminal Chamber

B




12 mm - Nonembeddable, Terminal Chamber

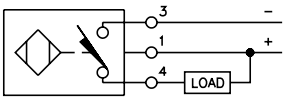
C



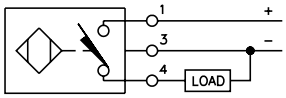

12 mm - Embeddable/Nonembeddable, Plastic, Terminal Chamber

### Wiring Diagrams/Mating Cordsets

1




2

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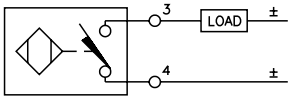



### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm

## Threaded Barrels with Terminal Chamber and DC Outputs

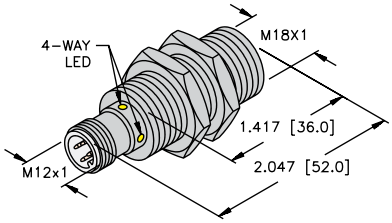
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi3U-EG12SK-AP6X** 1634400 | Uprox | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP68 | SS | PBT | N/A | YE | A | 2 | A4 |
| **Bi3U-P12SK-AP6X** 1634700 | Uprox | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP68 | PA 12 | PA 12 | N/A | YE | C | 2 | A4 |
| **Bi2-G12SK-AN6X2** 4636500 | | 2 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | GN | YE | A | 1 | A4 |
| **Bi2-G12SK-AP6X2** 4636400 | | 2 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | GN | YE | A | 2 | A4 |
| **Bi2-P12SK-AD4X** 4453050 | | 2 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | C | 3 | A2 |
| **Bi2-P12SK-AN6X2** 4654000 | | 2 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | GN | YE | C | 1 | A4 |
| **Bi2-P12SK-AP6X2** 4653900 | | 2 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | GN | YE | C | 2 | A4 |
| **Ni8U-EG12SK-AP6X** 1644400 | Uprox | 8 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | SS | PBT | N/A | YE | B | 2 | A4 |
| **Ni5-G12SK-AP6X2** 46366 | | 5 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | GN | YE | B | 2 | A4 |
| **Ni5-P12SK-AP6X2** 4654100 | | 5 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | GN | YE | C | 2 | A4 |



We reserve the right to make technical alterations without prior notice.

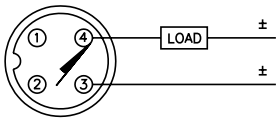
# Inductive Barrel Sensors | 18 mm

## Embeddable Threaded Metal Barrels with Connector and DC Outputs

| Housing Style | Dimension Drawings |
|---|---|
| | A   18 mm - Embeddable M12 Eurofast Connection |

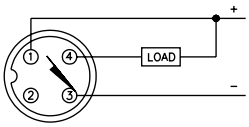
### Wiring Diagrams/Mating Cordsets

1



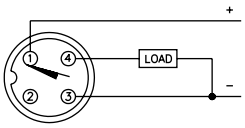

Mating Cordset: RK 4.2T-*

2



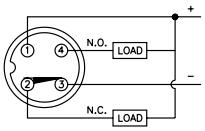

Mating Cordset: RK 4T-*; RKV 4T-*

3



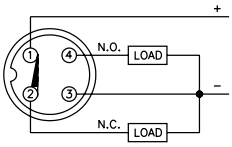

Mating Cordset: RK 4T-*; RKV 4T-*

4




Mating Cordset: RK 4.4T-*; RKV 4.4T-*

5




Mating Cordset: RK 4.4T-*

### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

## Embeddable Threaded Metal Barrels with Connector and DC Outputs

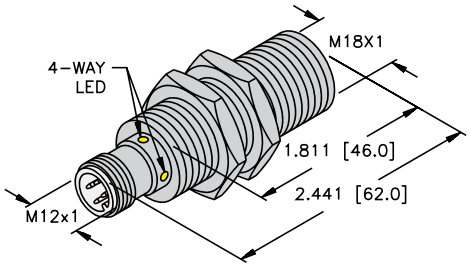
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi10U-M18-AN6X-H1141** 1644847 | Uprox3 | 10 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -25 to +70 | IP68 | CPB | LCP | N/A | YE | A | 2 | A4 |
| **Bi10U-M18-AP6X-H1141** 1644830 | Uprox3 | 10 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -25 to +70 | IP68 | CPB | LCP | N/A | YE | A | 3 | A4 |
| **Bi10U-M18-VP6X-H1141** 1644844 | Uprox3, Comp. Outputs | 10 | 4-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -25 to +70 | IP68 | CPB | LCP | N/A | YE | A | 5 | A4 |
| **Bi8U-M18-AN6X-H1141** 1644737 | Uprox+ | 8 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | A | 2 | A4 |
| **Bi8U-EM18-AN6X-H1141** 1644738 | Uprox+ | 8 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | SS | LCP | N/A | YE | A | 2 | A4 |
| **Bi8U-M18-AP6X-H1141** 1644731 | Uprox+ | 8 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | A | 3 | A4 |
| **Bi8U-EM18-AP6X-H1141** 1644734 | Uprox+ | 8 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | SS | LCP | N/A | YE | A | 3 | A4 |
| **Bi8-M18-AN6X-H1141** 4615100 | Extended Range | 8 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 2 | A4 |
| **Bi8-M18-AP6X-H1141** 46150 | Extended Range | 8 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 3 | A4 |
| **Bi8-EM18H-AP6X-H1141** 4615094 | Ext. Range, Stoneface | 8 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | SS | SF | N/A | YE | A | 3 | A4 |
| **Bi8-EM18-AP6X-H1141/S1589** 4615099 | Weldguard | 8 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | SS | WG | N/A | YE | A | 3 | A4 |
| **Bi8-M18-VN4X-H1141** 4590702 | Ext. Range, Comp. Outputs | 8 | 4-wire DC NPN | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 4 | A4 |
| **Bi8-M18-VP4X-H1141** 4590701 | Ext. Range, Comp. Outputs | 8 | 4-wire DC PNP | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 5 | A4 |
| **Bi7-M18-AD4X-H1141** 4414541 | Extended Range | 7 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A2 |
| **Bi5U-M18-AN6X-H1141** 1635150 | Uprox | 5 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | A | 2 | A4 |
| **Bi5U-EM18-AN6X-H1141** 1635350 | Uprox | 5 | 3-wire DC NPN | 10-30 VDC | 2500 | ≤200 | -30 to +85 | IP68 | SS | PBT | N/A | YE | A | 2 | A4 |
| **Bi5U-M18-AP6X-H1141** 1635140 | Uprox | 5 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | A | 3 | A4 |
| **Bi5U-EM18-AP6X-H1141** 1635340 | Uprox | 5 | 3-wire DC PNP | 10-30 VDC | 2500 | ≤200 | -30 to +85 | IP68 | SS | PBT | N/A | YE | A | 3 | A4 |
| **Bi5-M18-AD4X-H1141** 44145 | | 5 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A2 |
| **Bi5-M18-AN6X-H1141** 46146 | | 5 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 2 | A4 |
| **Bi5-M18-AP6X-H1141** 46145 | | 5 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 3 | A4 |
| **Bi5-EM18-AP6X-H1141** 4614501 | | 5 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 3 | A4 |
| **Bi5-M18-VN4X-H1141** 15718 | Comp. Outputs | 5 | 4-wire DC NPN | 10-65 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 4 | A4 |
| **Bi5-EM18-VN4X-H1141** 4614699 | Comp. Outputs | 5 | 4-wire DC NPN | 10-65 VDC | 1000 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 4 | A4 |
| **Bi5-M18-VP4X-H1141** 15618 | Comp. Outputs | 5 | 4-wire DC PNP | 10-65 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 5 | A4 |



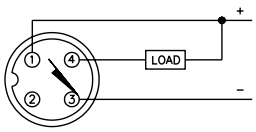
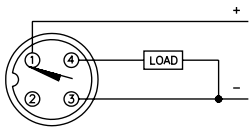
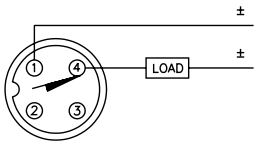
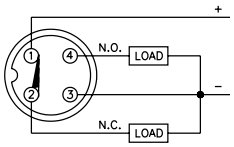
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

**Embeddable Threaded Metal Barrels with Connector and DC Outputs**

| Housing Style | Dimension Drawings |
|---|---|
| | A   18 mm - Embeddable, M12 Eurofast Connection |

**Wiring Diagrams/Mating Cordsets**

| 1 | 2 | 3 | 4 |
|---|---|---|---|
|   |   |   |   |
| Mating Cordset: RK 4T-*; RKC 4T-*/S1587 | Mating Cordset: RK 4T-*; RKC 4T-*/S1587 | Mating Cordset: RK 4.23T-* | Mating Cordset: RK 4.4T-* |

**A2 — 2-wire DC - (AD, RD, AG)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

**A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

## Embeddable Threaded Metal Barrels with Connector and DC Outputs

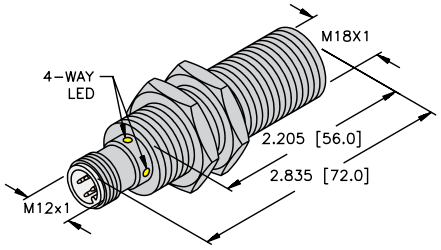
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi8U-EM18M-AP6X2-H1141/S1589** 1644771 | Uprox+, Weldguard | 8 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | SS | WG | GN | YE | A | 2 | A4 |
| **Bi8U-M18M-VP44X-H1141** 1634877 | Uprox+, Comp. Outputs | 8 | 4-wire DC PNP | 10-55 VDC | 1500 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | A | 4 | A4 |
| **Bi8-M18M-AP6X-H1141** 4615083 | Extended Range | 8 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +75 | IP67 | CPB | PBT | N/A | YE | A | 2 | A4 |
| **Bi5U-M18M-AD4X-H1144** 4405066 | Uprox+ | 5 | 2-wire DC | 10-65 VDC | 10 | ≤100 | -30 to +85 | IP68 | TC | LCP | N/A | YE | A | 3 | A2 |
| **Bi5U-M18-AN6X-H1141/S395** 1635154 | Uprox | 5 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A4 |
| **Bi5U-M18-AP6X-H1141/S395** 1635141 | Uprox | 5 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | A | 2 | A4 |
| **Bi5U-EM18-AP6X-H1141/S395** 1635342 | Uprox | 5 | 3-wire DC PNP | 10-30 VDC | 2500 | ≤200 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | A | 2 | A4 |
| **Bi5U-EM18H-AN6X2-H1141/S395** 1635146 | Uprox, Stoneface | 5 | 3-wire DC NPN | 10-30 VDC | 2500 | ≤200 | -30 to +85 | IP68 | SS | SF | GN | YE | A | 1 | A4 |
| **Bi5U-EM18H-AN6X2-H1141/S395/S1589** 1635196 | Uprox, Weldguard | 5 | 3-wire DC NPN | 10-30 VDC | 2500 | ≤200 | -30 to +85 | IP68 | SS | WG | GN | YE | A | 1 | A4 |
| **Bi5U-EM18H-AP6X2-H1141/S395** 1635158 | Uprox, Stoneface | 5 | 3-wire DC PNP | 10-30 VDC | 2500 | ≤200 | -30 to +85 | IP68 | SS | SF | GN | YE | A | 2 | A4 |
| **Bi5U-EM18-AP6X2-H1141/S395/S1589** 1635197 | Uprox, Weldguard | 5 | 3-wire DC PNP | 10-30 VDC | 2500 | ≤200 | -30 to +85 | IP68 | SS | WG | GN | YE | A | 2 | A4 |
| **Bi5U-EM18M-AP6X2-H1141** 1635349 | Uprox | 5 | 3-wire DC PNP | 10-30 VDC | 2500 | ≤200 | -30 to +85 | IP68 | SS | PBT | GN | YE | A | 2 | A4 |



We reserve the right to make technical alterations without prior notice.

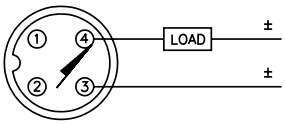
# Inductive Barrel Sensors | 18 mm

## Embeddable Threaded Metal Barrels with Connector and DC Outputs

| Housing Style | Dimension Drawings |
|---|---|
| | A   18 mm - Embeddable, Ext. Barrel Length, M12 Eurofast Connection |

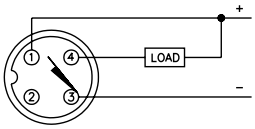
### Wiring Diagrams/Mating Cordsets

1



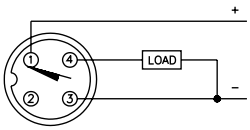

Mating Cordset: RK 4.2T-*

2




Mating Cordset: RK 4T-*; RKC 4T-*/S1587

3




Mating Cordset: RK 4T-*; RKV 4T-*; RKC 4T-*/S1587

### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

## Embeddable Threaded Metal Barrels with Connector and DC Outputs

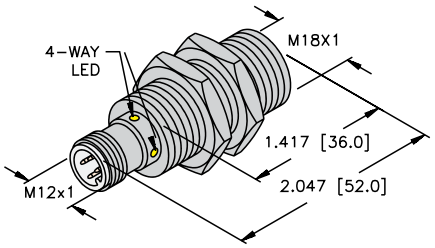
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi8U-EM18E-AP6X-H1141** 1634865 | Uprox+ | 8 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | SS | LCP | N/A | YE | A | 3 | A4 |
| **Bi8-M18E-AN6X-H1141** 4615190 | Extended Range | 8 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 2 | A4 |
| **Bi8-EM18HE-AN6X-H1141** 4615194 | Ext. Range, Stoneface | 8 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | SS | SF | N/A | YE | A | 2 | A4 |
| **Bi8-EM18E-AN6X-H1141/S1589** 4615193 | Ext. Range, Weldguard | 8 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | SS | WG | N/A | YE | A | 2 | A4 |
| **Bi8-EM18E-AP6X-H1141** 46150952 | Extended Range | 8 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | A | 3 | A4 |
| **Bi8-EM18HE-AP6X-H1141** 4615095 | Ext. Range, Stoneface | 8 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | SS | SF | N/A | YE | A | 3 | A4 |
| **Bi8-EM18E-AP6X-H1141/S1589** 4615096 | Ext. Range, Weldguard | 8 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | SS | WG | N/A | YE | A | 3 | A4 |
| **Bi7-M18E-AD4X-H1141** 4414580 | Extended Range | 7 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A2 |
| **Bi5U-M18E-AN6X-H1141** 1635122 | Uprox | 5 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | A | 2 | A4 |
| **Bi5U-M18E-AP6X-H1141** 1635103 | Uprox | 5 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | A | 3 | A4 |
| **Bi5-M18E-AD4X-H1141** 4414591 | | 5 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A2 |
| **Bi5-M18E-AN6X-H1141** 4614697 | | 5 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 2 | A4 |



We reserve the right to make technical alterations without prior notice.

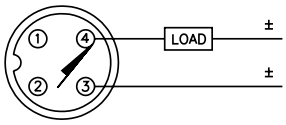
# Inductive Barrel Sensors | 18 mm

**Embeddable Threaded PTFE Coated Metal Barrels with Connector and DC Outputs**

| Housing Style | Dimension Drawings |
|---|---|
| | A   18 mm - Embeddable, M12 Eurofast Connection, PTFE Coated |

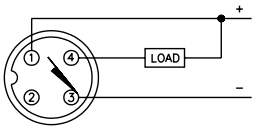
**Wiring Diagrams/Mating Cordsets**

1



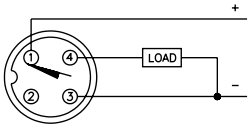

Mating Cordset: RK 4.2T-*

2




Mating Cordset: RK 4T-*; RKC 4T-*/S1587

3




Mating Cordset: RK 4T-*

**A2 — 2-wire DC - (AD, RD, AG)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

**A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

## Embeddable Threaded PTFE Coated Metal Barrels with Connector and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BI10U-MT18-AN6X-H1141** 1644858 | Uprox3, PTFE | 10 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -25 to +70 | IP68 | TC | TC | N/A | YE | A | 2 | A4 |
| **Bi10U-MT18-AP6X-H1141** 1644831 | Uprox3, PTFE | 10 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -25 to +70 | IP68 | TC | TC | N/A | YE | A | 3 | A4 |
| **Bi10U-MT18-AP6X2-H1141** 1644905 | Uprox3, PTFE | 10 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -25 to +70 | IP68 | TC | TC | GN | YE | A | 3 | A4 |
| **Bi8U-MT18-AN6X-H1141** 1644739 | Uprox+, PTFE | 8 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | TC | TC | N/A | YE | A | 2 | A4 |
| **Bi8U-MT18-AP6X-H1141** 1644730 | Uprox+, PTFE | 8 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | TC | TC | N/A | YE | A | 3 | A4 |
| **Bi8U-MT18-AN6X-H1141/S1589** 1644791 | Uprox+, PTFE, Weldguard | 8 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | TC | WG | N/A | YE | A | 2 | A4 |
| **Bi7-MT18H-AD4X-H1141** 44145801 | Ext. Range, PTFE | 7 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | TC | SF | N/A | YE | A | 1 | A2 |
| **Bi5U-MT18-AN6X-H1141** 1635250 | Uprox, PTFE | 5 | 3-wire DC NPN | 10-30 VDC | 2500 | ≤200 | -30 to +85 | IP67 | TC | TC | N/A | YE | A | 2 | A4 |
| **Bi5U-MT18-AP6X-H1141** 1635240 | Uprox, PTFE | 5 | 3-wire DC PNP | 10-30 VDC | 2500 | ≤200 | -30 to +85 | IP67 | TC | TC | N/A | YE | A | 3 | A4 |
| **Bi5U-MT18-AP6X2-H1141** 1635245 | Uprox, PTFE | 5 | 3-wire DC PNP | 10-30 VDC | 2500 | ≤200 | -30 to +85 | IP67 | TC | TC | GN | YE | A | 3 | A4 |



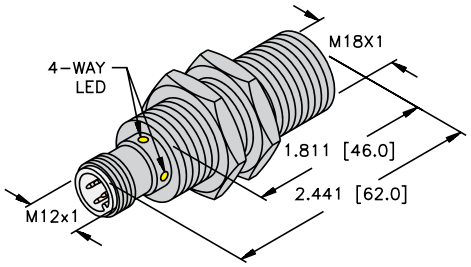
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

**Embeddable Threaded PTFE Coated Metal Barrels with Connector and DC Outputs**

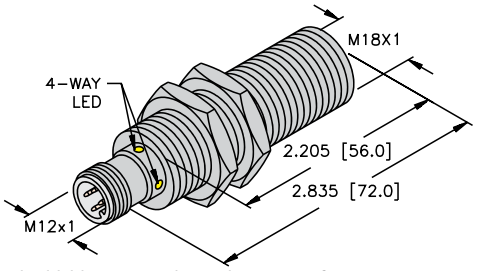
| Housing Style | Dimension Drawings |
|---|---|

A




18 mm - Embeddable, M12 Eurofast Connection, PTFE Coated

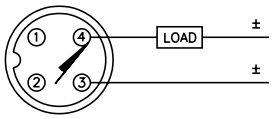
B




18 mm - Embeddable, Ext. Barrel Length, M12 Eurofast Connection, PTFE Coated

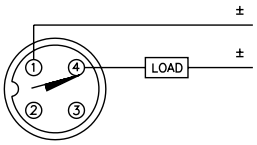
**Wiring Diagrams/Mating Cordsets**

1



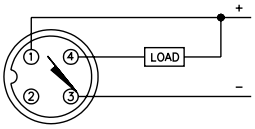

Mating Cordset: RK 4.2T-*

2



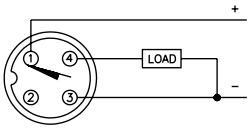

Mating Cordset: RK 4.23T-*

3




Mating Cordset: RK 4T-*; RKC 4T-*/S1587

4




Mating Cordset: RK 4T-*; RKC 4T-*/S1587

**A2 — 2-wire DC - (AD, RD, AG)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

**A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

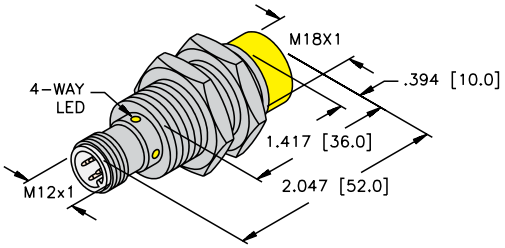
## Embeddable Threaded PTFE Coated Metal Barrels with Connector and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi8U-MT18M-AP6X2-H1141** 1644740 | Uprox+, PTFE | 8 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | TC | LCP | GN | YE | A | 4 | A4 |
| **Bi8U-MT18M-AP6X2-H1141/S1589** 16447411 | Uprox+, PTFE, Weldguard | 8 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | TC | WG | GN | YE | A | 4 | A4 |
| **Bi7-MT18HE-AD4X-H1141** 4414597 | PTFE, Stoneface | 7 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | TC | SF | N/A | YE | B | 1 | A2 |
| **Bi7-MT18HE-AD4X-H1144** 4414598 | PTFE, Stoneface | 7 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | TC | SF | N/A | YE | B | 2 | A2 |
| **Bi7-MT18HE-AD4X-H1141/S1589** 4414588 | PTFE, Weldguard | 7 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | TC | WG | N/A | YE | B | 1 | A2 |
| **Bi7-MT18HE-AD4X-H1144/S1589** 4414599 | PTFE, Weldguard | 7 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | TC | WG | N/A | YE | B | 2 | A2 |
| **Bi5U-MT18E-AP6X2-H1141** 1635247 | Uprox, PTFE | 5 | 3-wire DC PNP | 10-30 VDC | 2500 | ≤200 | -30 to +85 | IP68 | TC | TC | GN | YE | B | 4 | A4 |
| **Bi5U-MT18M-AP6X2-H1141** 1635252 | Uprox, PTFE | 5 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | TC | TC | GN | YE | A | 4 | A4 |
| **Bi5U-MT18H-AN6X2-H1141/S395** 1635225 | Uprox, PTFE, Stoneface | 5 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | TC | SF | GN | YE | A | 3 | A4 |
| **Bi5U-MT18-AN6X2-H1141/S395/S1589** 1635290 | Uprox, PTFE, Weldguard | 5 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | TC | WG | GN | YE | A | 3 | A4 |
| **Bi5U-MT18-AP6X-H1141/S395** 1635231 | Uprox, PTFE | 5 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | TC | TC | N/A | YE | A | 4 | A4 |
| **Bi5U-MT18H-AP6X2-H1141/S395** 1635220 | Uprox, PTFE, Stoneface | 5 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | TC | SF | GN | YE | A | 4 | A4 |
| **Bi5U-MT18-AP6X2-H1141/S395/S1589** 1635291 | Uprox, PTFE, Weldguard | 5 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | TC | WG | GN | YE | A | 4 | A4 |

We reserve the right to make technical alterations without prior notice.

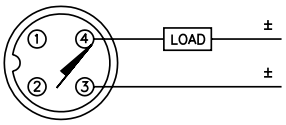
# Inductive Barrel Sensors | 18 mm

## Nonembeddable Threaded Metal Barrels with Connector and DC Outputs

| Housing Style | Dimension Drawings |
|---|---|
| | A   18 mm - Nonembeddable, M12 Eurofast Connection |

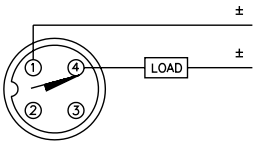
### Wiring Diagrams/Mating Cordsets

1



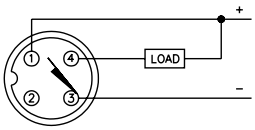

Mating Cordset: RK 4.2T-*

2



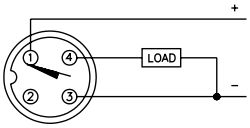

Mating Cordset: RK 4.23T-*

3



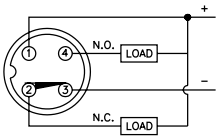

Mating Cordset: RK 4T-*; RKV 4T-*

4



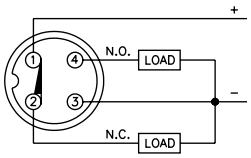

Mating Cordset: RK 4T-*; RKV 4T-*

5




Mating Cordset: RK 4.4T-*

6




Mating Cordset: RK 4.4T-*

### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

## Nonembeddable Threaded Metal Barrels with Connector and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni15U-M18-AN6X-H1141** 1635335 | Uprox+ | 15 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | A | 3 | A4 |
| **Ni15U-EM18-AN6X-H1141** 1635336 | Uprox+ | 15 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | SS | LCP | N/A | YE | A | 3 | A4 |
| **Ni15U-M18-AP6X-H1141** 1635331 | Uprox+ | 15 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | A | 4 | A4 |
| **Ni15U-EM18-AP6X-H1141** 1635332 | Uprox+ | 15 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | SS | LCP | N/A | YE | A | 4 | A4 |
| **Ni14-M18-AD4X-H1141** 4417241 | Extended Range | 14 | 2-wire DC | 10-65 VDC | 500 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A2 |
| **Ni14-M18-AD4X-H1144** 4417290 | Extended Range | 14 | 2-wire DC | 10-65 VDC | 500 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 2 | A2 |
| **Ni14-M18-AN6X-H1141** 4611410 | Extended Range | 14 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 3 | A4 |
| **Ni14-M18-AP6X-H1141** 4611400 | Extended Range | 14 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 4 | A4 |
| **Ni14-M18-VN4X-H1141** 4590603 | Ext. Range, Comp. Outputs | 14 | 4-wire DC NPN | 10-65 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 5 | A4 |
| **Ni14-M18-VP4X-H1141** 4590602 | Ext. Range, Comp. Outputs | 14 | 4-wire DC PNP | 10-65 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 6 | A4 |
| **Ni12U-M18-AN6X-H1141** 1645150 | Uprox | 12 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | CPB | LCP | N/A | YE | A | 3 | A4 |
| **Ni12U-EM18-AN6X-H1141** 1645350 | Uprox | 12 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | SS | PBT | N/A | YE | A | 3 | A4 |
| **Ni12U-M18-AP6X-H1141** 1645140 | Uprox | 12 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | CPB | LCP | N/A | YE | A | 4 | A4 |
| **Ni12U-M18-AP6X2-H1141** 1645145 | Uprox | 12 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | CPB | LCP | GN | YE | A | 4 | A4 |
| **Ni12U-EM18-AP6X-H1141** 1645340 | Uprox | 12 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | SS | PBT | N/A | YE | A | 4 | A4 |
| **Ni12U-EM18-AP6X2-H1141** 1645345 | Uprox | 12 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | SS | PBT | GN | YE | A | 4 | A4 |
| **Ni10-M18-AN6X-H1141** 4614892 | | 10 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 3 | A4 |
| **Ni10-M18-AP6X-H1141** 4641291 | | 10 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 4 | A4 |
| **Ni8-M18-AD4X-H1141** 44147 | | 8 | 2-wire DC | 10-65 VDC | 500 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A2 |
| **Ni8-M18-AD4X-H1144** 4411288 | | 8 | 2-wire DC | 10-65 VDC | 500 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 2 | A2 |
| **Ni8-M18-AN6X-H1141** 46148 | | 8 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 3 | A4 |
| **Ni8-M18-AP6X-H1141** 46147 | | 8 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 4 | A4 |
| **Ni8-M18-VN4X-H1141** 15719 | Comp. Outputs | 8 | 4-wire DC NPN | 10-65 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 5 | A4 |
| **Ni8-M18-VP4X-H1141** 15619 | Comp. Outputs | 8 | 4-wire DC PNP | 10-65 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 6 | A4 |

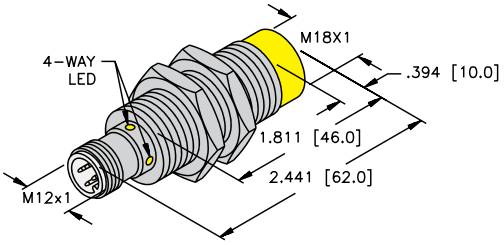
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

## Nonembeddable Threaded Metal Barrels with Connector and DC Outputs

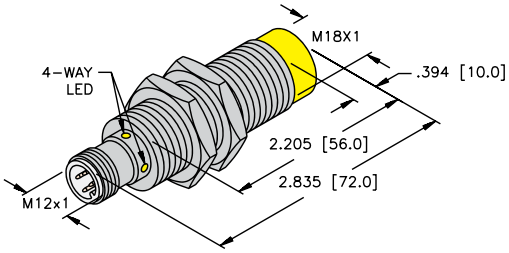
| Housing Style | Dimension Drawings |
|---|---|

A




18 mm - Nonembeddable, M12 Eurofast Connection

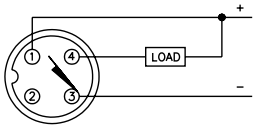
B




18 mm - Nonembeddable, Ext. Barrel Length M12 Eurofast Connection

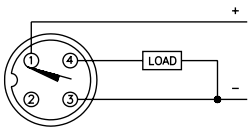
### Wiring Diagrams/Mating Cordsets

1



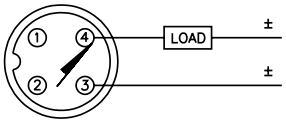

Mating Cordset: RK 4T-*; RKC 4T-*/S1587

2



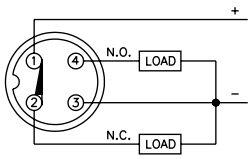

Mating Cordset: RK 4T-*; RKC 4T-*/S1587

3




Mating Cordset: RK 4.2T-*

4




Mating Cordset: RK 4.4T-*

### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

## Nonembeddable Threaded Metal Barrels with Connector and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni14-M18E-AD4X-H1141** 4417292 | Extended Range | 14 | 2-wire DC | 10-65 VDC | 500 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | B | 3 | A2 |
| **Ni14-M18E-AN6X-H1141** 4611483 | Extended Range | 14 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | B | 1 | A4 |
| **Ni14-EM18E-AN6X-H1141/S1589** 4611494 | Ext. Range, Weldguard | 14 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | SS | WG | N/A | YE | B | 1 | A4 |
| **Ni14-M18E-AP6X-H1141** 4611489 | Extended Range | 14 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | B | 2 | A4 |
| **Ni14-EM18E-AP6X-H1141/S1589** 4611495 | Ext. Range, Weldguard | 14 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | SS | WG | N/A | YE | B | 2 | A4 |
| **Ni12U-M18-AN6X-H1141/S395** 1645151 | Uprox | 12 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | A | 1 | A4 |
| **Ni12U-EM18-AP6X2-H1141/S395** 1645304 | Uprox | 12 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | SS | PBT | GN | YE | A | 2 | A4 |
| **Ni12U-EM18-AN6X2-H1141/S395/S1589** 1645490 | Uprox, Weldguard | 12 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | SS | WG | GN | YE | A | 1 | A4 |
| **Ni12U-EM18-AP6X2-H1141/S395/S1589** 1645491 | Uprox, Weldguard | 12 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | SS | WG | GN | YE | A | 2 | A4 |
| **Ni12U-M18E-AP6X-H1141** 1645143 | Uprox | 12 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | CPB | LCP | N/A | YE | B | 2 | A4 |
| **Ni12U-M18-AP6X-H1141/S395** 1645142 | Uprox | 12 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | A | 2 | A4 |
| **Ni12U-M18M-VP4X-H1141** 1581458 | Uprox, Comp. Outputs | 12 | 4-wire DC PNP | 10-65 VDC | 1500 | ≤200 | -30 to +85 | IP68 | CPB | PBT | N/A | YE | A | 4 | A4 |
| **Ni10-M18E-AN6X-H1141** 4614894 | | 10 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | B | 1 | A4 |
| **Ni10-M18E-AP6X-H1141** 4641294 | | 10 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | B | 2 | A4 |
| **Ni8-M18E-AD4X-H1141** 4411210 | | 8 | 2-wire DC | 10-65 VDC | 500 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | B | 3 | A2 |
| **Ni8-M18E-VP4X-H1141** 1561990 | Comp. Outputs | 8 | 4-wire DC PNP | 10-65 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | B | 4 | A4 |

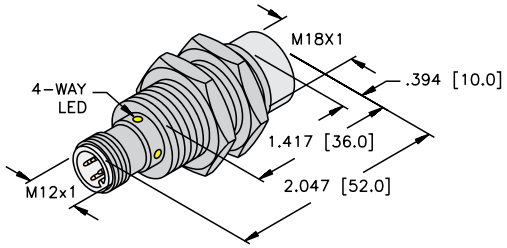
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

## Nonembeddable Threaded PTFE Coated Metal Barrels with Connector and DC Outputs

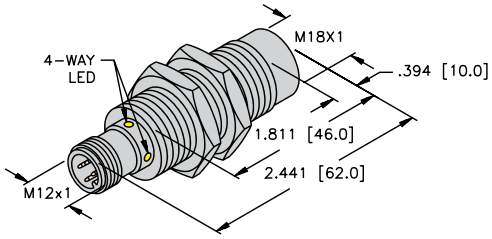
| Housing Style | Dimension Drawings |
|---|---|

A



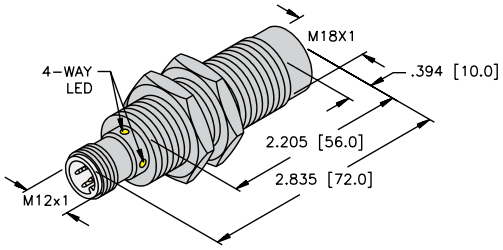

18 mm - Nonembeddable, M12 Eurofast Connection, PTFE Coated

B




18 mm - Nonembeddable, M12 Eurofast Connection, PTFE Coated

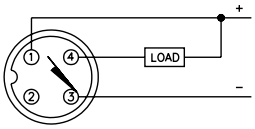
C




18 mm - Nonembeddable, Ext. Barrel Length M12 Eurofast Connection, PTFE Coated

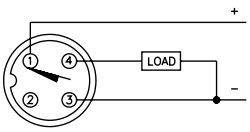
### Wiring Diagrams/Mating Cordsets

1




Mating Cordset: RK 4T-*; RKC 4T-*/S1587

2




Mating Cordset: RK 4T-*; RKC 4T-*/S1587

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current |
| | ≥170 mA on 150 mA Load Current |
| | ≥120 mA on 100 mA Load Current |
| Off-State (Leakage) Current: | ≤0.1 mA |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) |
| | ≤20 mA (Uprox+, Uprox3) |
| Time Delay Before Availability: | ≤8 ms |
| Power-On Effect: | Per IEC 947-5-2 |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Transient Protection: | Per EN 60947-5-2 |
| Temperature Drift: | ≤±10% |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

## Nonembeddable Threaded PTFE Coated Metal Barrels with Connector and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni15U-MT18-AN6X-H1141** 1635337 | Uprox+, PTFE | 15 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | TC | TC | N/A | YE | A | 1 | A4 |
| **Ni15U-MT18-AN6X-H1141/S1589** 16353370 | Uprox+, PTFE, Weldguard | 15 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | TC | WG | N/A | YE | A | 1 | A4 |
| **Ni15U-MT18-AP6X-H1141** 1635333 | Uprox+, PTFE | 15 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | TC | TC | N/A | YE | A | 2 | A4 |
| **Ni15U-MT18-AP6X-H1141/S1589** 1635333-1 | Uprox+, PTFE, Weldguard | 15 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | TC | WG | N/A | YE | A | 2 | A4 |
| **Ni15U-MT18M-AP6X2-H1141** 1635338 | Uprox+, PTFE | 15 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | TC | TC | GN | YE | B | 2 | A4 |
| **Ni15U-MT18M-AP6X2-H1141/S1589** 16352920 | Uprox+, PTFE, Weldguard | 15 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | TC | WG | GN | YE | B | 2 | A4 |
| **Ni14-MT18E-AP6X-H1141/S1589** 4611497 | Ext. Range, PTFE, Weldguard | 14 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | TC | WG | N/A | YE | C | 2 | A4 |
| **Ni12U-MT18-AN6X-H1141** 1645250 | Uprox, PTFE | 12 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | TC | TC | N/A | YE | A | 1 | A4 |
| **Ni12U-MT18-AP6X-H1141** 1645240 | Uprox, PTFE | 12 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | TC | TC | N/A | YE | A | 2 | A4 |
| **Ni12U-MT18-AP6X-H1141/S1589** 1645292 | Uprox, Weldguard | 12 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | TC | WG | N/A | YE | A | 2 | A4 |
| **Ni12U-MT18-AP6X2-H1141** 1645245 | Uprox, PTFE | 12 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | TC | TC | GN | YE | A | 2 | A4 |
| **Ni12U-MT18-AP6X2-H1141/S1589** 1645293 | Uprox, Weldguard | 12 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | TC | WG | GN | YE | A | 2 | A4 |
| **Ni12U-MT18-AP6X-H1141/S395** 1645242 | Uprox, PTFE | 12 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | TC | TC | N/A | YE | B | 2 | A4 |
| **Ni12U-MT18-AP6X2-H1141/S395** 1645246 | Uprox, PTFE | 12 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | TC | TC | GN | YE | B | 2 | A4 |
| **Ni12U-MT18-AP6X2-H1141/S395/ S1589** 1645291 | Uprox, PTFE, Weldguard | 12 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | TC | WG | GN | YE | B | 2 | A4 |

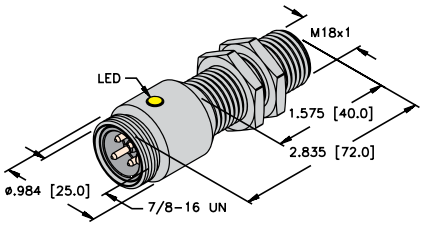
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

## Fully Threaded Metal Barrels with Connector and AC/DC Outputs

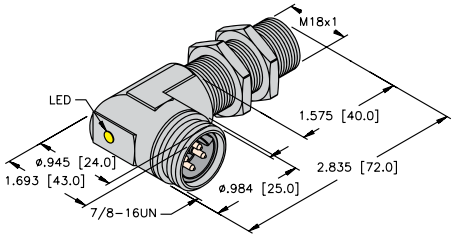
| Housing Style | Dimension Drawings |
|---|---|

A



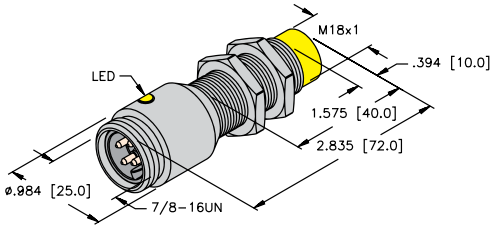

18 mm - Embeddable, 7/8" Minifast Connection

B



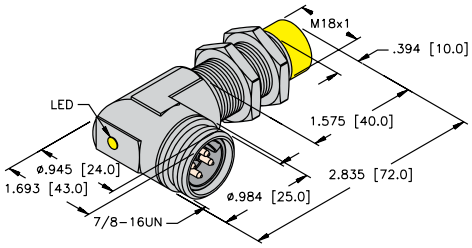

18 mm - Embeddable, Right Angle, 7/8" Minifast Connection

C




18 mm - Nonembeddable, 7/8" Minifast Connection

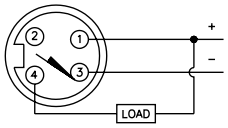
D




18 mm - Nonembeddable, 7/8" Minifast Right Angle Connection

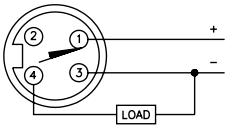
### Wiring Diagrams/Mating Cordsets

1



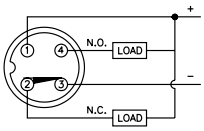

Mating Cordset: RKM 40-*M

2



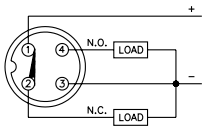

Mating Cordset: RKM 40-*M

3




Mating Cordset: RKM 40-*M

4




Mating Cordset: RKM 40-*M

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current |
| | ≥170 mA on 150 mA Load Current |
| | ≥120 mA on 100 mA Load Current |
| Off-State (Leakage) Current: | ≤0.1 mA |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) |
| | ≤20 mA (Uprox+, Uprox3) |
| Time Delay Before Availability: | ≤8 ms |
| Power-On Effect: | Per IEC 947-5-2 |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Transient Protection: | Per EN 60947-5-2 |
| Temperature Drift: | ≤±10% |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

**Fully Threaded Metal Barrels with Connector and AC/DC Outputs**

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi5-G18-AN6X-B1341** 46952 | | 5 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A4 |
| **Bi5-G18-AP6X-B1341** 46963 | | 5 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 2 | A4 |
| **Bi5-G18-AN6X-B1441** 46956 | | 5 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | B | 1 | A4 |
| **Bi5-G18-AP6X-B1441** 46967 | | 5 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | B | 2 | A4 |
| **Ni10-G18-AN6X-B1341** 46953 | | 10 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | C | 1 | A4 |
| **Ni10-G18-AP6X-B1341** 46964 | | 10 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | C | 2 | A4 |
| **Ni10-G18-AN6X-B1441** 46957 | | 10 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | D | 1 | A4 |
| **Ni10-G18-AP6X-B1441** 46968 | | 10 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | D | 2 | A4 |
| **Ni10-G18-VN6X-B1441** 46991 | Comp. Outputs | 10 | 4-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | D | 3 | A4 |
| **Ni10-G18-VP6X-B1441** 4699190 | Comp. Outputs | 10 | 4-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | D | 4 | A4 |



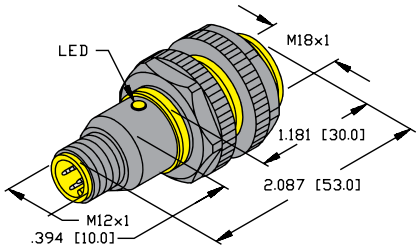
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

## Threaded Plastic Barrels with Connector and DC Outputs

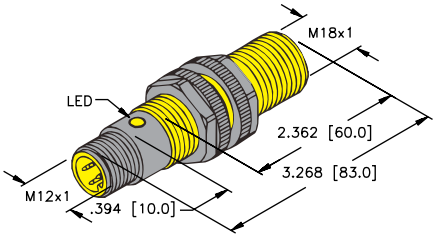
| Housing Style | Dimension Drawings |
|---|---|

A



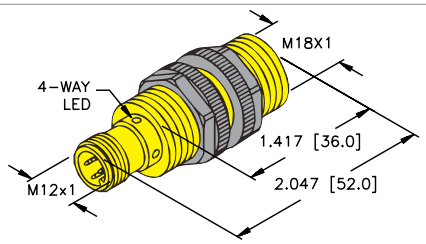

18 mm - Embeddable and Nonembeddable, Partial Threading, M12 Eurofast Connection

B



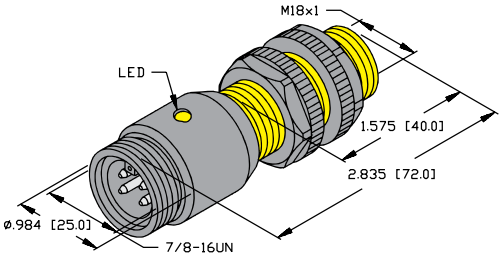

18 mm - Embeddable and Nonembeddable, Partial Threading, M12 Eurofast Connection

C




18 mm - Embeddable and Nonembeddable, Partial Threading, M12 Eurofast Connection

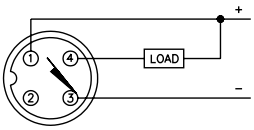
D




18 mm - Embeddable and Nonembeddable, Full Threading, 7/8" Minifast Connection

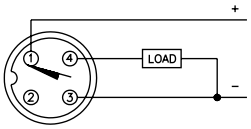
### Wiring Diagrams/Mating Cordsets

1



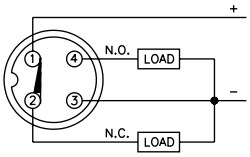

Mating Cordset: RKK 4T-*

2



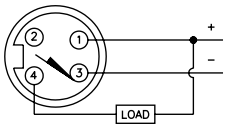

Mating Cordset: RKK 4T-*

3



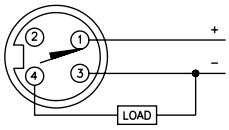

Mating Cordset: RKK 4.4T-*

4




Mating Cordset: RK 40-*M

5




Mating Cordset: RK 40-*M

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current |
| | ≥170 mA on 150 mA Load Current |
| | ≥120 mA on 100 mA Load Current |
| Off-State (Leakage) Current: | ≤0.1 mA |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) |
| | ≤20 mA (Uprox+, Uprox3) |
| Time Delay Before Availability: | ≤8 ms |
| Power-On Effect: | Per IEC 947-5-2 |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Transient Protection: | Per EN 60947-5-2 |
| Temperature Drift: | ≤±10% |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

## Threaded Plastic Barrels with Connector and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi5U-S18-AN6X-H1141** 1635620 | Uprox | 5 | 3-wire DC NPN | 10-30 VDC | 2500 | ≤200 | -30 to +85 | IP68 | PA 12 | PA 12 | N/A | YE | C | 1 | A4 |
| **Bi5U-S18-AP6X-H1141** 1635600 | Uprox | 5 | 3-wire DC PNP | 10-30 VDC | 2500 | ≤200 | -30 to +85 | IP68 | PA 12 | PA 12 | N/A | YE | C | 2 | A4 |
| **Bi5-S18-AN6X-H1141** 46525 | | 5 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | A | 1 | A4 |
| **Bi5-S18-AP6X-H1141** 46524 | | 5 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | A | 2 | A4 |
| **Bi5-S18-VP4X-H1141** 1513401 | Comp. Outputs | 5 | 4-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | B | 3 | A4 |
| **Bi5-P18-AN6X-B2341** 46972 | | 5 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | D | 4 | A4 |
| **Bi5-P18-AP6X-B2341** 46973 | | 5 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | D | 5 | A4 |
| **Ni12U-S18-AN6X-H1141** 1645620 | Uprox | 12 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | PA 12 | PA 12 | N/A | YE | C | 1 | A4 |
| **Ni12U-S18-AP6X-H1141** 1645600 | Uprox | 12 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | PA 12 | PA 12 | N/A | YE | C | 2 | A4 |
| **Ni10-P18-AN6X-B2341** 4697800 | | 10 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | D | 4 | A4 |
| **Ni10-P18-AP6X-B2341** 4697900 | | 10 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | D | 5 | A4 |
| **Ni8-S18-AN6X-H1141** 46527 | | 8 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | A | 1 | A4 |
| **Ni8-S18-AP6X-H1141** 46526 | | 8 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | A | 2 | A4 |

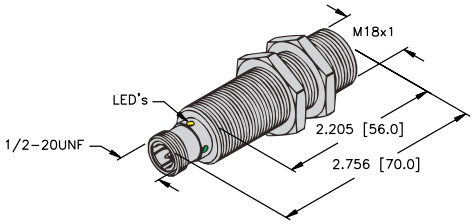
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

**Embeddable Fully Threaded Metal Barrels with Connector and AC/DC Outputs**

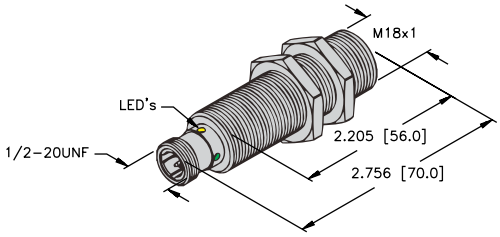
| Housing Style | Dimension Drawings |
|---|---|

A



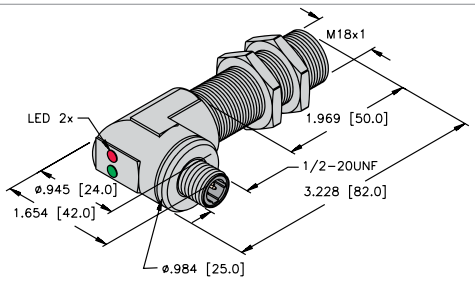

18 mm - Embeddable, 1/2" Microfast Connection

B



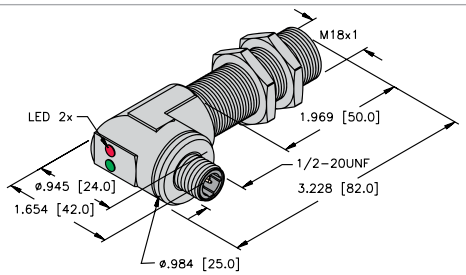

18 mm - Embeddable, 1/2" Microfast Connection, PTFE Coated

C




18 mm - Embeddable, 1/2" Microfast Connection

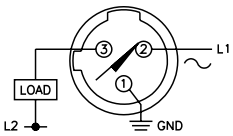
D




18 mm - Embeddable, 1/2" Microfast Right Angle Connection, PTFE Coated

**Wiring Diagrams/Mating Cordsets**

1




Mating Cordset: KB 3T-*; KBE 3T-*/S600

**A5** — **2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)**

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Minimum Load Current: | ≥3.0 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Inrush Current: | ≤3 A (≤20 ms, max 5 Hz) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | Power-On Effect: | Per IEC 947-5-2 |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA | Transient Protection: | Per EN 60947-5-2 |
| | AC: ≥120 mA; DC: ≥120 mA | Shock: | 30 g, 11 ms |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | AC: ≤100 mA; DC: ≤100 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Off-State (Leakage) Current: | ≤1.7 mA (AC) | | |
| | ≤1.5 mA (DC) | | |

**A6** — **2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)**

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Power-On Effect: | Per IEC 947-5-2 |
| | AC: ≤100 mA; DC: ≤100 mA | Transient Protection: | Per EN 60947-5-2 |
| Off-State (Leakage) Current: | ≤1.7 mA | Shock: | 30 g, 11 ms |
| Minimum Load Current: | ≥3.0 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

## Embeddable Fully Threaded Metal Barrels with Connector and AC/DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi8-G18-ADZ30X2-B3331** 4209301 | Extended Range | 8 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | SS | PA 12 | GN | RD | A | 1 | A5 |
| **Bi5U-G18-ADZ30X2-B3331** 4281213 | Uprox | 5 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP67 | CPB | PBT | GN | YE | A | 1 | A5 |
| **Bi5U-GT18-ADZ30X2-B3331** 4281223 | Uprox, PTFE | 5 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP67 | TC | TC | GN | YE | B | 1 | A5 |
| **Bi5-G18-ADZ30X2-B3331** 4208092 | | 5 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | GN | RD | A | 1 | A5 |
| **Bi5-GT18-ADZ30X2-B3331** 4255491 | PTFE | 5 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | TC | TC | GN | RD | B | 1 | A5 |
| **Bi5-GT18-ADZ30X2-B3331/S34** 4255400 | PTFE, WFI | 5 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | TC | TC | GN | RD | B | 1 | A5 |
| **Bi5-GT18H-ADZ30X2-B3331/S34** 4255289 | PTFE, WFI, Stoneface | 5 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | TC | SF | GN | RD | B | 1 | A5 |
| **Bi5-GT18H-ADZ30X2-B3331/S34/S1589** 4255283 | PTFE, Weldguard | 5 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | TC | WG | GN | RD | B | 1 | A5 |
| **Bi5-GT18-ADZ30X2-B3431/S34** 4255605 | PTFE, WFI | 5 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | TC | TC | GN | RD | D | 1 | A5 |
| **Bi5-G18-AZ3X-B3331** 4372098 | | 5 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | A | 1 | A6 |
| **Bi5-G18-AZ3X-B3431** 4372090 | | 5 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | C | 1 | A6 |



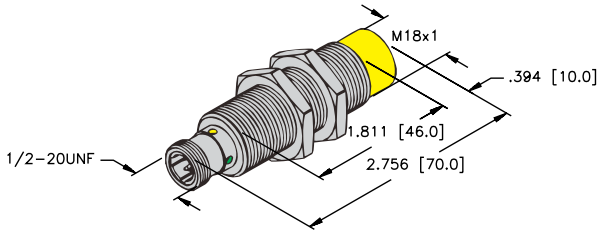
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

## Nonembeddable Fully Threaded Metal Barrels with Connector and AC/DC Outputs

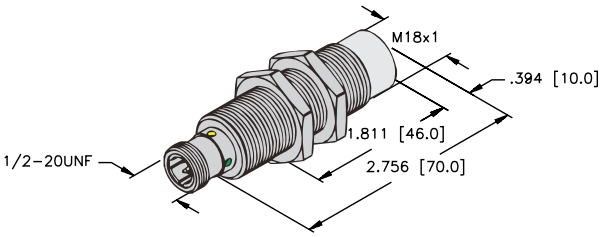
| Housing Style | Dimension Drawings |
|---|---|

A



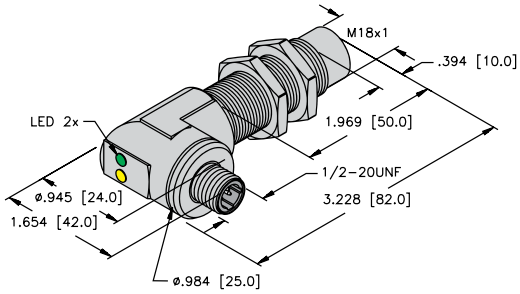

18 mm - Nonembeddable, 1/2" Microfast connection

B




18 mm - Nonembeddable, 1/2" Microfast connection, PTFE Coated

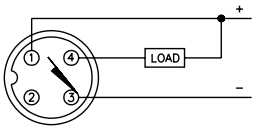
C




18 mm - Nonembeddable, PTFE Coated, 1/2" Microfast Right Angle Connection

### Wiring Diagrams/Mating Cordsets

1




Mating Cordset: KB 3T-*

### A5 — 2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA |
| | AC: ≥120 mA; DC: ≥120 mA |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA (AC) |
| | ≤1.5 mA (DC) |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤3 A (≤20 ms, max 5 Hz) |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

### A6 — 2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

## Nonembeddable Fully Threaded Metal Barrels with Connector and AC/DC Outputs

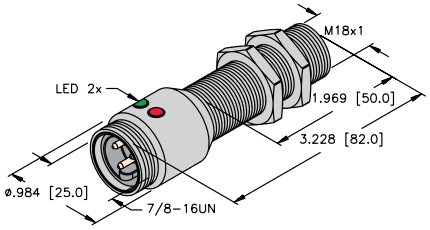
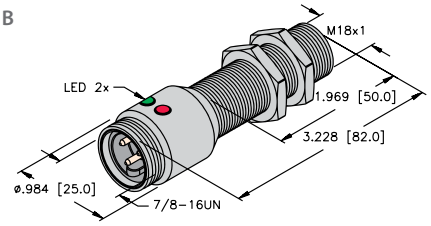
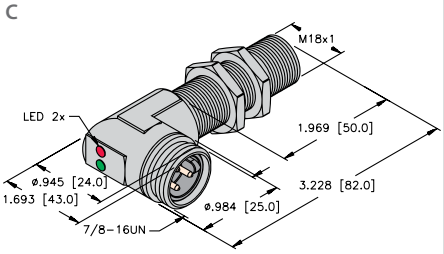
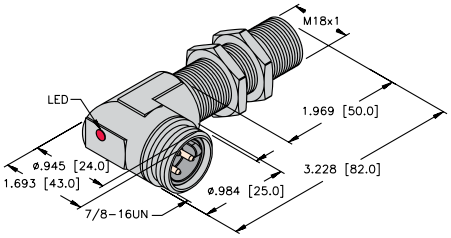
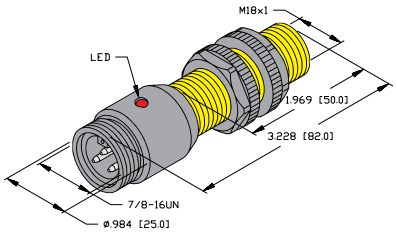
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni14-G18-ADZ30X2-B3331** 4205403 | Extended Range | 14 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | GN | RD | A | 1 | A5 |
| **Ni12U-G18-ADZ30X2-B3331** 4281413 | Uprox | 12 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP67 | CPB | PBT | GN | YE | A | 1 | A5 |
| **Ni12U-GT18-ADZ30X2-B3331** 4281423 | Uprox, PTFE | 12 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP67 | TC | TC | GN | YE | B | 1 | A5 |
| **Ni10-G18-AZ3X-B3331** 4372192 | | 10 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | A | 1 | A6 |
| **Ni8-G18-ADZ30X2-B3331/S34** 4209100 | WFI | 8 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | GN | RD | A | 1 | A5 |
| **Ni8-GT18-ADZ30X2-B3331/S34** 4209101 | PTFE, WFI | 8 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | TC | TC | GN | RD | B | 1 | A5 |
| **Ni8-GT18-ADZ30X2-B3431/S34** 4209201 | PTFE, WFI | 8 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | TC | TC | GN | RD | C | 1 | A5 |
| **Ni8-G18-AZ3X-B3331** 4350588 | | 8 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | A | 1 | A6 |



We reserve the right to make technical alterations without prior notice.

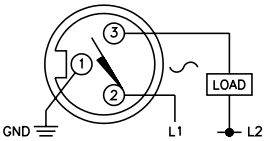
# Inductive Barrel Sensors | 18 mm

## Embeddable Fully Threaded Barrels with Connector and AC/DC Outputs

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   18 mm - Embeddable, 7/8" Minifast Connection | B   18 mm - Embeddable, 7/8" Minifast Connection, PTFE Coated |
| C   18 mm - Embeddable, 7/8" Minifast Right Angle Connection | D   18 mm - Embeddable, 7/8" Minifast Right Angle Connection, PTFE Coated | E   18 mm - Embeddable and Nonembeddable, Full Threading, 7/8" Minifast Connection |

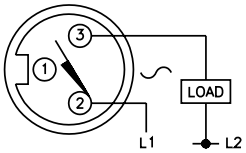
### Wiring Diagrams/Mating Cordsets

1




Mating Cordset: RKM 30-*M; RKM 311-*M/S600

2




Mating Cordset: RK 30-*M

### A5 — 2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Minimum Load Current: | ≥3.0 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Inrush Current: | ≤3 A (≤20 ms, max 5 Hz) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | Power-On Effect: | Per IEC 947-5-2 |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA | Transient Protection: | Per EN 60947-5-2 |
| | AC: ≥120 mA; DC: ≥120 mA | Shock: | 30 g, 11 ms |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | AC: ≤100 mA; DC: ≤100 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Off-State (Leakage) Current: | ≤1.7 mA (AC) | | |
| | ≤1.5 mA (DC) | | |

### A6 — 2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Power-On Effect: | Per IEC 947-5-2 |
| | AC: ≤100 mA; DC: ≤100 mA | Transient Protection: | Per EN 60947-5-2 |
| Off-State (Leakage) Current: | ≤1.7 mA | Shock: | 30 g, 11 ms |
| Minimum Load Current: | ≥3.0 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

## Embeddable Fully Threaded Barrels with Connector and AC/DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi5U-G18-ADZ30X2-B1331** 4281212 | Uprox | 5 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/ 10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP67 | CPB | PBT | GN | YE | A | 1 | A5 |
| **Bi5U-GT18-ADZ30X2-B1331** 4281222 | Uprox, PTFE | 5 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/ 10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP67 | TC | TC | GN | YE | B | 1 | A5 |
| **Bi5-G18-ADZ30X2-B1331** 42080 | | 5 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | GN | RD | A | 1 | A5 |
| **Bi5-GT18-ADZ30X2-B1331** 4255290 | PTFE | 5 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | TC | TC | GN | RD | B | 1 | A5 |
| **Bi5-GT18-ADZ30X2-B1331/S34** 4255200 | PTFE, WFI | 5 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | TC | TC | GN | RD | B | 1 | A5 |
| **Bi5-GT18H-ADZ30X2-B1331/S34/S1589** 4255284 | PTFE, WFI, Weldguard | 5 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | TC | WG | GN | RD | B | 1 | A5 |
| **Bi5-GT18-ADZ30X2-B1431** 4255690 | PTFE | 5 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | TC | TC | GN | RD | D | 1 | A5 |
| **Bi5-GT18-ADZ30X2-B1431/S34** 4255600 | PTFE, WFI | 5 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | TC | TC | GN | RD | D | 1 | A5 |
| **Bi5-GT18H-ADZ30X2-B1431/S34/S1589** 4255285 | PTFE, Weldguard | 5 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | TC | WG | GN | RD | D | 1 | A5 |
| **Bi5-G18-AZ3X-B1331** 43720 | | 5 | 2-wire AC/DC | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | A | 1 | A6 |
| **Bi5-G18-AZ3X-B1431** 43724 | | 5 | 2-wire AC/DC | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | C | 1 | A6 |
| **Bi5-P18-AZ3X-B2331** 43748 | | 5 | 2-wire AC/DC | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | RD | E | 2 | A6 |

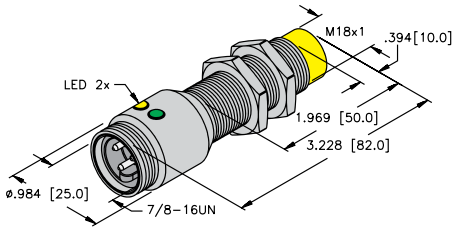
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

## Nonembeddable Fully Threaded Barrels with Connector and AC/DC Outputs

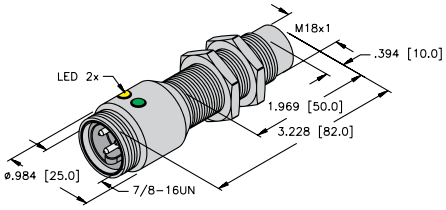
| Housing Style | Dimension Drawings |
|---|---|

A



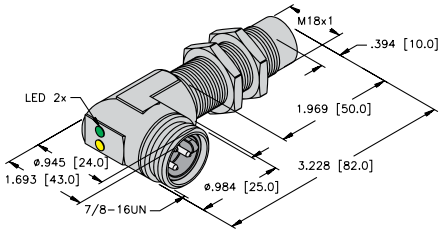

18 mm - Nonembeddable 7/8" Minifast Connection

B



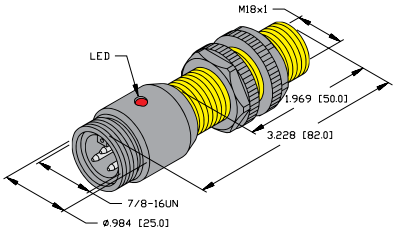

18 mm - Nonembeddable 7/8" Minifast Connection, PTFE Coated

C




18 mm - Nonembeddable, PTFE Coated 7/8" Minifast Right Angle Connection

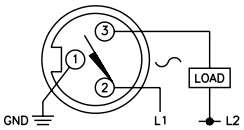
D




18 mm - Embeddable and Nonembeddable, Full Threading, 7/8" Minifast Connection

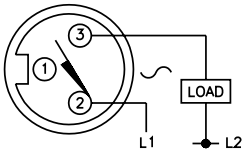
### Wiring Diagrams/Mating Cordsets

1




Mating Cordset: RKM 30-*M; RKM 311-*M/S600

2




Mating Cordset: RK 30-*M

### A5 — 2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA |
| | AC: ≥120 mA; DC: ≥120 mA |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA (AC) |
| | ≤1.5 mA (DC) |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤3 A (≤20 ms, max 5 Hz) |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

### A6 — 2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

## Nonembeddable Fully Threaded Barrels with Connector and AC/DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni14-G18-ADZ30X2-B1331** 4205407 | Extended Range | 14 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | GN | RD | A | 1 | A5 |
| **Ni14-GT18H-ADZ30X2-B1331/S1589** 4205484 | PTFE, Weldguard | 14 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | TC | WG | GN | RD | B | 1 | A5 |
| **Ni12U-G18-ADZ30X2-B1331** 4281412 | Uprox | 12 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/ 10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP67 | CPB | PBT | GN | YE | A | 1 | A5 |
| **Ni12U-GT18-ADZ30X2-B1331** 4281422 | Uprox | 12 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/ 10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP67 | TC | TC | GN | YE | B | 1 | A5 |
| **Ni10-G18-AZ3X-B1331** 43721 | | 10 | 2-wire AC/DC | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | A | 1 | A6 |
| **Ni10-P18-AZ3X-B2331** 43752 | | 10 | 2-wire AC/DC | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | RD | D | 2 | A6 |
| **Ni8-GT18-ADZ30X2-B1331/S34** 4208801 | PTFE, WFI | 8 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | TC | TC | GN | RD | B | 1 | A5 |
| **Ni8-GT18H-ADZ30X2-B1331/S34/S1589** 4208890 | PTFE, Weldguard | 8 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | TC | WG | GN | RD | B | 1 | A5 |
| **Ni8-GT18-ADZ30X2-B1431/S34** 4208901 | PTFE, WFI | 8 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | TC | TC | GN | RD | C | 1 | A5 |
| **Ni8-GT18H-ADZ30X2-B1431/S34/S1589** 4208990 | Weldguard | 8 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | TC | WG | GN | RD | C | 1 | A5 |



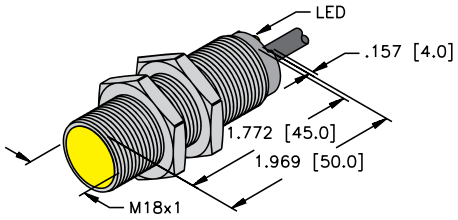
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

**Embeddable Threaded Metal Barrels with Cable and DC Outputs**

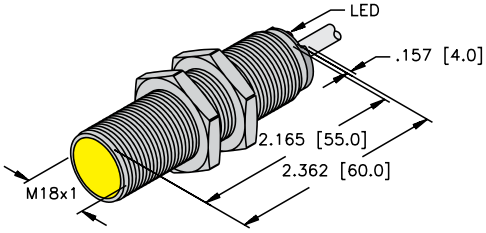
| Housing Style | Dimension Drawings |
|---|---|

A



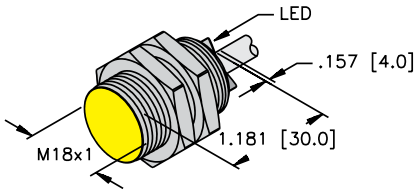

18 mm - Embeddable, Potted-in Cable

B



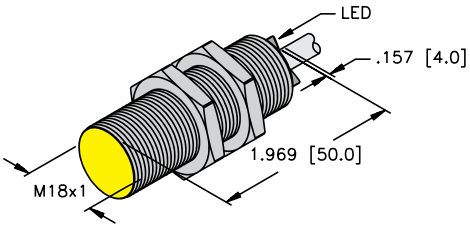

18 mm - Embeddable, Potted-In Cable, Extended Length Barrel, Partial Threading

C




18 mm - Embeddable, Full Threading, Potted-In Cable

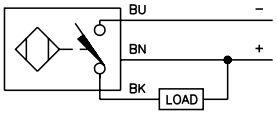
D



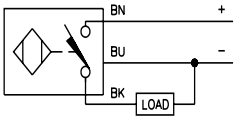

18 mm - Embeddable, Full Threading, Potted-In Cable

**Wiring Diagrams/Mating Cordsets**

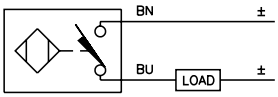
1



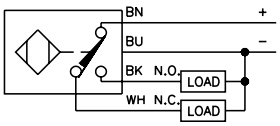

2




3




4




**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

## Embeddable Threaded Metal Barrels with Cable and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi10U-M18-AN6X** 1644845 | Uprox3 | 10 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -25 to +70 | IP68 | CPB | LCP | N/A | YE | 2M/PVC | A | 1 | A4 |
| **BI10U-M18-AP6X** 1644840 | Uprox3 | 10 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -25 to +70 | IP68 | CPB | LCP | N/A | YE | 2M/PVC | A | 2 | A4 |
| **BI10U-M18-VP6X** 1644842 | Uprox3, Comp. Outputs | 10 | 4-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -25 to +70 | IP68 | CPB | LCP | N/A | YE | 2M/PVC | A | 4 | A4 |
| **Bi8U-M18-AN6X** 1644736 | Uprox+ | 8 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | 2M/PVC | A | 1 | A4 |
| **Bi8U-M18-AP6X** 1644733 | Uprox+ | 8 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Bi8-M18-AN6X** 4615130 | Extended Range | 8 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/PVC | A | 1 | A4 |
| **Bi8-M18-AP6X** 4615030 | Extended Range | 8 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Bi8-M18-VN4X** 4590703 | Comp. Outputs | 8 | 4-wire DC NPN | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Bi8-M18-VP4X** 4590704 | Comp. Outputs | 8 | 4-wire DC PNP | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/PVC | A | 4 | A4 |
| **Bi8-G18-AN6X** 4616101 | Extended Range | 8 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/PVC | D | 1 | A4 |
| **Bi8-G18-AP6X** 4615088 | | 8 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/PVC | D | 2 | A4 |
| **Bi5U-M18-AN6X** 1635120 | Uprox | 5 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | 2M/PVC | A | 1 | A4 |
| **Bi5U-EM18-AP6X** 1635300 | Uprox | 5 | 3-wire DC PNP | 10-30 VDC | 2500 | ≤200 | -30 to +85 | IP68 | SS | PBT | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Bi5U-M18-AP6X** 1635100 | Uprox | 5 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Bi5U-M18E-AP6X** 1635101 | Uprox | 5 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | 2M/PVC | B | 1 | A4 |
| **Bi5-G18-AN6X** 4641500 | | 5 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | D | 1 | A4 |
| **Bi5-G18-AN7X** 4740500 | TTL Compatible | 5 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤150 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | D | 1 | A4 |
| **Bi5-G18-AP6X** 4641400 | | 5 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | D | 2 | A4 |
| **Bi5-EG18-AN6X** 4611101 | | 5 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/PVC | D | 1 | A4 |
| **Bi5-EG18-AP6X** 4611001 | | 5 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/PVC | D | 2 | A4 |
| **Bi5-M18E-VP4X** 1561190 | Comp. Outputs | 5 | 4-wire DC PNP | 10-65 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | B | 4 | A4 |
| **Bi5-G18K-AN6X** 46714 | Short Barrel | 5 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | C | 1 | A4 |
| **Bi5-G18K-AP6X** 46704 | Short Barrel | 5 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | C | 2 | A4 |

We reserve the right to make technical alterations without prior notice.

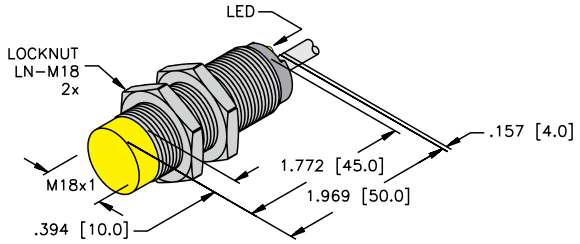
# Inductive Barrel Sensors | 18 mm

## Nonembeddable Threaded Metal Barrels with Cable and DC Outputs

**Housing Style**

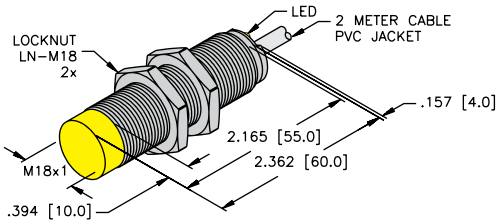
**Dimension Drawings**

A



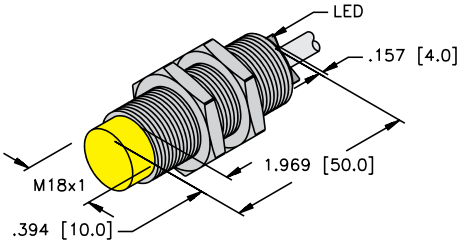

18 mm - Nonembeddable, Potted-in Cable

B




18 mm - Nonembeddable, Extended Barrel Length, Partial Threading, Potted-In Cable

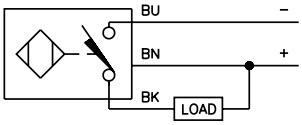
C



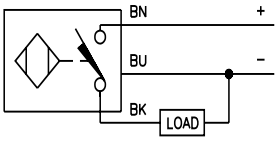

18 mm - Nonembeddable, Full Threading, Potted-In Cable

**Wiring Diagrams/Mating Cordsets**

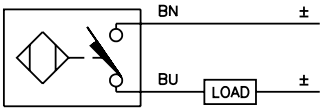
1




2




3




**A2 — 2-wire DC - (AD, RD, AG)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

**A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

## Nonembeddable Threaded Metal Barrels with Cable and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni15U-M18-AN6X** 1635334 | Uprox+ | 15 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | 2M/PVC | A | 1 | A4 |
| **Ni15U-M18-AP6X** 1635330 | Uprox+ | 15 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Ni14-M18-AD4X** 4417235 | Extended Range | 14 | 2-wire DC | 10-65 VDC | 500 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 3 | A2 |
| **Ni14-M18-AN6X** 4611411 | Extended Range | 14 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 1 | A4 |
| **Ni14-M18-AP6X** 4611401 | Extended Range | 14 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Ni12U-M18-AN6X** 1645120 | Uprox | 12 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | 2M/PVC | A | 1 | A4 |
| **Ni12U-M18-AP6X** 1645100 | Uprox | 12 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Ni12U-M18E-AN6X** 1645110 | Uprox | 12 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | 2M/PVC | B | 1 | A4 |
| **Ni12U-M18E-AP6X** 1645106 | Uprox | 12 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | 2M/PVC | B | 2 | A4 |
| **Ni12U-EM18-AN6X** 1645320 | Uprox | 12 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP67 | SS | PBT | N/A | YE | 2M/PVC | A | 1 | A4 |
| **Ni12U-EM18-AP6X** 1645300 | Uprox | 12 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP67 | SS | PBT | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Ni10-G18-AN6X** 4641700 | | 10 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | C | 1 | A4 |
| **Ni10-G18-AN7X** 4740700 | TTL Compatible | 10 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤150 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | C | 1 | A4 |
| **Ni10-G18-AP6X** 4641600 | | 10 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | C | 2 | A4 |
| **Ni8-M18-AD4X** 44112 | | 8 | 2-wire DC | 10-65 VDC | 500 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 3 | A2 |

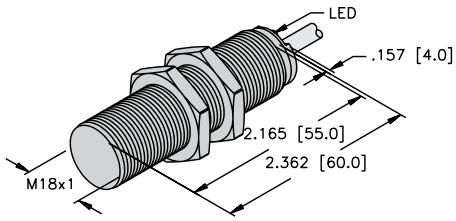
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

**Threaded Barrels with Cable and AC/DC Outputs**

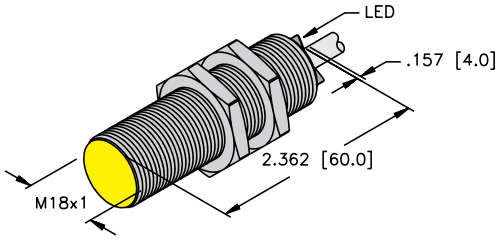
| Housing Style | Dimension Drawings |
|---|---|

A



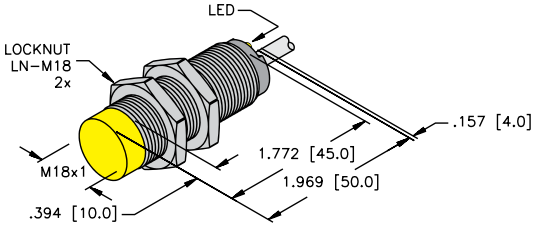

18 mm - Embeddable, Potted-In Cable, Partial Threading, PTFE Coated

B



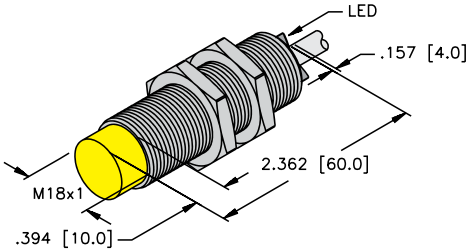

18 mm - Embeddable, Full Threading, Potted-In Cable

C



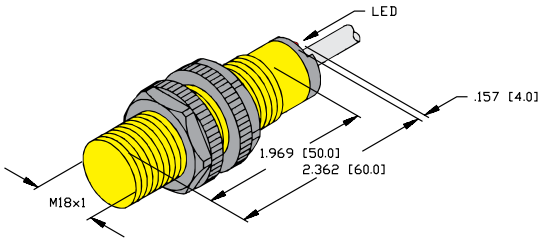

18 mm - Nonembeddable, Partial Threading, Potted-In Cable

D




18 mm - Nonembeddable, Full Threading, Potted-In Cable

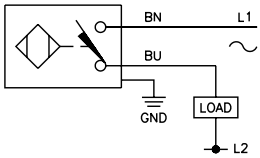
E



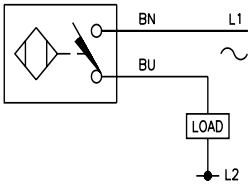

18 mm - Embeddable and Nonembeddable, Partial Threading, Potted-In Cable

**Wiring Diagrams/Mating Cordsets**

1




2




**A5** — **2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)**

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA |
| | AC: ≥120 mA; DC: ≥120 mA |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA (AC) |
| | ≤1.5 mA (DC) |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤3 A (≤20 ms, max 5 Hz) |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

**A6** — **2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)**

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

## Threaded Barrels with Cable and AC/DC Outputs

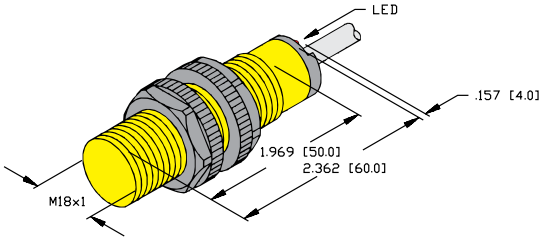
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi5U-MT18-ADZ30X2** 4209410 | Uprox | 5 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/ 10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP67 | TC | TC | GN | YE | 2M/PVC | A | 1 | A5 |
| **Bi5-G18-ADZ30X2** 4212000 | | 5 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | GN | RD | 2M/PVC | B | 1 | A5 |
| **Bi5-G18-AZ3X** 4330400 | | 5 | 2-wire AC/DC | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | 2M/PVC | B | 1 | A6 |
| **Bi5-G18-AZ3X2** 1374195 | | 5 | 2-wire AC/DC | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | GN | YE | 2M/PVC | B | 1 | A6 |
| **Bi5-EG18-AZ3X** 4611190 | | 5 | 2-wire AC/DC | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | SS | PA 12 | N/A | RD | 2M/PVC | B | 1 | A6 |
| **Bi5-S18-AZ3X** 4350400 | | 5 | 2-wire AC/DC | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | RD | 2M/PVC | E | 2 | A6 |
| **Ni14-G18-ADZ30X2** 4205402 | Extended Range | 14 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | GN | RD | 2M/PVC | D | 1 | A5 |
| **Ni12U-M18-ADZ30X2** 4282410 | Uprox | 12 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/ 10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP67 | CPB | PBT | GN | YE | 2M/PVC | C | 1 | A5 |
| **Ni8-S18-AZ3X** 4350500 | | 8 | 2-wire AC/DC | 20-250 VAC/ 10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | RD | 2M/PVC | E | 2 | A6 |



We reserve the right to make technical alterations without prior notice.

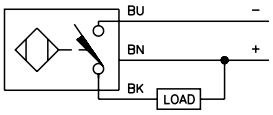
# Inductive Barrel Sensors | 18 mm

## Threaded Plastic Barrels with Cable and DC Outputs

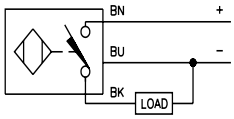
| Housing Style | Dimension Drawings |
|---|---|
| | A   18 mm - Embeddable and Nonembeddable, Partial Threading, Potted-In Cable |

### Wiring Diagrams/Mating Cordsets

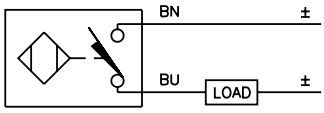
1




2




3




### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

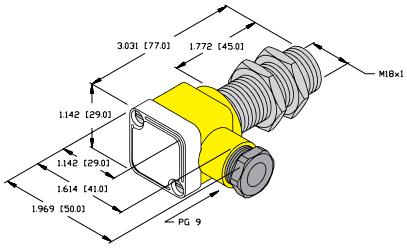
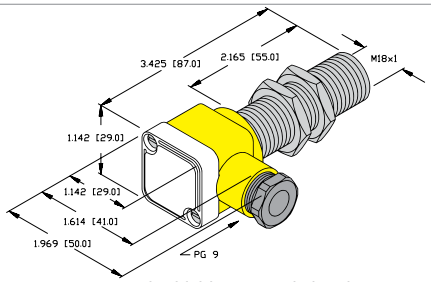
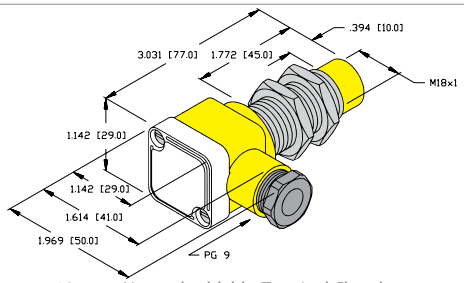
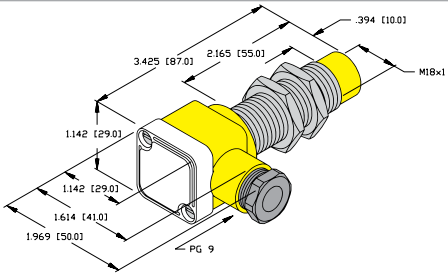
## Threaded Plastic Barrels with Cable and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi5U-S18-AP6X** 1635500 | Uprox | 5 | 3-wire DC PNP | 10-30 VDC | 2500 | ≤200 | -30 to +85 | IP68 | PA 12 | PA 12 | N/A | YE | A | 2 | A4 |
| **Bi5-S18-AD4X** 44560 | | 5 | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | A | 3 | A2 |
| **Bi5-S18-AN6X** 46561 | | 5 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | A | 1 | A4 |
| **Bi5-S18-AN7X** 1714000 | TTL Compatible | 5 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤150 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | A | 1 | A4 |
| **Bi5-S18-AN7X/S100** 17734 | High Temp. 100 °C | 5 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤150 | -25 to +100 | IP67 | PA 12 | IRPA | N/A | YE | A | 1 | A4 |
| **Bi5-S18-AP6X** 46560 | | 5 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | A | 2 | A4 |
| **Bi5-S18-AP7X/S100** 1754200 | TTL Compatible, High Temp. 100 °C | 5 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤150 | -25 to +100 | IP67 | PA 12 | IRPA | N/A | YE | A | 2 | A4 |
| **Ni12U-S18-AN6X** 1645520 | Uprox | 12 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | PA 12 | PA 12 | N/A | YE | A | 1 | A4 |
| **Ni12U-S18-AP6X** 1645500 | Uprox | 12 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | PA 12 | PA 12 | N/A | YE | A | 2 | A4 |
| **Ni8-S18-AD4X** 44562 | | 8 | 2-wire DC | 10-65 VDC | 500 | ≤100 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | A | 3 | A2 |
| **Ni8-S18-AN6X** 46563 | | 8 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | A | 1 | A4 |
| **Ni8-S18-AN7X** 1714100 | TTL Compatible | 8 | 3-wire DC NPN | 10-30 VDC | 500 | ≤150 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | A | 1 | A4 |
| **Ni8-S18-AP6X** 46562 | | 8 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | A | 2 | A4 |
| **Ni8-S18-AN7X/S100** 1773250 | TTL Compatible, High Temp. 100 °C | 8 | 3-wire DC NPN | 10-30 VDC | 500 | ≤150 | -25 to +100 | IP67 | PA 12 | IRPA | N/A | YE | A | 1 | A4 |
| **Ni8-S18-AP7X/S100** 1749850 | TTL Compatible, High Temp. 100 °C | 8 | 3-wire DC PNP | 10-30 VDC | 500 | ≤150 | -25 to +100 | IP67 | PA 12 | IRPA | N/A | YE | A | 2 | A4 |

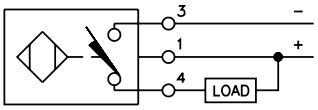
We reserve the right to make technical alterations without prior notice.

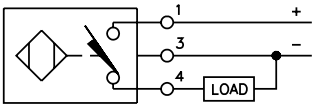
# Inductive Barrel Sensors | 18 mm

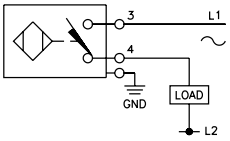
## Threaded Metal Barrels with Terminal Chamber and AC/DC Outputs

| Housing Style | Dimension Drawings |
|---|---|
| | A   18 mm - Embeddable, Terminal Chamber |
| B   18 mm - Embeddable, Terminal Chamber | C   18 mm - Nonembeddable, Terminal Chamber |
| D   18 mm - Nonembeddable, Terminal Chamber | |

### Wiring Diagrams/Mating Cordsets

1 


2 


3 


### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

### A6 — 2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Power-On Effect: | Per IEC 947-5-2 |
| | AC: ≤100 mA; DC: ≤100 mA | Transient Protection: | Per EN 60947-5-2 |
| Off-State (Leakage) Current: | ≤1.7 mA | Shock: | 30 g, 11 ms |
| Minimum Load Current: | ≥3.0 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

## Threaded Metal Barrels with Terminal Chamber and AC/DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi5U-EG18SK-AP6X** 1635400 | Uprox | 5 | 3-wire DC PNP | 10-30 VDC | 2500 | ≤200 | -30 to +85 | IP68 | SS | PA 12 | N/A | YE | A | 2 | A4 |
| **Bi5-G18SK-AN6X2** 4642500 | | 5 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | GN | YE | A | 1 | A4 |
| **Bi5-G18SK-AP6X2** 4642400 | | 5 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | GN | YE | A | 2 | A4 |
| **Bi5-G18SK-AZ3X2** 4331400 | | 5 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤500 | -25 to +70 | IP67 | CPB | PA 12 | GN | RD | B | 3 | A6 |
| **Ni10-G18SK-AN6X2** 4642700 | | 10 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | GN | YE | C | 1 | A4 |
| **Ni10-G18SK-AP6X2** 4642600 | | 10 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | GN | YE | C | 2 | A4 |
| **Ni10-G18SK-AZ3X2** 4331500 | | 10 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | GN | RD | D | 3 | A6 |

We reserve the right to make technical alterations without prior notice.

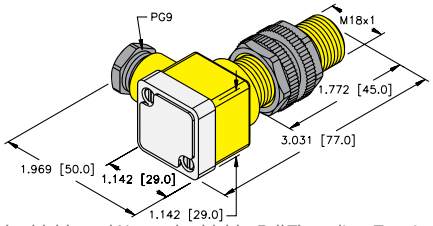
# Inductive Barrel Sensors | 18 mm

## Threaded Metal Barrels with Terminal Chamber and AC/DC Outputs

### Housing Style

### Dimension Drawings

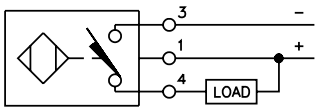
A




18 mm - Embeddable and Nonembeddable, Full Threading, Terminal Chamber

### Wiring Diagrams/Mating Cordsets

1

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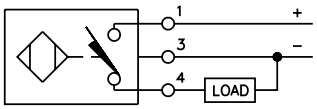
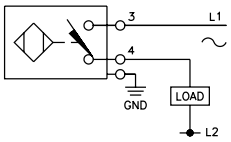



3




### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current |
| | ≥170 mA on 150 mA Load Current |
| | ≥120 mA on 100 mA Load Current |
| Off-State (Leakage) Current: | ≤0.1 mA |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) |
| | ≤20 mA (Uprox+, Uprox3) |
| Time Delay Before Availability: | ≤8 ms |
| Power-On Effect: | Per IEC 947-5-2 |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Transient Protection: | Per EN 60947-5-2 |
| Temperature Drift: | ≤±10% |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

### A6 — 2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm

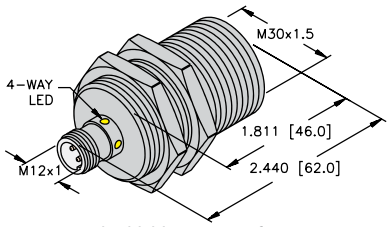
## Threaded Metal Barrels with Terminal Chamber and AC/DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi5U-P18SK-AP6X** 1635700 | Uprox | 5 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤200 | -30 to +85 | IP68 | PA 12 | PA 12 | N/A | YE | A | 2 | A4 |
| **Bi5-P18SK-AP6X2** 4656900 | | 5 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | GN | YE | A | 2 | A4 |
| **Bi5-P18SK-AZ3X2** 4351400 | | 5 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PA 12 | PA 12 | GN | RD | A | 3 | A6 |
| **Ni12U-P18SK-AP6X** 1645700 | Uprox | 12 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | PA 12 | PA 12 | N/A | YE | A | 2 | A4 |
| **Ni10-P18SK-AZ3X2** 4351500 | | 10 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PA 12 | PA 12 | GN | RD | A | 3 | A6 |
| **Ni10-P18SK-AN6X2** 4657200 | | 10 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | GN | YE | A | 1 | A4 |
| **Ni10-P18SK-AP6X2** 4657100 | | 10 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | GN | YE | A | 2 | A4 |

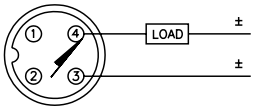
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm

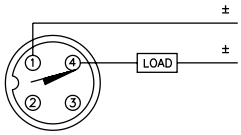
## Embeddable Threaded Metal Barrels with Connector and DC Outputs

| Housing Style | Dimension Drawings |
|---|---|
| | A   30 mm - Embeddable, M12 Eurofast Connection |

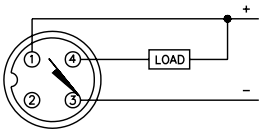
### Wiring Diagrams/Mating Cordsets

1


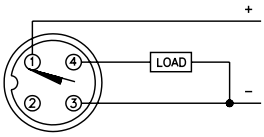
Mating Cordset: RK 4.2T-*

2


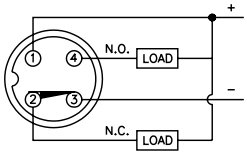
Mating Cordset: RK 4.23T-*

3


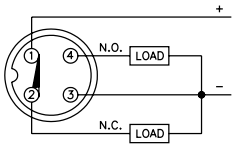
Mating Cordset: RK 4T-*; RKC 4T-*/S1587

4


Mating Cordset: RK 4T-*; RKC 4T-*/S1587

5


Mating Cordset: RK 4.4T-*

6


Mating Cordset: RK 4.4T-*

### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm

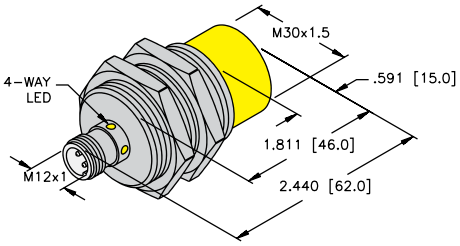
## Embeddable Threaded Metal Barrels with Connector and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi20U-M30-AN6X-H1141** 1644888 | Uprox3 | 20 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP68 | CPB | LCP | N/A | YE | A | 3 | A4 |
| **Bi20U-M30-AP6X-H1141** 1644880 | Uprox3 | 20 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP68 | CPB | LCP | N/A | YE | A | 4 | A4 |
| **Bi15U-M30-AN6X-H1141** 1636736 | Uprox+ | 15 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | A | 3 | A4 |
| **Bi15U-M30-AP6X-H1141** 1636732 | Uprox+ | 15 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | A | 4 | A4 |
| **Bi15U-EM30-AP6X-H1141** 1636733 | Uprox+ | 15 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | SS | LCP | N/A | YE | A | 4 | A4 |
| **Bi15-M30-AN6X-H1141** 4618600 | Extended Range | 15 | 3-wire DC NPN | 10-30 VDC | 300 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 3 | A4 |
| **Bi15-EM30H-AN6X-H1141** 4618692 | Ext. Range, Stoneface | 15 | 3-wire DC NPN | 10-30 VDC | 300 | ≤200 | -25 to +70 | IP67 | SS | SF | N/A | YE | A | 3 | A4 |
| **Bi15-M30-AP6X-H1141** 46185 | Extended Range | 15 | 3-wire DC PNP | 10-30 VDC | 300 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 4 | A4 |
| **Bi15-EM30H-AP6X-H1141** 4618592 | Ext. Range, Stoneface | 15 | 3-wire DC PNP | 10-30 VDC | 300 | ≤200 | -25 to +70 | IP67 | SS | SF | N/A | YE | A | 4 | A4 |
| **Bi15-EM30-AP6X-H1141/S1589** 4618593 | Weldguard | 15 | 3-wire DC PNP | 10-30 VDC | 300 | ≤200 | -25 to +70 | IP67 | SS | WG | N/A | YE | A | 4 | A4 |
| **Bi15-M30-VN4X-H1141** 4570711 | Ext. Range, Comp. Outputs | 15 | 4-wire DC NPN | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 5 | A4 |
| **Bi15-M30-VP4X-H1141** 4570710 | Ext. Range, Comp. Outputs | 15 | 4-wire DC PNP | 10-65 VDC | 300 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 6 | A4 |
| **Bi12-M30-AD4X-H1141** 4417041 | Extended Range | 12 | 2-wire DC | 10-65 VDC | 500 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A2 |
| **Bi10U-M30-AD4X-H1144** 4405072 | Uprox | 10 | 2-wire DC | 10-65 VDC | 10 | ≤100 | -25 to +70 | IP68 | CPB | LCP | N/A | YE | A | 2 | A2 |
| **Bi10U-M30-AN6X-H1141** 1636150 | Uprox | 10 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | A | 3 | A4 |
| **Bi10U-EM30-AN6X-H1141** 1636350 | Uprox | 10 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | SS | PBT | N/A | YE | A | 3 | A4 |
| **Bi10U-M30-AP6X-H1141** 1636140 | Uprox | 10 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | A | 4 | A4 |
| **Bi10U-M30-AP6X2-H1141** 1636145 | Uprox | 10 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP67 | CPB | PBT | GN | YE | A | 4 | A4 |
| **Bi10U-EM30-AP6X-H1141** 1636340 | Uprox | 10 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | SS | PBT | N/A | YE | A | 4 | A4 |
| **Bi10U-M30-VP4X-H1141** 1582253 | Uprox, Comp. Outputs | 10 | 4-wire DC PNP | 10-65 VDC | 1000 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | A | 6 | A4 |
| **Bi10-M30-AD4X-H1141** 44175 | | 10 | 2-wire DC | 10-65 VDC | 500 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A2 |
| **Bi10-M30-AN6X-H1141** 46176 | | 10 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 3 | A4 |
| **Bi10-M30-AP6X-H1141** 46175 | | 10 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 4 | A4 |
| **Bi10-M30-VN4X-H1141** 15716 | Comp. Outputs | 10 | 4-wire DC NPN | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 5 | A4 |
| **Bi10-M30-VP4X-H1141** 15616 | Comp. Outputs | 10 | 4-wire DC PNP | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 6 | A4 |

We reserve the right to make technical alterations without prior notice.

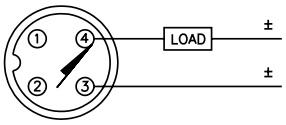
# Inductive Barrel Sensors | 30 mm

## Nonembeddable Threaded Metal Barrels with Connector and DC Outputs

| Housing Style | Dimension Drawings |
|---|---|
| | A   30 mm - Nonembeddable, M12 Eurofast Connection |

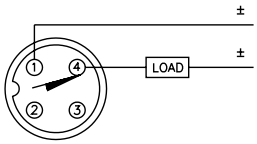
### Wiring Diagrams/Mating Cordsets

1



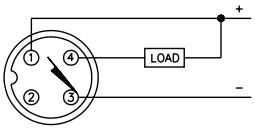

Mating Cordset: RK 4.2T-*

2



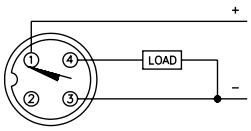

Mating Cordset: RK 4.23T-*

3



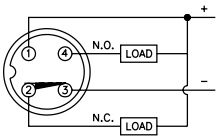

Mating Cordset: RK 4T-*; RKC 4T-*/S1587

4



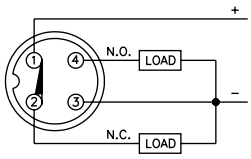

Mating Cordset: RK 4T-*; RKC 4T-*/S1587

5




Mating Cordset: RK 4.4T-*

6




Mating Cordset: RK 4.4T-*

### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm

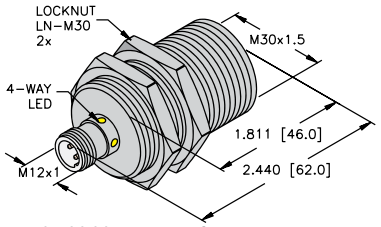
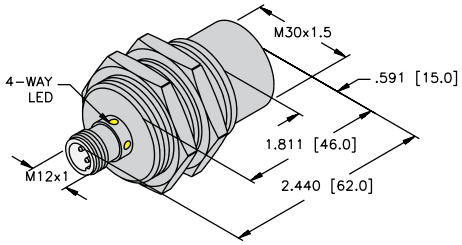
## Nonembeddable Threaded Metal Barrels with Connector and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni30U-M30-AN6X-H1141** 1644635 | Uprox+ | 30 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | A | 3 | A4 |
| **Ni30U-EM30-AN6X-H1141** 1644636 | Uprox+ | 30 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | SS | LCP | N/A | YE | A | 3 | A4 |
| **Ni30U-M30-AP6X-H1141** 1646631 | Uprox+ | 30 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | A | 4 | A4 |
| **Ni30U-EM30-AP6X-H1141** 1646632 | Uprox+ | 30 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | SS | LCP | N/A | YE | A | 4 | A4 |
| **Ni20U-M30-AN6X-H1141** 1646150 | Uprox | 20 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | A | 3 | A4 |
| **Ni20U-M30-AN6X2-H1141** 1646155 | Uprox | 20 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | CPB | PBT | GN | YE | A | 3 | A4 |
| **Ni20U-EM30-AN6X-H1141** 1646350 | Uprox | 20 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | SS | PBT | N/A | YE | A | 3 | A4 |
| **Ni20U-EM30-AN6X2-H1141/S1589** 1646191 | Uprox, Weldguard | 20 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | SS | WG | GN | YE | A | 3 | A4 |
| **Ni20U-M30-AP6X-H1141** 1646140 | Uprox | 20 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | A | 4 | A4 |
| **Ni20U-EM30-AP6X-H1141** 1646340 | Uprox | 20 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | SS | PBT | N/A | YE | A | 4 | A4 |
| **Ni20U-EM30-AP6X2-H1141** 1646345 | Uprox | 20 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | SS | PBT | GN | YE | A | 4 | A4 |
| **Ni20U-EM30-AP6X2-H1141/S1589** 1646490 | Uprox, Weldguard | 20 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | SS | WG | GN | YE | A | 4 | A4 |
| **Ni20U-M30-VP4X-H1141** 1582457 | Uprox | 20 | 4-wire DC PNP | 10-65 VDC | 1000 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | A | 6 | A4 |
| **Ni20-M30-AD4X-H1141** 4466141 | Extended Range | 20 | 2-wire DC | 10-65 VDC | 200 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A2 |
| **Ni20-M30-AD4X-H1144** 4466192 | Extended Range | 20 | 2-wire DC | 10-65 VDC | 200 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 2 | A2 |
| **Ni20-M30-AN6X-H1141** 4670515 | Extended Range | 20 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 3 | A4 |
| **Ni20-M30-AP6X-H1141** 4670510 | Extended Range | 20 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 4 | A4 |
| **Ni20-M30-VN4X-H1141** 4590606 | Ext. Range, Comp. Outputs | 20 | 4-wire DC NPN | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 5 | A4 |
| **Ni20-M30-VP4X-H1141** 4590607 | Ext. Range, Comp. Outputs | 20 | 4-wire DC PNP | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 6 | A4 |
| **Ni15-M30-AD4X-H1141** 44177 | | 15 | 2-wire DC | 10-65 VDC | 200 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A2 |
| **Ni15-M30-AN6X-H1141** 46178 | | 15 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 3 | A4 |
| **Ni15-M30-AP6X-H1141** 46177 | | 15 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 4 | A4 |
| **Ni15-M30-VN4X-H1141** 1571510 | Comp. Outputs | 15 | 4-wire DC NPN | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 5 | A4 |
| **Ni15-M30-VP4X-H1141** 15617 | Comp. Outputs | 15 | 4-wire DC PNP | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 6 | A4 |

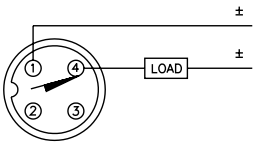
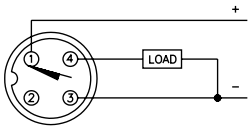
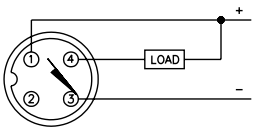
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm

## Threaded PTFE Coated Metal Barrels with Connector and DC Outputs

| Housing Style | Dimension Drawings |
|---|---|
| | A   30 mm - Embeddable, M12 Eurofast Connection, PTFE Coated |
| B   30 mm - Nonembeddable, M12 Eurofast Connection, PTFE Coated | |

### Wiring Diagrams/Mating Cordsets

| 1 | 2 | 3 |
|---|---|---|
|   |   |   |
| Mating Cordset: RK 4.23T-* | Mating Cordset: RK 4T-*; RKC 4T-*/S1587 | Mating Cordset: RK 4T-*; RKC 4T-*/S1587 |

### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm

## Threaded PTFE Coated Metal Barrels with Connector and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi20U-MT30-AN6X-H1141** 1644889 | Uprox3, PTFE | 20 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP68 | TC | TC | N/A | YE | A | 3 | A4 |
| **Bi20U-MT30-AP6X-H1141** 1644881 | Uprox3, PTFE | 20 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP68 | TC | TC | N/A | YE | A | 2 | A4 |
| **Bi15U-MT30-AP6X-H1141** 1636734 | Uprox+, PTFE | 15 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | TC | TC | N/A | YE | A | 2 | A4 |
| **Bi15U-MT30-AP6X2-H1141** 1644741 | Uprox+ | 15 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | TC | TC | GN | YE | A | 2 | A4 |
| **Bi12-MT30H-AD4X-H1144** 4417095 | PTFE, Stoneface | 12 | 2-wire DC | 10-65 VDC | 500 | ≤100 | -25 to +70 | IP67 | TC | SF | N/A | YE | A | 1 | A2 |
| **Bi10U-MT30-AN6X-H1141** 1636250 | Uprox | 10 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP67 | TC | TC | N/A | YE | A | 3 | A4 |
| **Bi10U-MT30-AP6X-H1141** 1636240 | Uprox, PTFE | 10 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP67 | TC | TC | N/A | YE | A | 2 | A4 |
| **Bi10U-MT30-AP6X2-H1141** 1636245 | Uprox, PTFE | 10 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP67 | TC | TC | GN | YE | A | 2 | A4 |
| **Bi10U-MT30H-AP6X2-H1141** 1636220 | Uprox, PTFE, Stoneface | 10 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP67 | TC | SF | GN | YE | A | 2 | A4 |
| **Bi10U-MT30-AP6X2-H1141/S1589** 1636291 | Uprox, PTFE, Weldguard | 10 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP67 | TC | WG | GN | YE | A | 2 | A4 |
| **Ni30U-MT30-AN6X-H1141** 1644637 | Uprox+, PTFE | 30 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | TC | TC | N/A | YE | B | 3 | A4 |
| **Ni30U-MT30-AP6X-H1141** 1646633 | Uprox+, PTFE | 30 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | TC | TC | N/A | YE | B | 2 | A4 |
| **Ni30U-MT30-AP6X2-H1141** 1646635 | Uprox+, PTFE | 30 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | TC | TC | GN | YE | B | 2 | A4 |
| **Ni30U-MT30-AP6X-H1141/S1589** 16466331 | Uprox+, PTFE, Weldguard | 30 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | TC | WG | N/A | YE | B | 2 | A4 |
| **Ni30U-MT30-AP6X2-H1141/S1589** 16466351 | Uprox+, PTFE, Weldguard | 30 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | TC | WG | GN | YE | B | 2 | A4 |
| **Ni20U-MT30-AP6X-H1141** 1646240 | Uprox, PTFE | 20 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP67 | TC | TC | N/A | YE | B | 2 | A4 |
| **Ni20U-MT30-AP6X2-H1141** 1646245 | Uprox, PTFE | 20 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP67 | TC | TC | GN | YE | B | 2 | A4 |
| **Ni20U-MT30-AP6X2-H1141/S1589** 1646291 | Uprox, Weldguard | 20 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP67 | TC | WG | GN | YE | B | 2 | A4 |
| **Ni20-MT30-AN6X-H1141/S1589** 4670589 | PTFE, Weldguard | 20 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | TC | WG | N/A | YE | B | 3 | A4 |
| **Ni15U-MT30-AD4X-H1144** 4405077 | Uprox, PTFE | 15 | 2-wire DC | 10-65 VDC | 10 | ≤100 | -25 to +70 | IP68 | TC | TC | GN | YE | B | 1 | A2 |

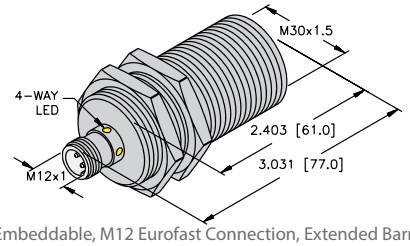
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm

## Threaded Metal Barrels with Connector and DC Outputs

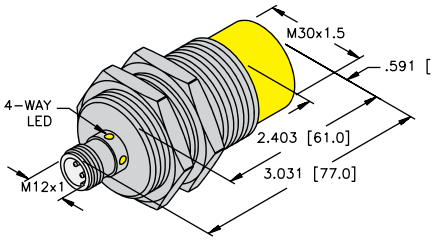
| Housing Style | Dimension Drawings |
|---|---|

A




30 mm - Embeddable, M12 Eurofast Connection, Extended Barrel Length

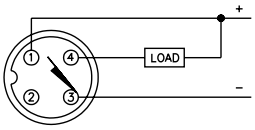
B




30 mm - Nonembeddable, M12 Eurofast Connection, Extended Barrel Length

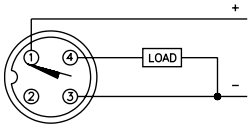
### Wiring Diagrams/Mating Cordsets

1



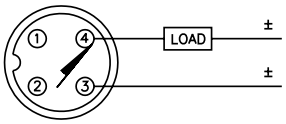

Mating Cordset: RK 4T-*

2



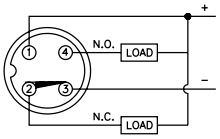

Mating Cordset: RK 4.23T-*

3



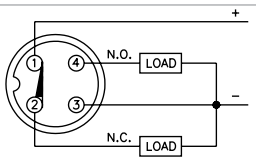

Mating Cordset: RK 4.2T-*

4




Mating Cordset: RK 4.4T-*

5




Mating Cordset: RK 4.4T-*

### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm

## Threaded Metal Barrels with Connector and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi15-M30E-AN6X-H1141** 4618690 | Extended Range | 15 | 3-wire DC NPN | 10-30 VDC | 300 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A4 |
| **Bi15-M30E-AP6X-H1141** 4618590 | Extended Range | 15 | 3-wire DC PNP | 10-30 VDC | 300 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 2 | A4 |
| **Bi10U-EM30E-AP6X-H1141** 1636322 | Uprox | 10 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | SS | PBT | N/A | YE | A | 2 | A4 |
| **Bi10U-EM30HE-AP6X2-H1141** 1636415 | Uprox, Stoneface | 10 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | SS | SF | GN | YE | A | 2 | A4 |
| **Bi10-M30E-AD4X-H1141** 4417501 | | 10 | 2-wire DC | 10-65 VDC | 500 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 3 | A2 |
| **Ni15-M30E-AD4X-H1141** 4417790 | | 15 | 2-wire DC | 10-65 VDC | 200 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | B | 3 | A2 |
| **Ni15-M30E-VN4X-H1141** 1571590 | Comp. Outputs | 15 | 4-wire DC NPN | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | B | 4 | A4 |
| **Ni15-M30E-VP4X-H1141** 1561790 | Comp. Outputs | 15 | 4-wire DC PNP | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | B | 5 | A4 |



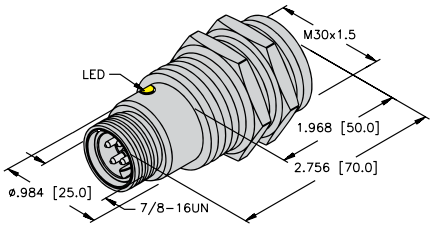
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm

## Threaded Metal Barrels with Connector and DC Outputs

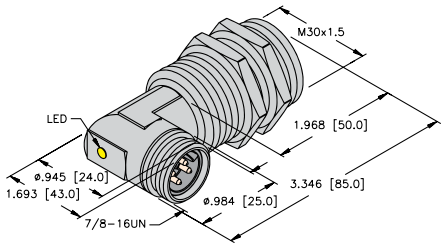
| Housing Style | Dimension Drawings |
|---|---|

A



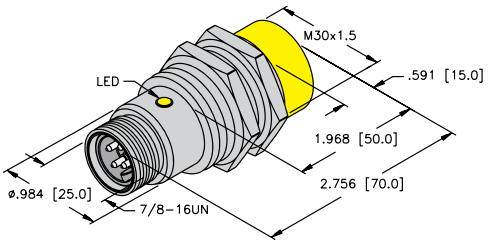

30 mm - Embeddable, 7/8" Minifast Connection

B



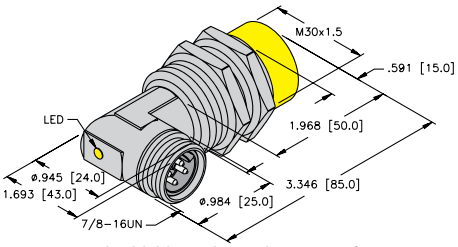

30 mm - Embeddable, 7/8" Minifast Right Angle Connection

C




30 mm - Nonembeddable, 7/8" Minifast Connection

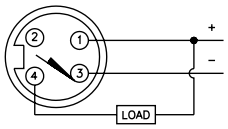
D




30 mm - Nonembeddable, Right Angle 7/8" Minifast Connection

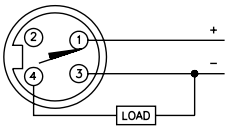
### Wiring Diagrams/Mating Cordsets

1




Mating Cordset: RKM 40-*M

2




Mating Cordset: RKM 40-*M

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm

**Threaded Metal Barrels with Connector and DC Outputs**

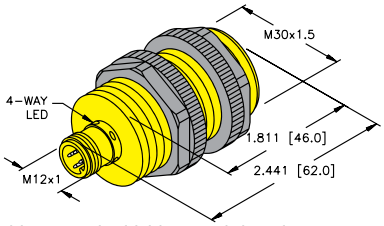
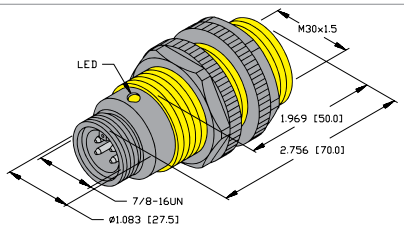
| Part Number/ ID Number | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi10-G30-AN6X-B1141** 46954 | 10 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A4 |
| **Bi10-G30-AP6X-B1141** 46965 | 10 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 2 | A4 |
| **Bi10-G30-AN6X-B1441** 46958 | 10 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | B | 1 | A4 |
| **Bi10-G30-AP6X-B1441** 46969 | 10 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | B | 2 | A4 |
| **Ni15-G30-AN6X-B1141** 46955 | 15 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | C | 1 | A4 |
| **Ni15-G30-AP6X-B1141** 46966 | 15 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | C | 2 | A4 |
| **Ni15-G30-AN6X-B1441** 4695590 | 15 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | D | 1 | A4 |
| **Ni15-G30-AP6X-B1441** 46970 | 15 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | D | 2 | A4 |



We reserve the right to make technical alterations without prior notice.

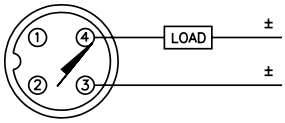
# Inductive Barrel Sensors | 30 mm

## Threaded Plastic Barrels with Connector and DC Outputs

| Housing Style | Dimension Drawings |
|---|---|
| | A   30 mm - Embeddable/Nonembeddable, Partial Threading, M12 Eurofast Connection |
| B   30 mm - Embeddable/Nonembeddable, Full Threading, 7/8" Minifast Connection | |

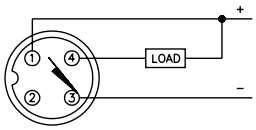
### Wiring Diagrams/Mating Cordsets

1



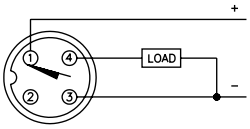

Mating Cordset: RKK 4.2T-*

2



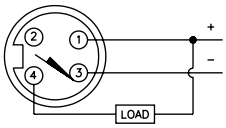

Mating Cordset: RKK 4T-*

3



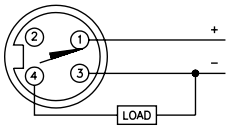

Mating Cordset: RKK 4T-*

4




Mating Cordset: RK 40-*M

5




Mating Cordset: RK 40-*M

### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm

## Threaded Plastic Barrels with Connector and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi10U-S30-AN6X-H1141** 1636620 | Uprox | 10 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | PA 12 | PA 12 | N/A | YE | A | 2 | A4 |
| **Bi10U-S30-AP6X-H1141** 1636600 | Uprox | 10 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | PA 12 | PA 12 | N/A | YE | A | 3 | A4 |
| **Bi10-S30-AD4X-H1141** 4458000 | | 10 | 2-wire DC | 10-65 VDC | 500 | ≤100 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | A | 1 | A2 |
| **Bi10-S30-AN6X-H1141** 46581 | | 10 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | A | 2 | A4 |
| **Bi10-S30-AP6X-H1141** 46580 | | 10 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | A | 3 | A4 |
| **Bi10-P30-AN6X-B2141** 46974 | | 10 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | B | 4 | A4 |
| **Bi10-P30-AP6X-B2141** 46975 | | 10 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | B | 5 | A4 |
| **Ni20U-S30-AN6X-H1141** 1646620 | Uprox | 20 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | PA 12 | PA 12 | N/A | YE | A | 2 | A4 |
| **Ni20U-S30-AP6X-H1141** 1646600 | Uprox | 20 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | PA 12 | PA 12 | N/A | YE | A | 3 | A4 |
| **Ni15-S30-AD4X-H1141** 44582 | | 15 | 2-wire DC | 10-65 VDC | 200 | ≤100 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | A | 1 | A2 |
| **Ni15-S30-AN6X-H1141** 46583 | | 15 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | A | 2 | A4 |
| **Ni15-P30-AN6X-B2141** 46976 | | 15 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | B | 4 | A4 |
| **Ni15-S30-AP6X-H1141** 46582 | | 15 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | A | 3 | A4 |
| **Ni15-P30-AP6X-B2141** 46977 | | 15 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | B | 5 | A4 |

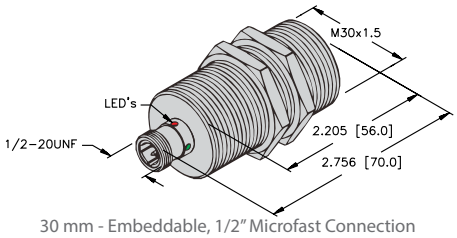
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm

## Threaded Metal Barrels with Connector and AC/DC Outputs

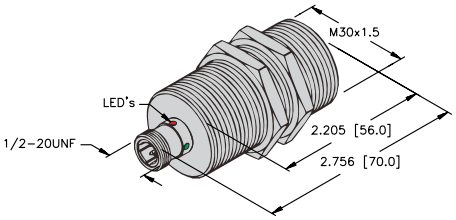
| Housing Style | Dimension Drawings |
|---|---|

A



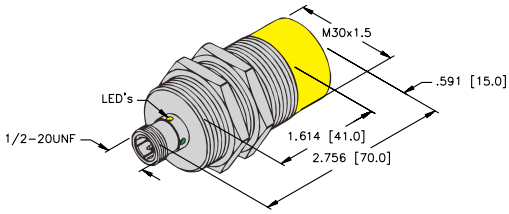

30 mm - Embeddable, 1/2" Microfast Connection

B



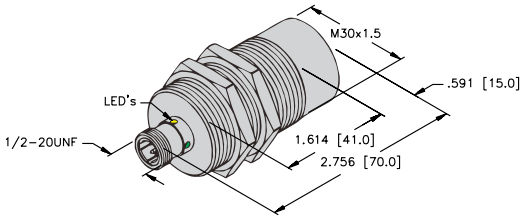

30 mm - Embeddable, 1/2" Microfast Connection, PTFE Coated

C




30 mm - Nonembeddable, 1/2" Microfast Connection

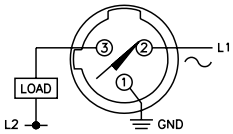
D




30 mm - Nonembeddable, 1/2" Microfast Connection, PTFE Coated

### Wiring Diagrams/Mating Cordsets

1




Mating Cordset: KB 3T-*; KBE 3T-*/S600

### A5 — 2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA |
| | AC: ≥120 mA; DC: ≥120 mA |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA (AC) |
| | ≤1.5 mA (DC) |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤3 A (≤20 ms, max 5 Hz) |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

### A6 — 2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm

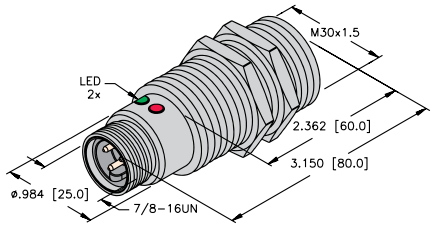
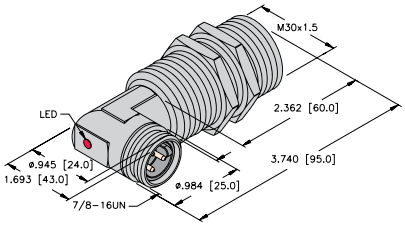
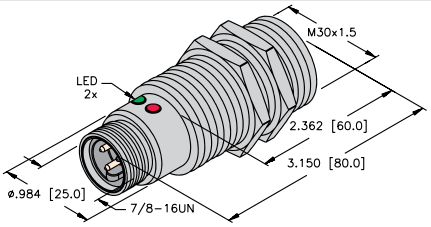
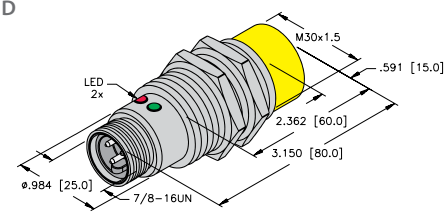
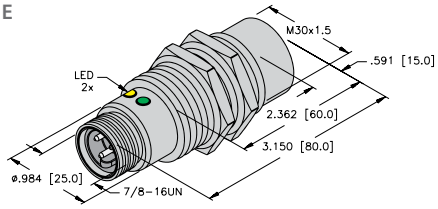
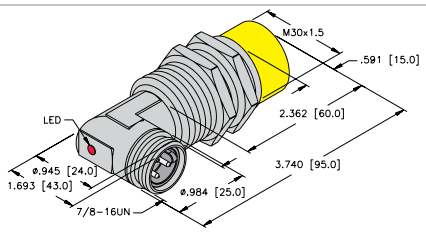
## Threaded Metal Barrels with Connector and AC/DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi15-G30-ADZ30X2-B3131** 4207201 | Extended Range | 15 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | GN | RD | A | 1 | A5 |
| **Bi15-EG30H-ADZ30X2-B3131** 4207284 | Ext. Range, Stoneface | 15 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | SS | SF | GN | RD | A | 1 | A5 |
| **Bi10U-G30-ADZ30X2-B3131** 4281613 | Uprox | 10 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP67 | CPB | PBT | GN | YE | A | 1 | A5 |
| **Bi10U-GT30-ADZ30X2-B3131** 4281623 | Uprox, PTFE | 10 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP67 | TC | TC | GN | YE | B | 1 | A5 |
| **Bi10-G30-ADZ30X2-B3131** T207591 | | 10 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | GN | RD | A | 1 | A5 |
| **Bi10-GT30-ADZ30X2-B3131/S34** 4256203 | PTFE, WFI | 10 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | TC | TC | GN | RD | B | 1 | A5 |
| **Bi10-GT30H-ADZ30X2-B3131/S34** 4256094 | WFI, Stoneface | 10 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | TC | SF | GN | RD | B | 1 | A5 |
| **Bi10-G30-AZ3X-B3131** 4372298 | | 10 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | A | 1 | A6 |
| **Ni20U-G30-ADZ30X2-B3131** 4281813 | Uprox | 20 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP67 | CPB | PBT | GN | YE | C | 1 | A5 |
| **Ni20U-GT30-ADZ30X2-B3131** 4281823 | Uprox, PTFE | 20 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP67 | TC | TC | GN | YE | D | 1 | A5 |
| **Ni20-G30-ADZ30X2-B3131** 4205406 | Extended Range | 20 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | GN | RD | C | 1 | A5 |
| **Ni15-G30-AZ3X-B3131** 1306090 | | 15 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | C | 1 | A6 |

We reserve the right to make technical alterations without prior notice.

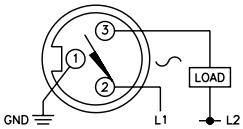
# Inductive Barrel Sensors | 30 mm

## Threaded Metal Barrels with Connector and AC/DC Outputs

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   30 mm - Embeddable, 7/8" Minifast Connection | B   30 mm - Embeddable, 7/8" Minifast Right Angle Connection |
| C   30 mm - Embeddable, 7/8" Minifast Connection, PTFE Coated | D   30 mm - Nonembeddable, 7/8" Minifast Connection | E   30 mm - Nonembeddable, 7/8" Minifast Connection, PTFE Coated |
| F   30 mm - Nonembeddable, 7/8" Minifast Right Angle Connection | | |

### Wiring Diagrams/Mating Cordsets

1




Mating Cordset: RKM 30-*M; RKM 311-*M/S600

### A5 — 2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Minimum Load Current: | ≥3.0 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Inrush Current: | ≤3 A (≤20 ms, max 5 Hz) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | Power-On Effect: | Per IEC 947-5-2 |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA | Transient Protection: | Per EN 60947-5-2 |
| | AC: ≥120 mA; DC: ≥120 mA | Shock: | 30 g, 11 ms |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | AC: ≤100 mA; DC: ≤100 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Off-State (Leakage) Current: | ≤1.7 mA (AC) | | |
| | ≤1.5 mA (DC) | | |

### A6 — 2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Power-On Effect: | Per IEC 947-5-2 |
| | AC: ≤100 mA; DC: ≤100 mA | Transient Protection: | Per EN 60947-5-2 |
| Off-State (Leakage) Current: | ≤1.7 mA | Shock: | 30 g, 11 ms |
| Minimum Load Current: | ≥3.0 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm

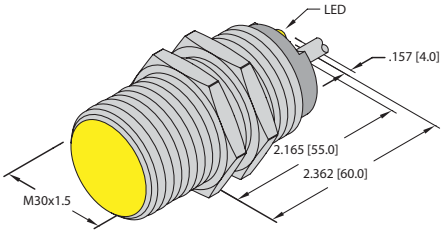
## Threaded Metal Barrels with Connector and AC/DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi15-G30-ADZ30X2-B1131** 4207202 | Extended Range | 15 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | GN | RD | A | 1 | A5 |
| **Bi15-EG30H-ADZ30X2-B1131** 4207292 | Ext. Range, Stoneface | 15 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | SS | SF | GN | RD | A | 1 | A5 |
| **Bi10U-G30-ADZ30X2-B1131** 4281612 | Uprox | 10 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP67 | CPB | PBT | GN | YE | A | 1 | A5 |
| **Bi10-GT30-ADZ30X2-B1131/S34/S1589** 4255280 | PTFE, WFI, Weldguard | 10 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | TC | WG | GN | RD | C | 1 | A5 |
| **Bi10-G30-ADZ30X2-B1131** 42075 | | 10 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | GN | RD | A | 1 | A5 |
| **Bi10-GT30-ADZ30X2-B1131/S34** 4256200 | PTFE, WFI | 10 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | TC | TC | GN | RD | C | 1 | A5 |
| **Bi10-GT30-ADZ30X2-B1131** 4256290 | PTFE | 10 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | TC | TC | GN | RD | C | 1 | A5 |
| **Bi10-G30-AZ3X-B1131** 43722 | | 10 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | A | 1 | A6 |
| **Bi10-G30-AZ3X-B1431** 43726 | | 10 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | B | 1 | A6 |
| **Bi10U-GT30-ADZ30X2-B1131** 4281622 | Uprox, PTFE | 10 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP67 | TC | TC | GN | YE | C | 1 | A5 |
| **Ni20U-G30-ADZ30X2-B1131** 4281812 | Uprox | 20 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP67 | CPB | PBT | GN | YE | D | 1 | A5 |
| **Ni20U-GT30-ADZ30X2-B1131** 4281822 | Uprox | 20 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 10 | ≤400/300 | -30 to +85 | IP67 | TC | TC | GN | YE | E | 1 | A5 |
| **Ni20-G30-ADZ30X2-B1131** 4205405 | Extended Range | 20 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | GN | RD | D | 1 | A5 |
| **Ni15-G30-AZ3X-B1131** 43723 | | 15 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | D | 1 | A6 |
| **Ni15-G30-AZ3X-B1431** 4372700 | | 15 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | F | 1 | A6 |

We reserve the right to make technical alterations without prior notice.

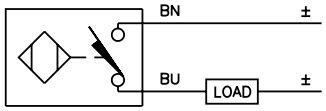
# Inductive Barrel Sensors | 30 mm

## Embeddable Threaded Metal Barrels with Cable and DC Outputs

| Housing Style | Dimension Drawings |
|---|---|
| | A   30 mm - Embeddable, Potted-in Cable |

### Wiring Diagrams/Mating Cordsets

1

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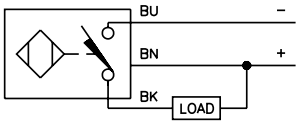


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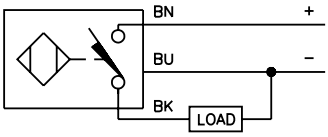
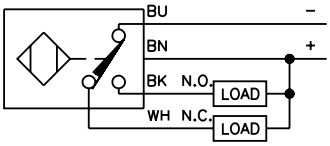
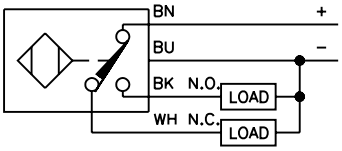



4




5




### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm

## Embeddable Threaded Metal Barrels with Cable and DC Outputs

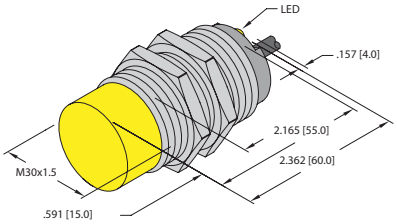
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi20U-M30-AN6X** 1644890 | Uprox3 | 20 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP68 | CPB | LCP | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Bi20U-M30-AP6X** 1644886 | Uprox3 | 20 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP68 | CPB | LCP | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Bi15U-M30-AN6X** 1636735 | Uprox+ | 15 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Bi15U-M30-AP6X** 1636731 | Uprox+ | 15 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Bi15U-EM30-AP6X** 1636741 | Uprox+ | 15 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | SS | LCP | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Bi15-M30-AN6X** 4618620 | Extended Range | 15 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Bi15-M30-AP6X** 4618530 | Extended Range | 15 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Bi15-M30-VN4X** 4570712 | Ext. Range, Comp. Outputs | 15 | 4-wire DC NPN | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 4 | A4 |
| **Bi15-M30-VP4X** 4570713 | Ext. Range, Comp. Outputs | 15 | 4-wire DC PNP | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 5 | A4 |
| **Bi12-M30-AD4X** 4417035 | Extended Range | 12 | 2-wire DC | 10-65 VDC | 400 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 1 | A2 |
| **Bi10U-M30-AD4X** 4405073 | Uprox | 10 | 2-wire DC | 10-65 VDC | 10 | ≤100 | -30 to +85 | IP68 | TC | LCP | N/A | YE | 2M/PVC | A | 1 | A2 |
| **Bi10U-M30-AN6X** 1636120 | Uprox | 10 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Bi10U-EM30-AN6X** 1636320 | Uprox | 10 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | SS | LCP | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Bi10U-M30-AP6X** 1636100 | Uprox | 10 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Bi10U-EM30-AP6X** 1636300 | Uprox | 10 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | SS | LCP | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Bi10-M30-AD4X** 44170 | | 10 | 2-wire DC | 10-65 VDC | 500 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 1 | A2 |
| **Bi10-M30-VN4X** 15714 | Comp. Outputs | 10 | 4-wire DC NPN | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 4 | A4 |
| **Bi10-M30-VP4X** 15614 | Comp. Outputs | 10 | 4-wire DC PNP | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 5 | A4 |



We reserve the right to make technical alterations without prior notice.

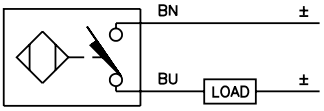
# Inductive Barrel Sensors | 30 mm

## Nonembeddable Threaded Metal Barrels with Cable and DC Outputs

| Housing Style | Dimension Drawings |
|---|---|
| | A   30 mm - Nonembeddable, Potted-In Cable |

### Wiring Diagrams/Mating Cordsets

1

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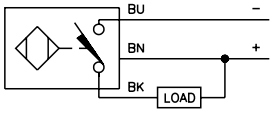


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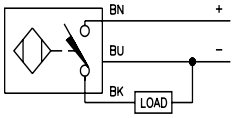


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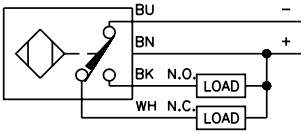
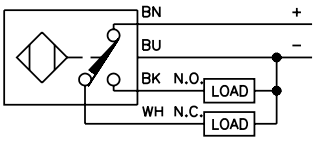



5




### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm

## Nonembeddable Threaded Metal Barrels with Cable and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni30U-M30-AN6X** 1644634 | Uprox+ | 30 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Ni30U-M30-AP6X** 1646630 | Uprox+ | 30 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP68 | CPB | LCP | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Ni20U-M30-AN6X** 1646120 | Uprox | 20 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Ni20U-EM30-AN6X** 1646320 | Uprox | 20 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | SS | PBT | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Ni20U-M30-AP6X** 1646100 | Uprox | 20 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -30 to +85 | IP67 | CPB | PBT | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Ni20U-EM30-AP6X** 1646300 | Uprox | 20 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | SS | PBT | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Ni20-M30-AD4X** 4466135 | Extended Range | 20 | 2-wire DC | 10-65 VDC | 200 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 1 | A2 |
| **Ni20-M30-AN6X** 4670516 | Extended Range | 20 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Ni20-M30-AP6X** 4670511 | Extended Range | 20 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Ni20-M30-VN4X** 4590604 | Extended Range | 20 | 4-wire DC NPN | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 4 | A4 |
| **Ni20-M30-VP4X** 4590605 | Extended Range | 20 | 4-wire DC PNP | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 5 | A4 |
| **Ni15-M30-AD4X** 44172 | | 15 | 2-wire DC | 10-65 VDC | 200 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 1 | A2 |
| **Ni15-M30-VN4X** 15715 | Comp. Outputs | 15 | 4-wire DC NPN | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 4 | A4 |
| **Ni15-M30-VP4X** 15615 | Comp. Outputs | 15 | 4-wire DC PNP | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 5 | A4 |

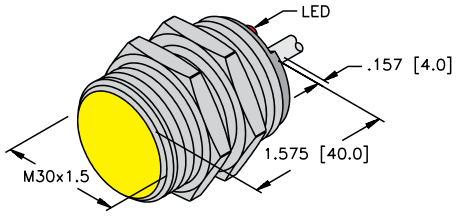
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm

**Threaded Metal Barrels with Cable and DC Outputs**

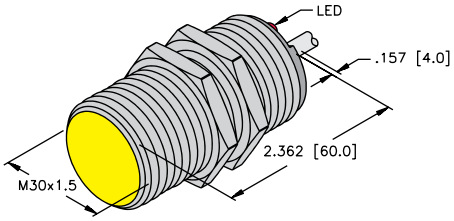
| Housing Style | Dimension Drawings |
|---|---|

A



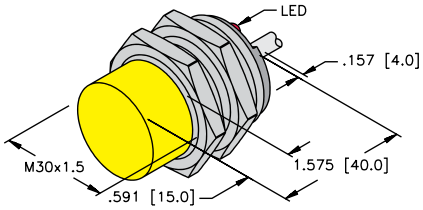

30 mm - Embeddable, Potted-In Cable

B



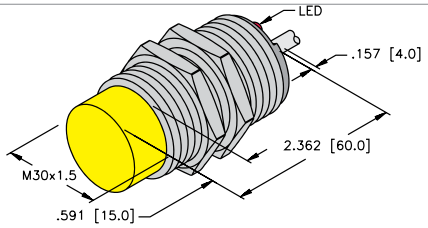

30 mm - Embeddable, Potted-In Cable

C




30 mm - Nonembeddable, Potted-In Cable

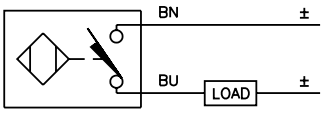
D




30 mm - Nonembeddable, Potted-In Cable

**Wiring Diagrams/Mating Cordsets**

1

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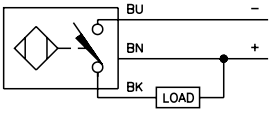


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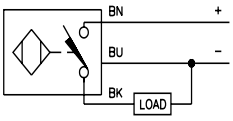



**A2** — **2-wire DC - (AD, RD, AG)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm

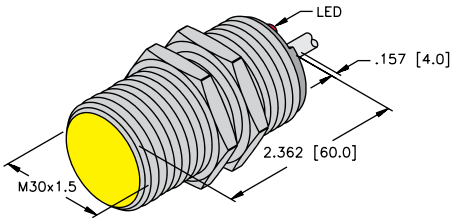
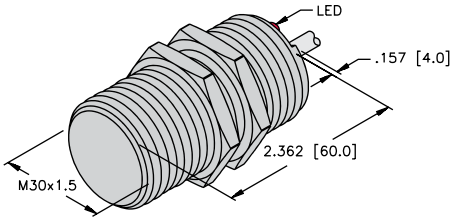
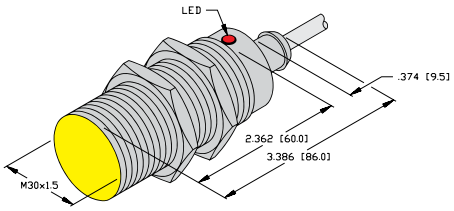
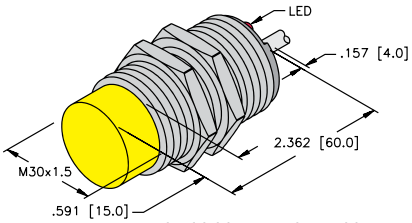
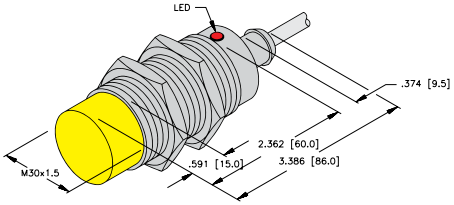
## Threaded Metal Barrels with Cable and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi10-G30K-AD4X** 4670695 | Short Barrel | 10 | 2-wire DC | 10-65 VDC | 500 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 1 | A2 |
| **Bi10-G30K-AN6X** 46716 | Short Barrel | 10 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Bi10-G30K-AP6X** 46706 | Short Barrel | 10 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Bi15-G30K-AP6X** 4207300 | Short Barrel | 15 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Bi10-G30-AN6X** 4647500 | | 10 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | B | 2 | A4 |
| **Bi10-G30-AN7X** 1714800 | TTL Compatible | 10 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | B | 2 | A4 |
| **Bi10-G30-AP6X** 4647400 | | 10 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | B | 3 | A4 |
| **Ni30-G30K-AP6X** 4670711 | Short Barrel | 30 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | C | 3 | A4 |
| **Ni15-G30-AN6X** 46477 | | 15 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | D | 2 | A4 |
| **Ni15-G30-AN7X** 1714900 | | 15 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | D | 2 | A4 |
| **Ni15-G30-AP6X** 4647600 | | 15 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | D | 3 | A4 |
| **Ni15-G30K-AN6X** 46717 | Short Barrel | 15 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | C | 2 | A4 |
| **Ni15-G30K-AP6X** 46707 | Short Barrel | 15 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | C | 3 | A4 |

We reserve the right to make technical alterations without prior notice.

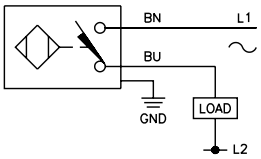
# Inductive Barrel Sensors | 30 mm

## Threaded Metal Barrels with Cable and AC/DC Outputs

| Housing Style | Dimension Drawings |
|---|---|
| | A   30 mm - Embeddable, Potted-In Cable |
| B   30 mm - Embeddable, Potted-In Cable, PTFE Coated | C   30 mm - Embeddable, Potted-In Cable |
| D   30 mm - Nonembeddable, Potted-In Cable | E   30 mm - Nonembeddable, Potted-In Cable |

### Wiring Diagrams/Mating Cordsets

1




### A5 — 2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA |
| | AC: ≥120 mA; DC: ≥120 mA |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA (AC) |
| | ≤1.5 mA (DC) |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤3 A (≤20 ms, max 5 Hz) |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

### A6 — 2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm

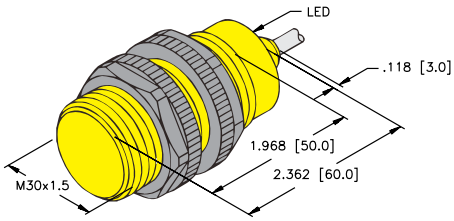
## Threaded Metal Barrels with Cable and AC/DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi10-EG30-ADZ30X2** 4256095 | | 10 | 2-wire AC/DC Short-circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | SS | PA 12 | GN | RD | 2M/PVC | A | 1 | A5 |
| **Bi10-G30-ADZ30X2** 42070 | | 10 | 2-wire AC/DC Short-circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | GN | RD | 2M/PVC | A | 1 | A5 |
| **Bi15-G30-ADZ30X2** 4207200 | | 15 | 2-wire AC/DC Short-circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | GN | RD | 2M/PVC | A | 1 | A5 |
| **Bi10-EG30-AZ3X** 4345699 | | 10 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | SS | PA 12 | N/A | RD | 2M/PVC | A | 1 | A6 |
| **Bi10-G30-AZ3X** 4345400 | | 10 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | 2M/PVC | A | 1 | A6 |
| **Bi10-GT30-ADZ30X2/S34** 4256000 | PTFE, WFI | 10 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | TC | TC | GN | RD | 2M/PVC | B | 1 | A5 |
| **Bi10-M30T-AZ3X** 43170 | | 10 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | 2M/PVC | C | 1 | A6 |
| **Ni20-G30-ADZ30X2** 4205404 | | 20 | 2-wire AC/DC Short-Circuit Protected | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | GN | RD | 2M/PVC | D | 1 | A5 |
| **Ni15-M30T-AZ3X** 43171 | | 15 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | 2M/PVC | E | 1 | A6 |

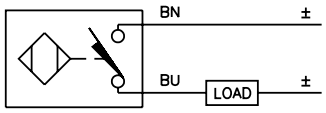
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm

## Threaded Plastic Barrels with Cable and DC Outputs

| Housing Style | Dimension Drawings |
|---|---|
| | A   30 mm - Embeddable/Nonembeddable, Partial Threading, Potted-In Cable |

### Wiring Diagrams/Mating Cordsets

1
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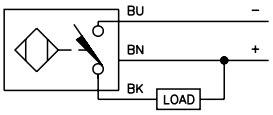


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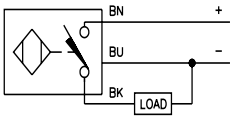


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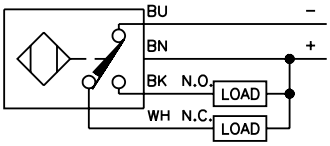
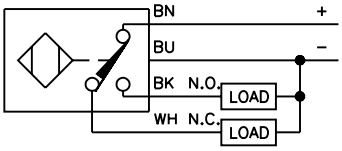



5



### A2 — 2-wire DC - (AD, RD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-polarized (AD) <5.0 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤4.2 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm

## Threaded Plastic Barrels with Cable and DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi10U-S30-AN6X** 1636520 | Uprox | 10 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | PA 12 | PA 12 | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Bi10U-S30-AP6X** 1636500 | Uprox | 10 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | PA 12 | PA 12 | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Bi10-S30-AD4X** 44590 | | 10 | 2-wire DC | 10-65 VDC | 500 | ≤100 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | 2M/PVC | A | 1 | A2 |
| **Bi10-S30-AN6X** 46591 | | 10 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Bi10-S30-AN7X/S100** 17777 | TTL Compatible, High Temp. 100 °C | 10 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +100 | IP67 | PA 12 | IRPA | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Bi10-S30-AP6X** 46590 | | 10 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Bi10-S30-VP4X** 15122 | Comp. Outputs | 10 | 4-wire DC PNP | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | 2M/PVC | A | 5 | A4 |
| **Ni20U-S30-AN6X** 1646520 | Uprox | 20 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | PA 12 | PA 12 | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Ni20U-S30-AP6X** 1646500 | Uprox | 20 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | PA 12 | PA 12 | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Ni15-S30-AD4X** 44592 | | 15 | 2-wire DC | 10-65 VDC | 200 | ≤100 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | 2M/PVC | A | 1 | A2 |
| **Ni15-S30-AN6X** 46593 | | 15 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | 2M/PVC | A | 2 | A4 |
| **Ni15-S30-AP6X** 46592 | | 15 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | 2M/PVC | A | 3 | A4 |
| **Ni15-S30-VN4X** 15224 | Comp. Outputs | 15 | 4-wire DC NPN | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | 2M/PVC | A | 4 | A4 |
| **Ni15-S30-VP4X** 15630 | Comp. Outputs | 15 | 4-wire DC PNP | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | YE | 2M/PVC | A | 5 | A4 |

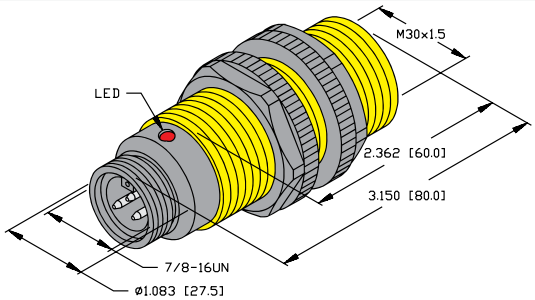
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm

**Threaded Plastic Barrels with AC Outputs**

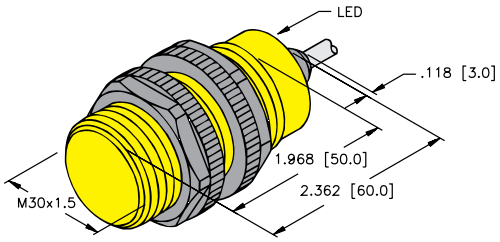
| Housing Style | Dimension Drawings |
|---|---|

A




30 mm - Embeddable/Nonembeddable, Full Threading, 7/8" Minifast Connection

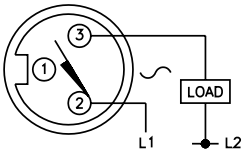
B




30 mm - Embeddable/Nonembeddable, Partial Threading, Potted-In Cable

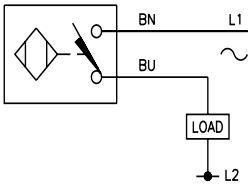
**Wiring Diagrams/Mating Cordsets**

1




Mating Cordset: RK 30-*M

2




**A6** — **2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)**

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Power-On Effect: | Per IEC 947-5-2 |
| | AC: ≤100 mA; DC: ≤100 mA | Transient Protection: | Per EN 60947-5-2 |
| Off-State (Leakage) Current: | ≤1.7 mA | Shock: | 30 g, 11 ms |
| Minimum Load Current: | ≥3.0 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm

**Threaded Plastic Barrels with AC Outputs**

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi10-S30-AZ3X** 43554 | | 10 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | RD | 2M/PVC | B | 2 | A6 |
| **Ni15-S30-AZ3X** 43555 | | 15 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | RD | 2M/PVC | B | 2 | A6 |
| **Bi10-P30-AZ3X-B2131** 43749 | | 10 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | RD | -- | A | 1 | A6 |
| **Ni15-S30-AZ3X/S100** 13758 | High Temp. 100 °C | 15 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +100 | IP67 | PA 12 | PA 12 | N/A | RD | 2M/PVC | B | 2 | A6 |
| **Ni15-P30-AZ3X-B2131** 43754 | | 15 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | RD | -- | A | 1 | A6 |



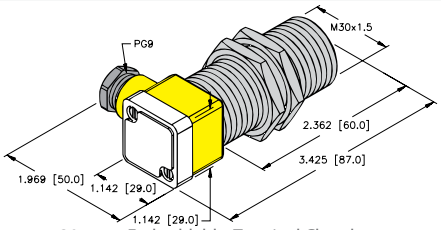
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm

## Threaded Barrels with Terminal Chamber and AC/DC Outputs

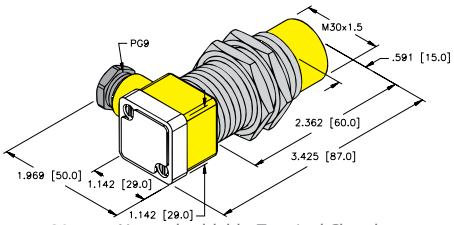
| Housing Style | Dimension Drawings |
|---|---|

A



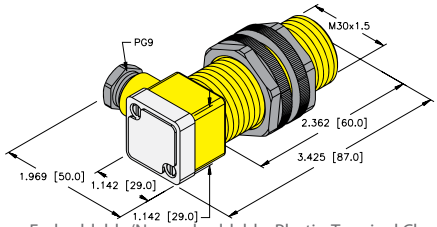

30 mm - Embeddable, Terminal Chamber

B



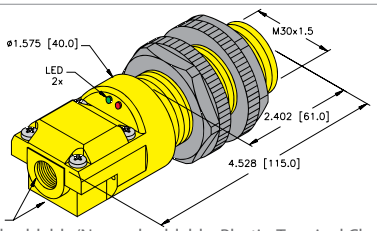

30 mm - Nonembeddable, Terminal Chamber

C




30 mm - Embeddable/Nonembeddable, Plastic, Terminal Chamber

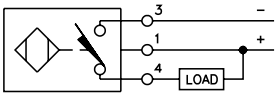
D




30 mm - Embeddable/Nonembeddable, Plastic, Terminal Chamber

### Wiring Diagrams/Mating Cordsets

1

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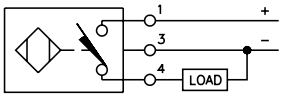


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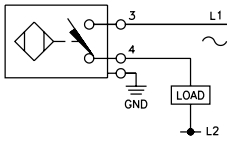


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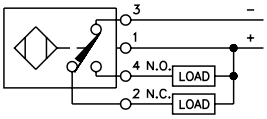


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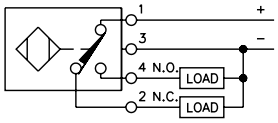



### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

### A6 — 2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Power-On Effect: | Per IEC 947-5-2 |
| | AC: ≤100 mA; DC: ≤100 mA | Transient Protection: | Per EN 60947-5-2 |
| Off-State (Leakage) Current: | ≤1.7 mA | Shock: | 30 g, 11 ms |
| Minimum Load Current: | ≥3.0 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm

## Threaded Barrels with Terminal Chamber and AC/DC Outputs

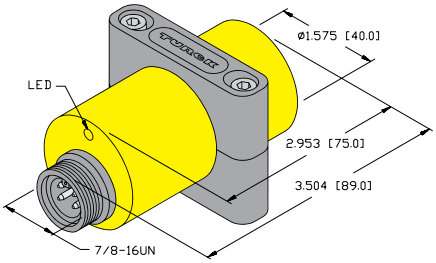
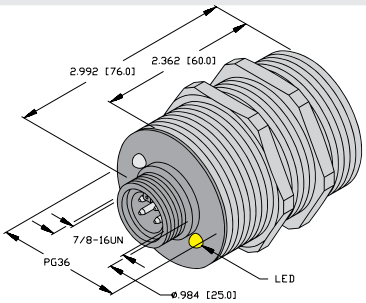
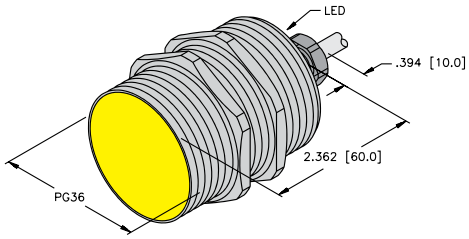
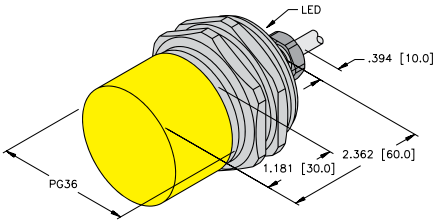
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi10U-EG30SK-AN6X** 1636420 | Uprox | 10 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | SS | LCP | N/A | YE | A | 1 | A4 |
| **Bi10-G30SK-AN6X2** 4648500 | | 10 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | GN | YE | A | 1 | A4 |
| **Bi10-P30SK-AN6X2** 4660000 | | 10 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | GN | YE | C | 1 | A4 |
| **Bi10-G30SK-AP6X2** 4648400 | | 10 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | GN | YE | A | 2 | A4 |
| **Bi10-P30SK-AP6X2** 4659900 | | 10 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | GN | YE | C | 2 | A4 |
| **Bi10-P30SR-VN4X2** 15752 | Comp. Outputs | 10 | 4-wire DC NPN | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | GN | YE | D | 4 | A4 |
| **Bi10-P30SR-VP4X2** 15652 | Comp. Outputs | 10 | 4-wire DC PNP | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | GN | YE | D | 5 | A4 |
| **Bi10-G30SK-AZ3X2** 4346400 | | 10 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | GN | RD | A | 3 | A6 |
| **Bi10-P30SK-AZ3X2** 4356400 | | 10 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PA 12 | PA 12 | GN | RD | C | 3 | A6 |
| **Bi10-P30SR-FZ3X2** 13420 | Programmable Outputs | 10 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤500 | -25 to +70 | IP67 | PA 12 | PA 12 | GN | RD | D | 3 | A6 |
| **Ni20U-P30SK-AP6X** 1646700 | Uprox | 20 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -30 to +85 | IP68 | PA 12 | PA 12 | N/A | YE | C | 2 | A4 |
| **Ni15-P30SK-AN6X2** 4660200 | | 15 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | GN | YE | C | 1 | A4 |
| **Ni15-G30SK-AP6X2** 4648600 | | 15 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | GN | YE | B | 2 | A4 |
| **Ni15-P30SK-AP6X2** 4660100 | | 15 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | GN | YE | C | 2 | A4 |
| **Ni15-P30SR-VN4X2** 15753 | Comp. Outputs | 15 | 4-wire DC NPN | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | GN | YE | D | 4 | A4 |
| **Ni15-P30SR-VP4X2** 15653 | Comp. Outputs | 15 | 4-wire DC PNP | 10-65 VDC | 500 | ≤200 | -25 to +70 | IP67 | PA 12 | PA 12 | GN | YE | D | 5 | A4 |
| **Ni15-G30SK-AZ3X2** 4346500 | | 15 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | GN | RD | B | 3 | A6 |
| **Ni15-P30SK-AZ3X2** 4356500 | | 15 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PA 12 | PA 12 | GN | RD | C | 3 | A6 |
| **Ni15-P30SR-FZ3X2** 13421 | Programmable Outputs | 15 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤500 | -25 to +70 | IP67 | PA 12 | PA 12 | GN | RD | D | 3 | A6 |



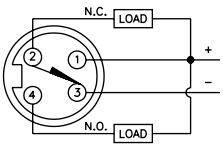
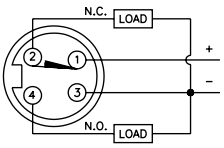
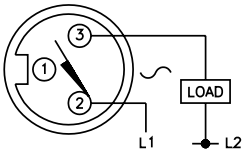
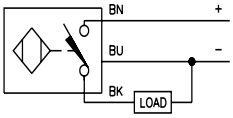
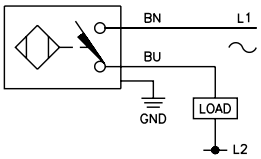
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 40 mm, 47 mm

**Large Diameter Barrels with AC/DC Outputs**

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   40 mm - Nonembeddable, Smooth Plastic Barrel, 7/8" Minifast Connection | B   47 mm - Embeddable, 7/8" Minifast Connection |
| C   47 mm - Embeddable, Potted-In Cable | D   47 mm - Nonembeddable, Potted-In Cable | |

**Wiring Diagrams/Mating Cordsets**

| | | |
|---|---|---|
| 1   Mating Cordset: RKM 40-*M | 2   Mating Cordset: RKM 40-*M | 3   Mating Cordset: RKM 30-*M |
| 4   | 5   | |

**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

**A6** — **2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)**

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Power-On Effect: | Per IEC 947-5-2 |
| | AC: ≤100 mA; DC: ≤100 mA | Transient Protection: | Per EN 60947-5-2 |
| Off-State (Leakage) Current: | ≤1.7 mA | Shock: | 30 g, 11 ms |
| Minimum Load Current: | ≥3.0 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 40 mm, 47 mm

## Large Diameter Barrels with AC/DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi20-G47-AP4X** 15645 | | 20 | 3-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | C | 4 | A4 |
| **Bi20-G47-AZ3X** 13088 | | 20 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | 2M/PVC | C | 5 | A6 |
| **Ni25-G47-AP4X** 15646 | | 25 | 3-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/PVC | D | 4 | A4 |
| **Ni25-G47-AZ3X** 13089 | | 25 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | 2M/PVC | D | 5 | A6 |
| **Bi25-G47-VN4X-B2141** 45903 | Comp. Outputs | 25 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | -- | B | 1 | A4 |
| **Bi25-G47-VP4X-B2141** 45902 | Comp. Outputs | 25 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | -- | B | 2 | A4 |
| **Bi20-G47-AZ3X-B2131** 43759 | | 20 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | N/A | RD | -- | B | 3 | A6 |
| **Ni30-K40-VN4X-B2141** 45904 | Comp. Outputs | 30 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | ABS | ABS | N/A | YE | -- | A | 1 | A4 |
| **Ni30-K40-VP4X-B2141** 45905 | Comp. Outputs | 30 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | ABS | ABS | N/A | YE | -- | A | 2 | A4 |
| **Ni30-K40-AZ3X-B2131** 43758 | | 30 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | ABS | ABS | N/A | RD | -- | A | 3 | A6 |



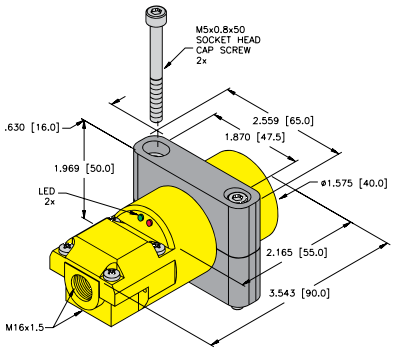
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 40 mm, 47 mm

**Large Diameter Barrels with Terminal Chambers and AC/DC Outputs**

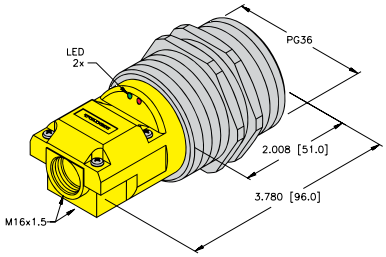
| Housing Style | Dimension Drawings |
|---|---|

A



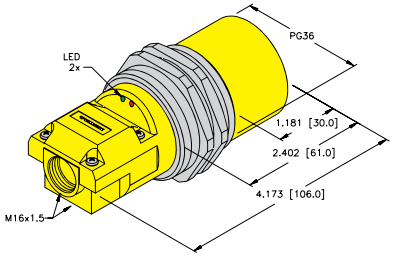

40 mm - Smooth Plastic, Terminal Chamber

B




47 mm - Embeddable, Terminal Chamber

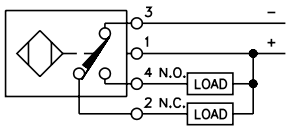
C




47 mm - Nonembeddable, Terminal Chamber

**Wiring Diagrams/Mating Cordsets**

1

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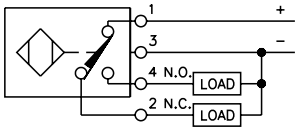
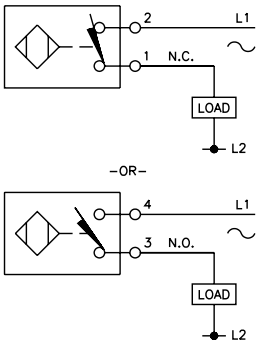



3




**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

**A6** — **2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)**

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Power-On Effect: | Per IEC 947-5-2 |
| | AC: ≤100 mA; DC: ≤100 mA | Transient Protection: | Per EN 60947-5-2 |
| Off-State (Leakage) Current: | ≤1.7 mA | Shock: | 30 g, 11 ms |
| Minimum Load Current: | ≥3.0 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 40 mm, 47 mm

**Large Diameter Barrels with Terminal Chambers and AC/DC Outputs**

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi25-G47SR-FZ3X2** 13427 | Programmable Outputs | 25 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | GN | RD | B | 3 | A6 |
| **Bi25-G47SR-VN4X2** 15748 | Comp. Outputs | 25 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | GN | YE | B | 1 | A4 |
| **Bi25-G47SR-VP4X2** 15648 | Comp. Outputs | 25 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | GN | YE | B | 2 | A4 |
| **Bi15-K40SR-FZ3X2** 13423 | Programmable Outputs | 15 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | ABS | ABS | GN | RD | A | 3 | A6 |
| **Bi15-K40SR-VP4X2** 15655 | Comp. Outputs | 15 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | ABS | ABS | GN | YE | A | 2 | A4 |
| **Ni40-G47SR-FZ3X2** 13428 | Programmable Outputs | 40 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | CPB | PA 12 | GN | RD | C | 3 | A6 |
| **Ni40-G47SR-VP4X2** 15650 | Comp. Outputs | 40 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | GN | YE | C | 2 | A4 |
| **Ni30-K40SR-FZ3X2** 13425 | Programmable Outputs | 30 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | ABS | ABS | GN | RD | A | 3 | A6 |
| **Ni30-K40SR-VN4X2** 15758 | Comp. Outputs | 30 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | ABS | ABS | GN | YE | A | 1 | A4 |
| **Ni30-K40SR-VP4X2** 15658 | Comp. Outputs | 30 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | ABS | ABS | GN | YE | A | 2 | A4 |
| **Ni20-K40SR-FZ3X2** 13424 | Programmable Outputs | 20 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | ABS | ABS | GN | RD | A | 3 | A6 |
| **Ni20-K40SR-VN4X2** 15756 | Comp. Outputs | 20 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | ABS | ABS | GN | YE | A | 1 | A4 |
| **Ni20-K40SR-VP4X2** 15656 | Comp. Outputs | 20 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | ABS | ABS | GN | YE | A | 2 | A4 |

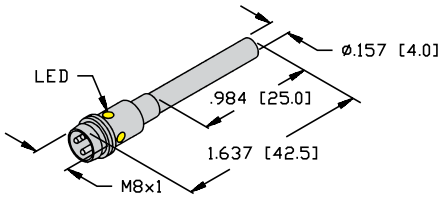
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 4 mm, 5 mm, & 6.5 mm Namur

**Intrinsically Safe**

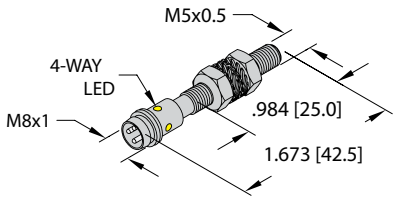
## Dimension Drawings

A



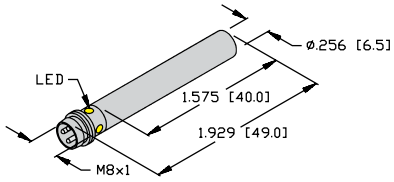

4 mm - Embeddable, Miniature Smooth, M8 Picofast Quick Disconnect

B



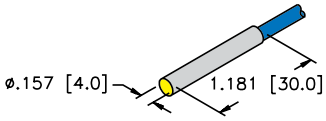

5 mm - Embeddable, Miniature Threaded, M8 Picofast Quick Disconnect

C



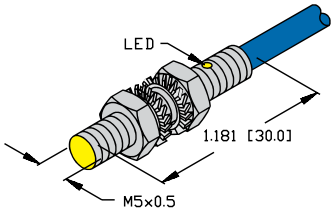

6.5 mm - Embeddable, Miniature Smooth, M8 Picofast Quick Disconnect

D



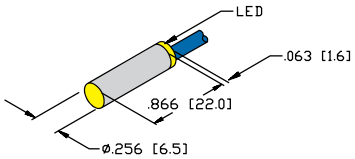

4 mm - Embeddable, Miniature Smooth Barrel, Potted-In Cable

E



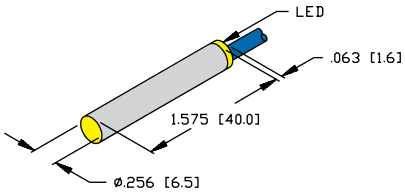

5 mm - Embeddable, Miniature Threaded Barrel, Potted-In Cable

F



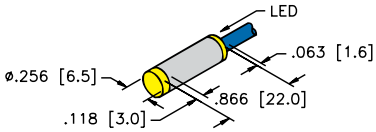

6.5 mm - Embeddable, Miniature Smooth Barrel, Potted-In Cable

G




6.5 mm - Embeddable, Miniature Smooth Barrel, Potted-In Cable

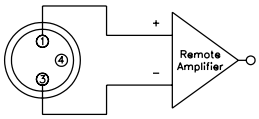
H




6.5 mm - Nonembeddable, Miniature Smooth Barrel, Potted-In Cable

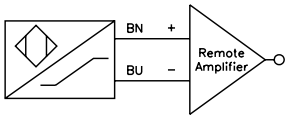
## Wiring Diagrams/Mating Cordsets

1




Mating Cordset: PKG 3M-*

2




## A1 2-wire DC NAMUR - (Y0 and Y1)

| | | | |
|---|---|---|---|
| Differential Travel (Hysteresis): | 1-10% (5% typical) | Power-On Effect: | Realized in Amplifier |
| Nominal Voltage: | 8.2 VDC (EN60947-5-6) | Reverse Polarity Protection: | Incorporated |
| Load Resistance: | 1000 Ω | Wire-Break Protection: | Realized in Amplifier |
| Non-Activated Current Consumption: | ≥2.1 mA | Transient Protection: | Realized in Amplifier |
| Activated Current Consumption: | ≤1.2 mA | Shock: | 30 g, 11 ms |
| Recommended Switching Point for | >1.2 to <2.1 mA, | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Remote Amplifier: | typ. 1.55 mA ON/1.75 mA OFF | Repeatability: | ≤2% of Rated Operating Distance |

**Amplifier Note:**
Inductive sensors with Namur outputs are typically used in hazardous locations and the approval agencies require the use of an amplifier to regulate the signals in the hazardous area. Due to the wide variety of approvals, output options, and amplifier designs, it is not possible to incorporate all of the choices in this catalog. For the most up to date information, please either search for these products under our interface technology product category (www.turck.us) or contact us by phone.

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 4 mm, 5 mm, & 6.5 mm Namur

**Intrinsically Safe** IS

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Cable Length/Jacket | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi1-EH04-Y1-V1330** 1003044 | | 1 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | -- | N/A | A | 1 | A1 |
| **Bi1-EG05-Y1-V1331** 1003241 | | 1 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | -- | N/A | B | 1 | A1 |
| **Bi1.5-EH6.5-Y1-V1130** 1004621 | | 1.5 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | -- | N/A | C | 1 | A1 |
| **Bi1-EH04-Y1** 1003040 | | 1 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | 2M/PVC | N/A | D | 2 | A1 |
| **Bi1-EG05-Y1** 1003240 | | 1 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | 2M/PVC | N/A | E | 2 | A1 |
| **Bi1.5-EH6.5K-Y1** 1004600 | Short Barrel | 1.5 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | 2M/PVC | N/A | F | 2 | A1 |
| **Bi1.5-H6.5-Y1X** 4004810 | | 1.5 | 2-wire DC NAMUR | 5-30 VDC | 3000 | Remote | -25 to +70 | IP67 | SS | PA 12 | 2M/PVC | YE | G | 2 | A1 |
| **Ni3-EH6.5K-Y1** 1004700 | Short Barrel | 3 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | 2M/PVC | N/A | H | 2 | A1 |



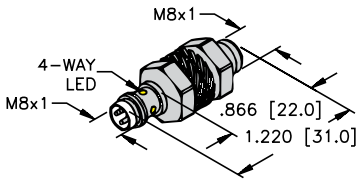
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 8 mm Namur

**Intrinsically Safe**

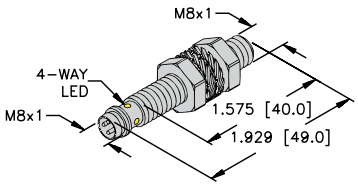
## Dimension Drawings

A



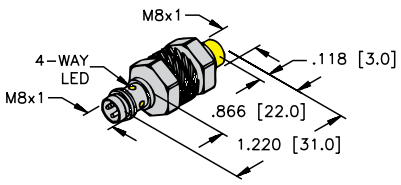

8 mm - Embeddable, Miniature Threaded, M8 Picofast Quick Disconnect

B



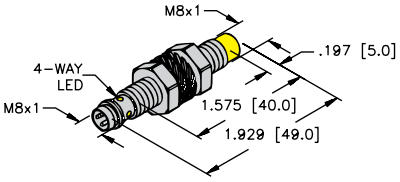

8 mm - Embeddable, Miniature Threaded, M8 Picofast Quick Disconnect

C



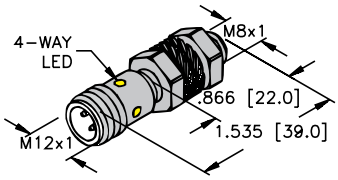

8 mm - Nonembeddable, Miniature Threaded, M8 Picofast Quick Disconnect

D



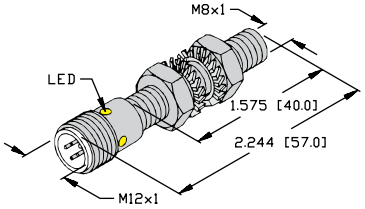

8 mm - Nonembeddable, Miniature Threaded, M8 Picofast Quick Disconnect

E



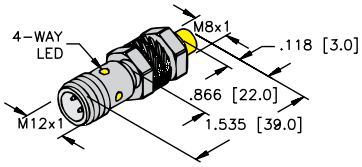

8 mm - Embeddable, Miniature Threaded, M12 Eurofast Quick Disconnect

F



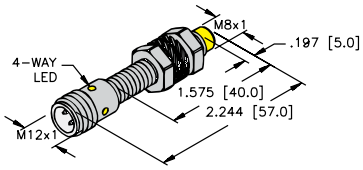

8 mm - Embeddable, Miniature Threaded, M12 Eurofast Quick Disconnect

G




8 mm - Nonembeddable, Miniature Threaded, M12 Eurofast Quick Disconnect

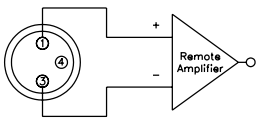
H




8 mm - Nonembeddable, Miniature Threaded, M12 Eurofast Quick Disconnect

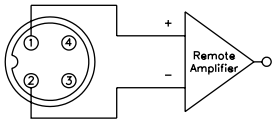
## Wiring Diagrams/Mating Cordsets

1




Mating Cordset: PKG 3M-*

2




Mating Cordset: RK 4.21T-*

## A1 2-wire DC NAMUR - (Y0 and Y1)

| | |
|---|---|
| Differential Travel (Hysteresis): | 1-10% (5% typical) |
| Nominal Voltage: | 8.2 VDC (EN60947-5-6) |
| Load Resistance: | 1000 Ω |
| Non-Activated Current Consumption: | ≥2.1 mA |
| Activated Current Consumption: | ≤1.2 mA |
| Recommended Switching Point for Remote Amplifier: | >1.2 to <2.1 mA, typ. 1.55 mA ON/1.75 mA OFF |
| Power-On Effect: | Realized in Amplifier |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Realized in Amplifier |
| Transient Protection: | Realized in Amplifier |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

**Amplifier Note:**
Inductive sensors with Namur outputs are typically used in hazardous locations and the approval agencies require the use of an amplifier to regulate the signals in the hazardous area. Due to the wide variety of approvals, output options, and amplifier designs, it is not possible to incorporate all of the choices in this catalog. For the most up to date information, please either search for these products under our interface technology product category (www.turck.us) or contact us by phone.

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 8 mm Namur

**Intrinsically Safe** IS

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi1.5-EG08K-Y1-V1131** 1003630 | Short Barrel | 1.5 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | N/A | A | 1 | A1 |
| **Bi1.5-EG08-Y1-V1131** 1003530 | | 1.5 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | N/A | B | 1 | A1 |
| **Ni3-EG08K-Y1-V1130** 1003721 | Short Barrel | 3 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | N/A | C | 1 | A1 |
| **Ni3-EG08-Y1-V1130** 1003732 | | 3 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | N/A | D | 1 | A1 |
| **Bi1.5-EG08K-Y1-H1341** 1003620 | Short Barrel | 1.5 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | N/A | E | 2 | A1 |
| **Bi1.5-EG08K-Y1X-H1341** 1003640 | Short Barrel | 1.5 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | YE | E | 2 | A1 |
| **Bi1.5-EG08-Y1-H1341** 1003502 | | 1.5 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | N/A | F | 2 | A1 |
| **Ni3-EG08K-Y1-H1341** 1003720 | Short Barrel | 3 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | N/A | G | 2 | A1 |
| **Ni3-EG08K-Y1X-H1341** 1003704 | Short Barrel | 3 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | N/A | G | 2 | A1 |
| **Ni3-EG08-Y1-H1341** 1003730 | | 3 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | N/A | H | 2 | A1 |



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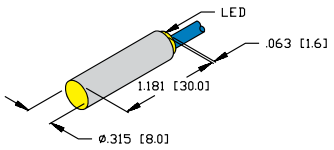
# Inductive Barrel Sensors | 8 mm Namur

**Intrinsically Safe**

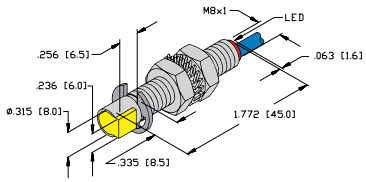
## Dimension Drawings

A



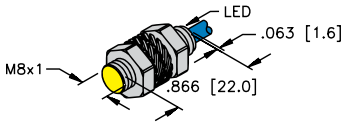

8 mm - Embeddable, Miniature Smooth Barrel, Potted-In Cable

B



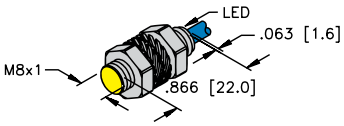

8 mm - Embeddable, Miniature Threaded Barrel, Side Sensing, Potted-In Cable

C



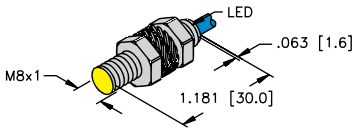

8 mm - Embeddable, Miniature Threaded Barrel, Potted-In Cable

D



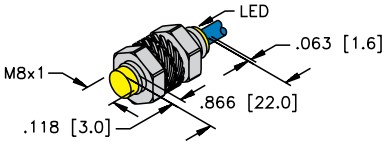

8 mm - Embeddable, Miniature Threaded Barrel, Potted-In Cable

E



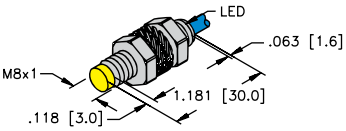

8 mm - Embeddable, Miniature Threaded Barrel, Potted-In Cable

F




8 mm - Nonembeddable, Miniature Threaded Barrel, Potted-In Cable

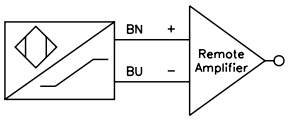
G




8 mm - Nonembeddable, Miniature Threaded Barrel, Potted-In Cable

## Wiring Diagrams/Mating Cordsets

1




## A1 — 2-wire DC NAMUR - (Y0 and Y1)

| | |
|---|---|
| Differential Travel (Hysteresis): | 1-10% (5% typical) |
| Nominal Voltage: | 8.2 VDC (EN60947-5-6) |
| Load Resistance: | 1000 Ω |
| Non-Activated Current Consumption: | ≥2.1 mA |
| Activated Current Consumption: | ≤1.2 mA |
| Recommended Switching Point for Remote Amplifier: | >1.2 to <2.1 mA, typ. 1.55 mA ON/1.75 mA OFF |
| Power-On Effect: | Realized in Amplifier |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Realized in Amplifier |
| Transient Protection: | Realized in Amplifier |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

**Amplifier Note:**
Inductive sensors with Namur outputs are typically used in hazardous locations and the approval agencies require the use of an amplifier to regulate the signals in the hazardous area. Due to the wide variety of approvals, output options, and amplifier designs, it is not possible to incorporate all of the choices in this catalog. For the most up to date information, please either search for these products under our interface technology product category (www.turck.us) or contact us by phone.

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 8 mm Namur

**Intrinsically Safe** IS

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi1.5-H08-Y1** 1021800 | | 1.5 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | N/A | 2M/PVC | A | 1 | A1 |
| **Bi1.5-GS880-Y0** 1004401 | Side Sensing | 1.5 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | N/A | 2M/PVC | B | 1 | A1 |
| **Bi1.5-EG08K-Y1** 1003600 | Short Barrel | 1.5 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | N/A | 2M/PVC | C | 1 | A1 |
| **Bi1.5-EG08-Y1** 1003500 | | 1.5 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | N/A | 2M/PVC | D | 1 | A1 |
| **Bi1.5-G08-Y1** 1005224 | | 1.5 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | N/A | 2M/PVC | E | 1 | A1 |
| **Ni3-EG08K-Y1** 1003700 | Short Barrel | 3 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | N/A | 2M/PVC | F | 1 | A1 |
| **Ni2-G08-Y1** 10053 | | 2 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | N/A | 2M/PVC | G | 1 | A1 |



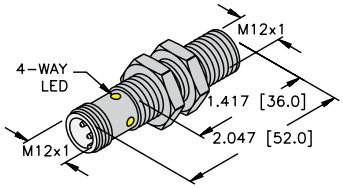
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 12 mm Namur

**Intrinsically Safe**

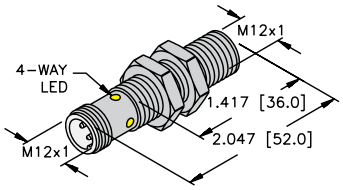
## Dimension Drawings

A



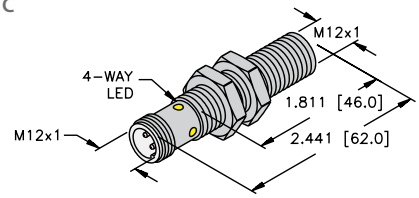

12 mm - Embeddable, M12 Eurofast Connection

B



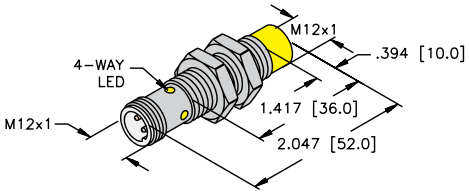

12 mm - Embeddable, M12 Eurofast Connection, PTFE Coated Sensors

C



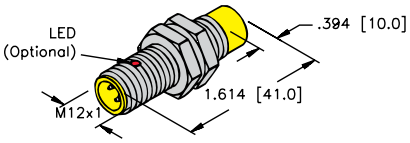

12 mm - Embeddable, M12 Eurofast Connection, Extended Barrel Length

D



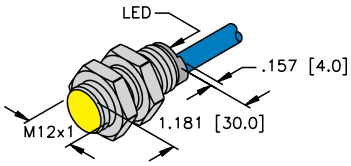

12 mm - Nonembeddable, M12 Eurofast Connection

E



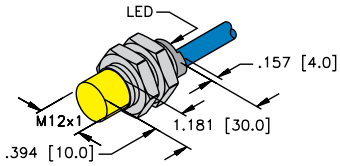

12 mm - Nonembeddable, M12 Eurofast Connection

F



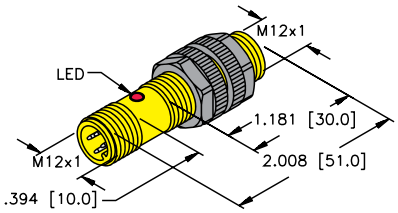

12 mm - Embeddable, Potted-In Cable

G



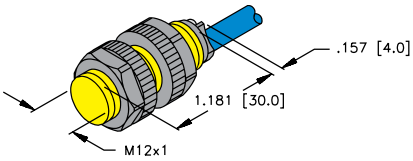

12 mm - Nonembeddable, Potted-In Cable

H




12 mm - Embeddable/Nonembeddable, Plastic, M12 Eurofast Quick Disconnect

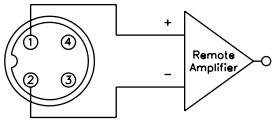
I




12 mm - Embeddable/Nonembeddable, Plastic Potted-In Cable

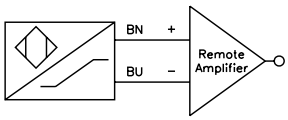
## Wiring Diagrams/Mating Cordsets

1




Mating Cordset: RK 4.21T-*; RKK 4.21T-*

2




## A1 — 2-wire DC NAMUR - (Y0 and Y1)

| | |
|---|---|
| Differential Travel (Hysteresis): | 1-10% (5% typical) |
| Nominal Voltage: | 8.2 VDC (EN60947-5-6) |
| Load Resistance: | 1000 Ω |
| Non-Activated Current Consumption: | ≥2.1 mA |
| Activated Current Consumption: | ≤1.2 mA |
| Recommended Switching Point for Remote Amplifier: | >1.2 to <2.1 mA, typ. 1.55 mA ON/1.75 mA OFF |
| Power-On Effect: | Realized in Amplifier |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Realized in Amplifier |
| Transient Protection: | Realized in Amplifier |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

**Amplifier Note:**
Inductive sensors with Namur outputs are typically used in hazardous locations and the approval agencies require the use of an amplifier to regulate the signals in the hazardous area. Due to the wide variety of approvals, output options, and amplifier designs, it is not possible to incorporate all of the choices in this catalog. For the most up to date information, please either search for these products under our interface technology product category (www.turck.us) or contact us by phone.

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# Inductive Barrel Sensors | 12 mm Namur

**Intrinsically Safe** IS

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi2-M12-Y1X-H1141** 40102 | | 2 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | CPB | PA 12 | YE | -- | A | 1 | A1 |
| **Bi2-MT12-Y0X-H1141** 4010093 | PTFE | 2 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | TC | TC | YE | -- | B | 1 | A1 |
| **Bi2-M12E-Y0X-H1141** 4606490 | | 2 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | CPB | PA 12 | YE | -- | C | 1 | A1 |
| **Bi2-S12-Y0X-H1141** 4030090 | | 2 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | PA | PA | RD | -- | H | 1 | A1 |
| **Ni5-M12-Y1X-H1141** 40103 | | 5 | 2-wire DC NAMUR | 5-30 VDC | 2000 | Remote | -25 to +70 | IP67 | CPB | PA 12 | YE | -- | D | 1 | A1 |
| **Ni5-G12-Y0-H1141** 1005594 | | 5 | 2-wire DC NAMUR | 5-30 VDC | 2000 | Remote | -25 to +70 | IP67 | CPB | PA 12 | N/A | -- | E | 1 | A1 |
| **Ni5-S12-Y0X-H1141** 4030300 | | 5 | 2-wire DC NAMUR | 5-30 VDC | 2000 | Remote | -25 to +70 | IP67 | PA | PA | RD | -- | H | 1 | A1 |
| **Bi2-EG12-Y0X** 4012097 | | 2 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | SS | PA 12 | YE | 2M/PVC | F | 2 | A1 |
| **Bi2-G12-Y0** 1005450 | | 2 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | CPB | PA 12 | N/A | 2M/PVC | F | 2 | A1 |
| **Bi2-G12-Y0X** 4010000 | | 2 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | CPB | PA 12 | YE | 2M/PVC | F | 2 | A1 |
| **Bi2-P12-Y0** 1005456 | | 2 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | 2M/PVC | I | 2 | A1 |
| **Bi2-P12-Y0X** 403000 | | 2 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | PA 12 | PA 12 | YE | 2M/PVC | I | 2 | A1 |
| **Bi2-P12-Y1X/S97** 4030021 | Low Temp. -40 °C | 2 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -40 to +70 | IP67 | PA 12 | PA 12 | YE | 2M/Silicon | I | 2 | A1 |
| **Ni5-G12-Y0** 1005451 | | 5 | 2-wire DC NAMUR | 5-30 VDC | 2000 | Remote | -25 to +70 | IP67 | CPB | PA 12 | N/A | 2M/PVC | G | 2 | A1 |
| **Ni5-G12-Y0X** 1005458 | | 5 | 2-wire DC NAMUR | 5-30 VDC | 2000 | Remote | -25 to +70 | IP67 | CPB | PA 12 | YE | 2M/PVC | G | 2 | A1 |
| **Ni5-P12-Y0X** 1005460 | | 5 | 2-wire DC NAMUR | 5-30 VDC | 2000 | Remote | -25 to +70 | IP67 | PA 12 | PA 12 | YE | 2M/PVC | I | 2 | A1 |
| **Ni5-P12-Y1** 10094 | | 5 | 2-wire DC NAMUR | 5-30 VDC | 2000 | Remote | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | 2M/PVC | I | 2 | A1 |

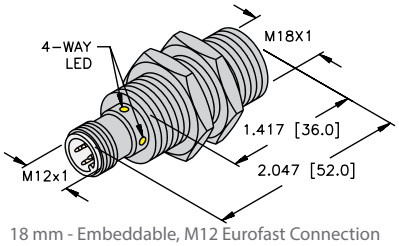
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm Namur

**Intrinsically Safe**

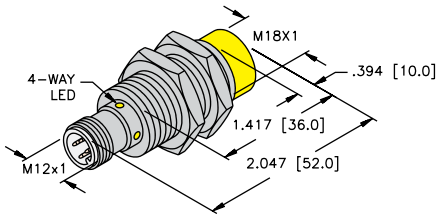
## Dimension Drawings

A



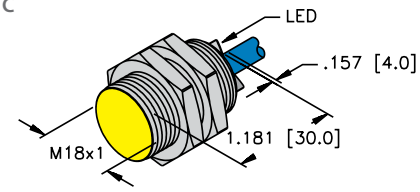

18 mm - Embeddable, M12 Eurofast Connection

B



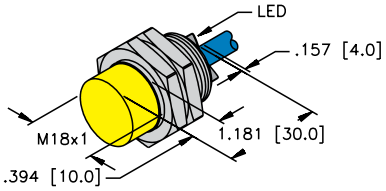

18 mm - Nonembeddable, M12 Eurofast Connection

C



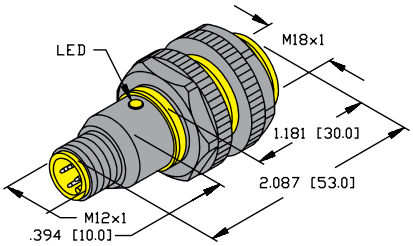

18 mm - Embeddable, Full Threading, Potted-In Cable

D



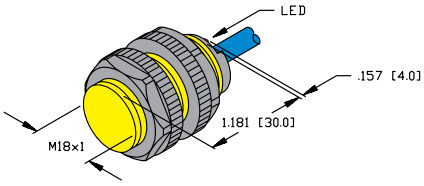

18 mm - Nonembeddable, Full Threading, Potted-In Cable

E



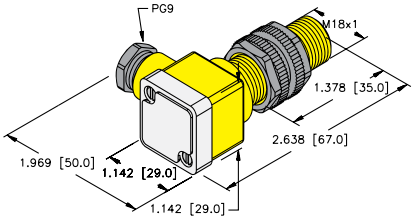

18 mm - Embeddable and Nonembeddable, Partial Threading, M12 Eurofast Connection

F




18 mm - Embeddable and Nonembeddable, Full Threading, Potted-In Cable

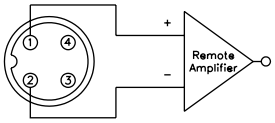
G




18 mm - Embeddable and Nonembeddable, Full Threading, Terminal Chamber

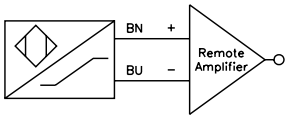
## Wiring Diagrams/Mating Cordsets

1

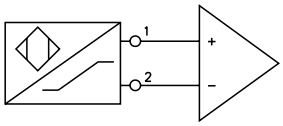



Mating Cordset: RK 4.21T-*; RKK 4.21T-*

2




3




## A1 2-wire DC NAMUR - (Y0 and Y1)

| | |
|---|---|
| Differential Travel (Hysteresis): | 1-10% (5% typical) |
| Nominal Voltage: | 8.2 VDC (EN60947-5-6) |
| Load Resistance: | 1000 Ω |
| Non-Activated Current Consumption: | ≥2.1 mA |
| Activated Current Consumption: | ≤1.2 mA |
| Recommended Switching Point for Remote Amplifier: | >1.2 to <2.1 mA, typ. 1.55 mA ON/1.75 mA OFF |
| Power-On Effect: | Realized in Amplifier |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Realized in Amplifier |
| Transient Protection: | Realized in Amplifier |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

**Amplifier Note:**
Inductive sensors with Namur outputs are typically used in hazardous locations and the approval agencies require the use of an amplifier to regulate the signals in the hazardous area. Due to the wide variety of approvals, output options, and amplifier designs, it is not possible to incorporate all of the choices in this catalog. For the most up to date information, please either search for these products under our interface technology product category (www.turck.us) or contact us by phone.

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 18 mm Namur

**Intrinsically Safe** IS

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi5-M18-Y1X-H1141** 40152 | | 5 | 2-wire DC NAMUR | 5-30 VDC | 1000 | Remote | -25 to +70 | IP67 | CPB | PA 12 | YE | -- | A | 1 | A1 |
| **Ni10-M18-Y1X-H1141** 40153 | | 10 | 2-wire DC NAMUR | 5-30 VDC | 500 | Remote | -25 to +70 | IP67 | CPB | PA 12 | YE | -- | B | 1 | A1 |
| **Bi5-EG18-Y0** 100600 | | 5 | 2-wire DC NAMUR | 5-30 VDC | 1000 | Remote | -25 to +70 | IP67 | SS | PA 12 | N/A | 2M/PVC | C | 2 | A1 |
| **Bi5-G18-Y0** 1005452 | | 5 | 2-wire DC NAMUR | 5-30 VDC | 1000 | Remote | -25 to +70 | IP67 | CPB | PA 12 | N/A | 2M/PVC | C | 2 | A1 |
| **Bi5-G18-Y0X** 4015000 | | 5 | 2-wire DC NAMUR | 5-30 VDC | 1000 | Remote | -25 to +70 | IP67 | CPB | PA 12 | YE | 2M/PVC | C | 2 | A1 |
| **Ni10-G18-Y0** 1006100 | | 10 | 2-wire DC NAMUR | 5-30 VDC | 500 | Remote | -25 to +70 | IP67 | CPB | PA 12 | N/A | 2M/PVC | D | 2 | A1 |
| **Ni10-G18-Y0X** 4015100 | | 10 | 2-wire DC NAMUR | 5-30 VDC | 500 | Remote | -25 to +70 | IP67 | CPB | PA 12 | YE | 2M/PVC | D | 2 | A1 |
| **Bi5-S18-Y0X-H1141** 4036095 | | 5 | 2-wire DC NAMUR | 5-30 VDC | 1000 | Remote | -25 to +70 | IP67 | PA 12 | PA 12 | YE | -- | E | 1 | A1 |
| **Bi5-P18-Y0** 1005457 | | 5 | 2-wire DC NAMUR | 5-30 VDC | 1000 | Remote | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | 2M/PVC | F | 2 | A1 |
| **Bi5-P18-Y0X** 1005462 | | 5 | 2-wire DC NAMUR | 5-30 VDC | 1000 | Remote | -25 to +70 | IP67 | PA 12 | PA 12 | YE | 2M/PVC | F | 2 | A1 |
| **Bi5-P18-Y0/S100** 1024500 | High Temp. 100 °C | 5 | 2-wire DC NAMUR | 5-30 VDC | 1000 | Remote | -25 to +100 | IP67 | PA 12 | IRPA | N/A | 2M/PVC | F | 2 | A1 |
| **Ni10-P18-Y0X** 1005463 | | 10 | 2-wire DC NAMUR | 5-30 VDC | 500 | Remote | -25 to +70 | IP67 | PA 12 | PA 12 | YE | 2M/PVC | F | 2 | A1 |
| **Ni10-P18-Y1** 10096 | | 10 | 2-wire DC NAMUR | 5-30 VDC | 500 | Remote | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | 2M/PVC | F | 2 | A1 |
| **Ni10-P18-Y0/S100** 103170 | High Temp. 100 °C | 10 | 2-wire DC NAMUR | 5-30 VDC | 500 | Remote | -25 to +100 | IP67 | PA 12 | IRPA | N/A | 2M/PVC | F | 2 | A1 |
| **Bi5-P18SK-Y1X** 40360 | | 5 | 2-wire DC NAMUR | 5-30 VDC | 1000 | Remote | -25 to +70 | IP67 | PA 12 | PA 12 | YE | -- | G | 3 | A1 |
| **Ni10-P18SK-Y1X** 40361 | | 10 | 2-wire DC NAMUR | 5-30 VDC | 500 | Remote | -25 to +70 | IP67 | PA 12 | PA 12 | YE | -- | G | 3 | A1 |



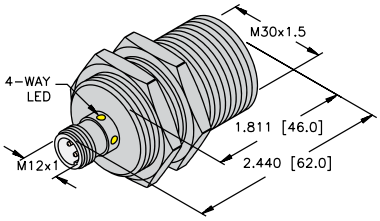
We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm Namur

**Intrinsically Safe**

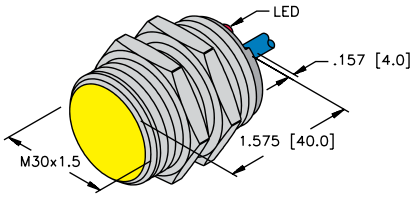
## Dimension Drawings

A



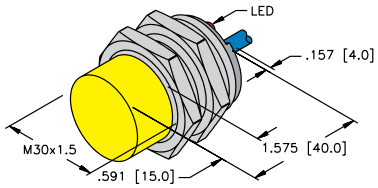

30 mm - Embeddable, M12 Eurofast Connection

B



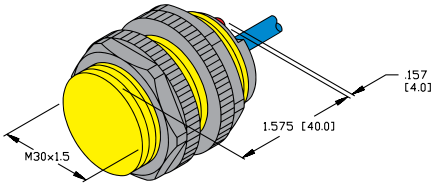

30 mm - Embeddable, Potted-In Cable

C




30 mm - Nonembeddable, Potted-In Cable

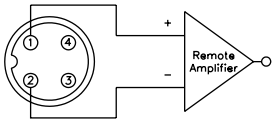
D




30 mm - Embeddable/Nonembeddable, Full Threading, Potted-In Cable

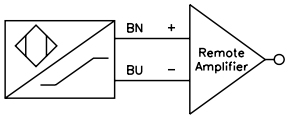
## Wiring Diagrams/Mating Cordsets

1




Mating Cordset: RK 4.21T-*

2




## A1 — 2-wire DC NAMUR - (Y0 and Y1)

| | |
|---|---|
| Differential Travel (Hysteresis): | 1-10% (5% typical) |
| Nominal Voltage: | 8.2 VDC (EN60947-5-6) |
| Load Resistance: | 1000 Ω |
| Non-Activated Current Consumption: | ≥2.1 mA |
| Activated Current Consumption: | ≤1.2 mA |
| Recommended Switching Point for Remote Amplifier: | >1.2 to <2.1 mA, typ. 1.55 mA ON/1.75 mA OFF |
| Power-On Effect: | Realized in Amplifier |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Realized in Amplifier |
| Transient Protection: | Realized in Amplifier |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

**Amplifier Note:**
Inductive sensors with Namur outputs are typically used in hazardous locations and the approval agencies require the use of an amplifier to regulate the signals in the hazardous area. Due to the wide variety of approvals, output options, and amplifier designs, it is not possible to incorporate all of the choices in this catalog. For the most up to date information, please either search for these products under our interface technology product category (www.turck.us) or contact us by phone.

We reserve the right to make technical alterations without prior notice.

# Inductive Barrel Sensors | 30 mm Namur

**Intrinsically Safe** IS

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi10-M30-Y1X-H1141** 40202 | | 10 | 2-wire DC NAMUR | 5-30 VDC | 2000 | Remote | -25 to +70 | IP67 | CPB | PA 12 | YE | -- | A | 1 | A1 |
| **Bi10-G30-Y0** 1005453 | Short Barrel | 10 | 2-wire DC NAMUR | 5-30 VDC | 200 | Remote | -25 to +70 | IP67 | CPB | PA 12 | N/A | 2M/PVC | B | 2 | A1 |
| **Bi10-G30-Y0X** 1005459 | Short Barrel | 10 | 2-wire DC NAMUR | 5-30 VDC | 200 | Remote | -25 to +70 | IP67 | CPB | PA 12 | YE | 2M/PVC | B | 2 | A1 |
| **Ni15-G30-Y0** 1005454 | | 15 | 2-wire DC NAMUR | 5-30 VDC | 200 | Remote | -25 to +70 | IP67 | CPB | PA 12 | N/A | 2M/PVC | C | 2 | A1 |
| **Ni15-G30-Y0X** 4020100 | | 15 | 2-wire DC NAMUR | 5-30 VDC | 200 | Remote | -25 to +70 | IP67 | CPB | PA 12 | YE | 2M/PVC | C | 2 | A1 |
| **Bi10-P30-Y0X** 404000 | | 10 | 2-wire DC NAMUR | 5-30 VDC | 500 | Remote | -25 to +70 | IP67 | PA 12 | PA 12 | YE | 2M/PVC | D | 2 | A1 |
| **Bi10-P30-Y1** 10097 | | 10 | 2-wire DC NAMUR | 5-30 VDC | 500 | Remote | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | 2M/PVC | D | 2 | A1 |
| **Ni15-P30-Y0X** 1005465 | | 15 | 2-wire DC NAMUR | 5-30 VDC | 200 | Remote | -25 to +70 | IP67 | PA 12 | PA 12 | YE | 2M/PVC | D | 2 | A1 |
| **Ni15-P30-Y1** 10098 | | 15 | 2-wire DC NAMUR | 5-30 VDC | 200 | Remote | -25 to +70 | IP67 | PA 12 | PA 12 | N/A | 2M/PVC | D | 2 | A1 |



We reserve the right to make technical alterations without prior notice.

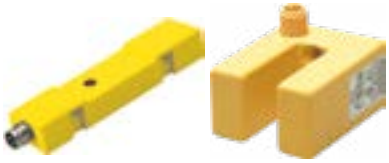
Notes

Notes

# Specialty Sensor Section

| Specialty Sensors | | | |
|---|---|---|---|
| | | | |
| **Housing** | **Barrel and Rectangular** | **12, 18, and 30 mm** | **40, 80, and 160 mm** |
| **Features** | **Washdown Uprox+** | **High Temperature Sensors** | **High Temperature Sensors** |
| **Pages** | **C9 - 14** | **C15 - 20** | **C21** |

| Specialty Sensors | | | |
|---|---|---|---|
| | | | |
| **Housing** | **8, 12, 18, and 30 mm** | **Barrel and Rectangular** | **30 mm** |
| **Features** | **Stainless Steel Face Sensors** | **Mobile Equipment Sensors** | **High Current Solid State Sensors** |
| **Pages** | **C23 - 32** | **C33 - 36** | **C37** |

| Specialty Sensors | | | |
|---|---|---|---|
| | | |  |
| **Housing** | **12,18, and 30 mm** | **Variable** | **Variable** |
| **Features** | **FM, Class I Div 2 Approved Sensors** | **Ring Sensing** | **Tube and Slot Sensing** |
| **Pages** | **C39** | **C41 - 44** | **C45 - 48** |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensor Selection Guide

| Specialty Sensors | | | |
|---|---|---|---|
| | | | |
| **Housing** | **12 mm** | **80 and 130 mm** | **130 mm** |
| **Features** | **Weld Nut Detection Sensor** | **Edge Detection Sensing** | **Can Line Sensing** |
| **Pages** | **C49** | **C51 - 54** | **C55** |

| Specialty Sensors | | | |
|---|---|---|---|
| | | | |
| **Housing** | **8, 12, and 18 mm** | **18 mm** | **Barrel and Rectangular** |
| **Features** | **Magnetic Inductive Sensing** | **Submersible** | **Selective Metal Sensing** |
| **Pages** | **C57 - 60** | **C61** | **C63 - 66** |

| Specialty Sensors | | |
|---|---|---|
| | | |
| **Housing** | **12 and 18 mm** | **18 and 30 mm** |
| **Features** | **In Cylinder Sensor** | **Rotational Speed Monitoring** |
| **Pages** | **C67** | **C69** |



We reserve the right to make technical alterations without prior notice.

# Specialty Sensor Part Number Key

| B | I | 10 | U | - | | G | T | 30 | | - | A | DZ | 30 | X2 | | Wiring Option* | Special Option Code** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

**Mounting**
- B = embeddable
- BID = high pressure sensor
- N = nonembeddable
- S = slot

**Principle of Operation**
- I = inductive
- IM = inductive magnet operated

**Rated Operating Distance (mm)**

**Sensing Characteristics**
- FE = ferrous only
- R = ring sensor
- U =Uprox® Sensor

**Housing Material Modifier**
- E = stainless steel

**Housing Style**

**Barrel - Metal**
- G = full threading, generally chrome plated brass
- H = smooth, chrome plated brass or stainless steel
- M = partial threading, chrome plated brass

**Barrel - Plastic**
- K = smooth
- P = full threading
- S = partial threading

**Rectangular**
- Q = metal or plastic, various rectangular styles

**Limit Switch**
- CA = stubby ®, short aluminum housing, connector
- CK = stubby ®, short plastic housing, connector

**Slot**
- K = slot sensor, plastic housing

**Ring**
- 32SR = large plastic housing, static or dynamic output
- Q = small rectangular plastic housing, static output
- W = small plastic housing, dynamic output

**Primary Barrel Modifier**
- T = PTFE® coated

**Housing Diameter or Height (mm)**

**Number of LEDs**
- (blank) = no LEDs
- X = 1 LED
- X2 = 2 LEDs

**Voltage Range**

**AC/DC: (No SCP**)**
- 3 = 20-250 VAC, 10-300 VDC

**AC/DC: (Latched SCP)**
- 30 = 20-250 VAC, 10-300 VDC 400 mA

**DC:**
- 4 = 10-65 VDC, polarity protected, pulsed SCP**
- 6 = 10-30 VDC, polarity protected, pulsed SCP
- 44 = 10-55 VDC
- 45 = 8.4-65 Volts

**Output**
- D = 2-wire DC (transistor output)
- DZ = 2-wire AC/DC, (power MOSFET output)
- N = NPN transistor (current sinking)
- P = PNP transistor (current sourcing)
- Z = 2-wire AC or 2-wire AC/DC
- M = high current solid state relay

**Output Function**
- A = normally open (N.O.)
- DA = dynamic output (ring sensor), normally open
- R = normally closed (N.C.)
- U = jumper programmable (N.O. or N.C.)
- V = complementary outputs: one N.O., one N.C.
- Y0 = NAMUR output, requires switching amplifier
- Y1 = NAMUR output, requires switching amplifier, ATEX approved

**Secondary Barrel Modifier**
- E = extended barrel length
- EE = extra long barrel length
- FE = stainless steel face, extended barrel length
- FM = stainless steel face, medium barrel length
- M = medium barrel length
- TC = terminal chamber
- WD = washdown IP67/IP68/IP69K
- F = stainless steel face, standard length

**NOTE:**
Part number keys are to assist in identification only.
Verify new part numbers with factory; some configurations are not possible.
* See next page Wiring Options and Special Option Codes.

We reserve the right to make technical alterations without prior notice.

# Specialty Sensor Part Number Key

## Wiring Options*

**A. Connectorized Sensor**

**Bi2 - M12 - AN6X2 - H1 1 4 1**

**Connector Family**

B1 = Minifast®, 7/8"-16UN, metal, male
B2 = Minifast , 7/8"-16UN, plastic, male
B3 = Microfast®, 1/2"-20UNF, metal, male
H1 = Eurofast®, M12x1, metal or plastic, male
V1 = Picofast®, snap and M8x1, metal, male (Q08 snap only)
V2 = Picofast , snap and M8x1, male (Q08 only)

**Connector/Sensor Transition**

1 = straight
3 = straight with adapter
4 = right-angle with adapter

**Wiring Configuration**

**Example:**

0 = non-standard wiring
1 = standard wiring
3 = N.C. DC output on pin 4 (for US)
4 = N.O. 2-wire DC output on pin 4

**Number of Pins**

**3** = **3**
**4** = **4**
**5** = **5**

**B. Potted Cable**

**Bi2 - G12 - AN6X 7M**

**Cable Length**

(blank) = 2 meter cable
7M = 7 meter cable
*M = custom cable lengths available

## Special Option Codes**

**Bi 2-S12-AN7X /S100 or Bi10R-W30-DAN6X-H1141 /F2**

**Example:**

/S90 = TPU cable
/S97 = -40 °C (-40 °F) operating temperature
/S100 = +100 °C (+212 °F) operating temperature
/S120 = +120 °C (+248 °F) operating temperature
/S139 = submersible
/S907 = +160 °C (+320 °F) operating temperature
/S1009 = 250 ms internal off delay
/S1102 =+250 °C (+482 °F) operating temperature
/S1751 = approved for FM Class I, Div 2, groups A, B, C, and D

**Example:**

/F2 = alternate oscillator frequency

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors

## Uprox+ Washdown Sensors

The Uprox+ Washdown product family is with a full line of inductive sensors that senses all metals at the same range (no correction factor), extended temperature rating from -40 to +100 °C, robust construction with IP68 and IP69k sealing ratings, and housing materials compatible with common acidic and alkaline chemicals used in Food and Beverage applications.

## Sensors with Extended Temperature Range

Turck offers sensors for applications that withstand extreme temperatures of -40 to +250 °C. Typically, these sensors are used in applications like cold storage facilities, metal foundries, glass making, outdoor applications, and in painting shops in the automotive industry.

## Stainless Steel Face Sensors

Inductive sensors with one piece stainless steel faced barrels are ideal for applications where physical impact is common or where ingress through the sensing face is a concern. The sensors are available in barrel diameters from 8 mm to 30 mm, standard and extended sensing ranges, rated IP68/IP69K, with optional coatings for welding environments, and 2 and 3-wire designs.

## Mobile Equipment Sensors

Position sensing applications in mobile equipment have different electrical requirements than what is common for industrial sensors. Turck designs and manufactures a diverse line of inductive sensors that meet or exceed the industry requirements for sealing (IP68/IP69K), load dump protection, resistance to shock, vibration, EMC immunity, extended temperature range, wide operating voltage, and extended sensing range.

## Inductive Sensor with 6 A Rated Output

This 30 mm mobile equipment sensor uses a MOSFET component to switch up to 6 amps of current with either a normally open output or a complementary normally open and closed output in a stainless steel housing. The sensor can be configured as an embeddable or nonembeddable sensor.

We reserve the right to make technical alterations without prior notice.

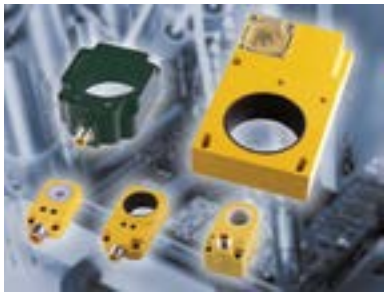
# Specialty Sensors

## FM Class I Div 2

The new FM approval standard permits the use of quick disconnect with a lock fast accessory equipped sensor being used in Class I Div 2, Groups A, B, C, D. The ability to use quick disconnect will enable users to install sensors faster and at a lower cost than traditional conduit methods. We also offer approved cordsets with Eurofast or Minifast connectors (when used with a Lokfast guard). All cables have the ITC-ER rating. For applications where conduit is preferred, we offer sensors with potted-in ITC rated cables.

## Inductive Ring Sensor

Turck offers a variety of ring sensor designs that detect a wide variety of target sizes, with sensor outputs to solve either static or dynamic part feeding applications. In addition to our six different ring sensor housings, Turck offers the TS12 Uprox®+ sensor, which senses all metals at the same range while functioning like a ring sensor but can be strapped onto a tube to simplify installation.



## Inductive Slot Sensors

Turck's slot sensors incorporate a U-shaped design with the active sensing face between the two arms. If the object being detected moves into the U-shaped area, the sensor is actuated. Slot sensors are capable of securely detecting targets whose distance from the active face is not clearly defined upon side approach.

## Weld Nut Sensors

Turck's magnetic weld nut sensors provide efficient and economical detection of weld nuts in automotive applications. The sensors detect ferromagnetic components, such as nuts, bushings and spacer sleeves, to ensure these components are present before robotic welding occurs. These sensors are less complex than existing devices that require additional software or electronics to detect the target.

## Can and Edge Detection Sensor

Turck's Q130 sensor is designed for easy mounting on metal can conveying systems to help detect jam ups or lack of metal cans in the conveyor, while the CK4080 and CK40130 sensors are optimized to detect the edges of metal sheets commonly used in transfer presses found in automotive or white goods stamping applications.

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors

## Inductive-Magnetic Proximity Sensors

Turck's line of BIM barrel sensors are designed to work with external magnets and can be used to solve a wide variety of sensing applications, especially where the user would like long sensing ranges (up to 90 mm with DMR31-15-5 magnet) in small housings, such as 8 or 12 mm.

## Submersible Inductive Sensors

These sensors are rated for submersion in water depths up to 500 meters. The materials used to construct this 18 mm diameter sensor are seawater resistant. Available in a variety of sensing ranges and outputs.

## Selective Metal Sensors

Standard inductive sensors sense all metals. Turck's family of selective metal inductive sensors offer a reliable solution for applications where the user wants to detect ferrous metals or non-ferrous metals only.

## In-Cylinder Inductive Sensors

These inductive sensors are designed for use in a hydraulic cylinder to detect extended or retracted positions. Available in M12 or M18 barrels, these senors can withstand static pressures up to 7,250 psi.

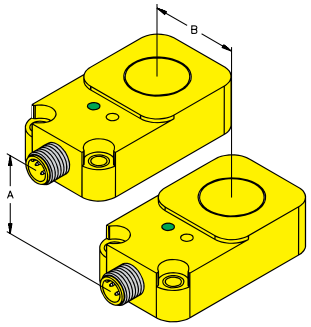
## Rotational Speed Sensors

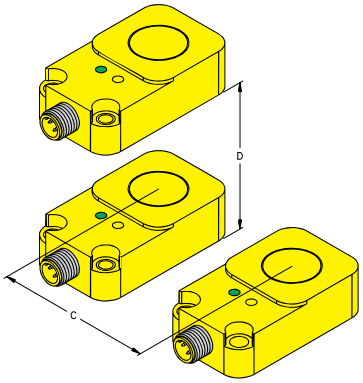
Rotational speed sensors are designed to work with a rotating metal target like a keyway or sprocket. These sensors feature a simple potentiometer for adjusting the set point and are ideal for monitoring applications where the user wants to monitor under speed or over speed conditions. If the speed is below the set point the output is off, and if the speed is above the set point the output turns on.

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors

## Ring and Tube Sensor Mounting Characteristics

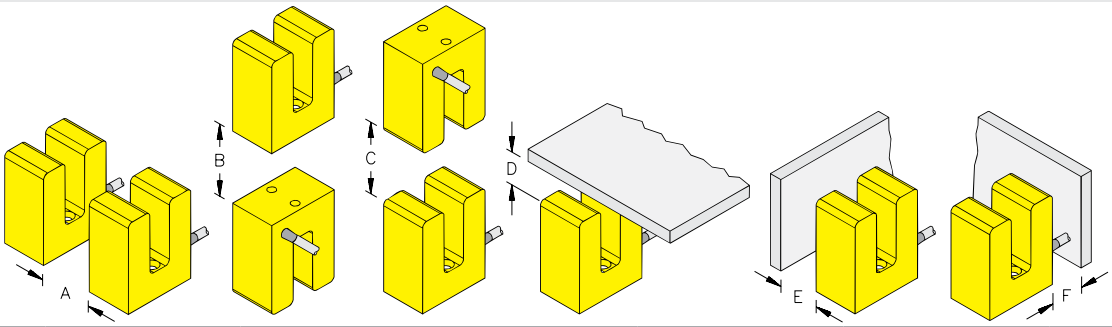



| Sensor Type | A | B | C | D |
|---|---|---|---|---|
| Bi6R-Q14 | 0 | 14 | 45 | 45 |
| Bi6R-W30 | 120 | 6 | 120 | 120 |
| Bi10R-Q14 | 30 | 14 | 45 | 45 |
| Bi10R-W30 | 120 | 10 | 120 | 120 |
| Bi15R-Q14 | 30 | 14 | 45 | 45 |
| Bi15R-W30 | 120 | 15 | 120 | 120 |
| Bi20R-Q14 | 30 | 14 | 45 | 45 |
| Bi20R-W30 | 120 | 20 | 120 | 120 |
| Ni20R-S32SR | 150 | 150 | 150 | 150 |
| Bi30R-Q20 | 40 | 20 | 55 | 55 |
| Bi30R-W30 | 120 | 30 | 120 | 120 |
| Ni40R-S32SR | 150 | 150 | 150 | 150 |
| Bi50R-Q80* | 90 | 50 | 140 | 120 |
| Ni65R-Q80* | 90 | 65 | 140 | 150 |
| Ni65R-S32SR | 150 | 150 | 150 | 150 |
| Ni100R-S32XL** | Consult data sheet | Consult data sheet | 290 | 240 |
| Ni20U-TS12*** (tube) | Consult data sheet | Consult data sheet | 42 | 50 |

Dimensions are in mm.
* Do not use a metal mounting bracket.
** Sensitivity adjustment does affect the recommended mounting spacing. Please consult factory for assistance when using multiple sensors.
*** Spacing of multiple sensors depends on the actual number and orientation. Please contact factory for assistance.

## Slot Sensor Mounting Characteristics



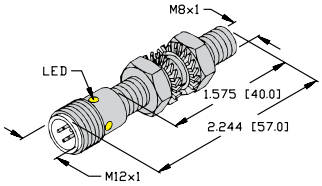
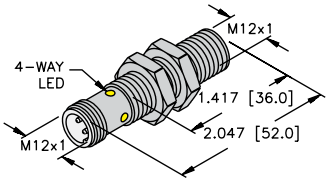
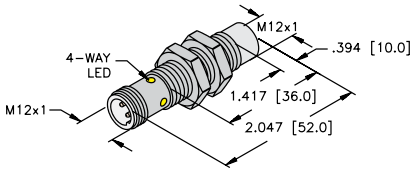
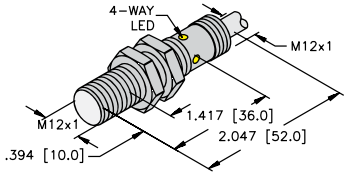
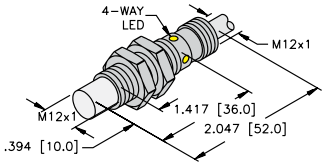

| Sensor Type | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| Si3.5 | 15.00 | 5.00 | 15.00 | 0 | 0 | 0 |
| Si5 | 10.00 | 0 | 5.00 | 0 | 0 | 0 |
| Si15 | 30.00 | 10.00 | 30.00 | 5.00 | 5.00 | 5.00 |

Dimensions are in mm.

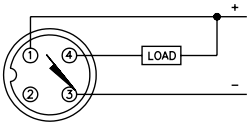
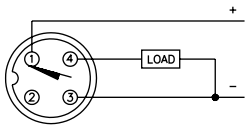
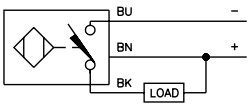
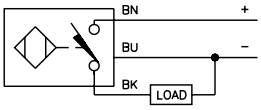
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Washdown

## Threaded Metal Barrels with Cable or Connector and 3-Wire DC Outputs

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   8 mm - Embeddable, M12 Eurofast Connection | B   12 mm - Embeddable, M12 Eurofast Connection |
| C   12 mm - Nonembeddable, M12 Eurofast Connection | D   12 mm - Embeddable, Potted-in Cable | E   12 mm - Nonembeddable, Potted-in Cable |

### Wiring Diagrams/Mating Cordsets

| 1 | 2 | 3 | 4 |
|---|---|---|---|
|   Mating Cordset: RKV 4T-*; RKV 4T-*/S90 |   Mating Cordset: RKV 4T-*; RKV 4T-*/S90 |   |   |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox 3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Washdown

## Threaded Metal Barrels with Cable or Connector and 3-Wire DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi1.5-EG08WD-AN6X-H1341** 4602211 | Washdown | 1.5 | 3-wire DC NPN | 10-30 VDC | 3000 | ≤150 | -25 to +85 | IP68/69K | SS | PVDF | N/A | YE | - - | A | 1 | A4 |
| **Bi1.5-EG08WD-AP6X-H1341** 4602210 | Washdown | 1.5 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤150 | -25 to +85 | IP68/69K | SS | PVDF | N/A | YE | - - | A | 2 | A4 |
| **Bi4U-EM12WD-AN6X-H1141** 1634841 | Uprox+, Washdown | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -40 to +100 | IP68/69K | SS | PVDF | N/A | YE | - - | B | 1 | A4 |
| **Bi4U-EM12WD-AP6X-H1141** 1634812 | Uprox+, Washdown | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -40 to +100 | IP68/69K | SS | PVDF | N/A | YE | - - | B | 2 | A4 |
| **Ni10U-EM12WD-AN6X-H1141** 1634837 | Uprox+, Washdown | 10 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -40 to +100 | IP68/69K | SS | PVDF | N/A | YE | - - | C | 1 | A4 |
| **Ni10U-EM12WD-AP6X-H1141** 1634814 | Uprox+, Washdown | 10 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -40 to +100 | IP68/69K | SS | PVDF | N/A | YE | - - | C | 2 | A4 |
| **Bi4U-EM12WD-AN6X** 1634842 | Uprox+, Washdown | 4 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -40 to +100 | IP68/69K | SS | PVDF | N/A | YE | 2M/PP | D | 3 | A4 |
| **Bi4U-EM12WD-AP6X** 1634811 | Uprox+, Washdown | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -40 to +100 | IP68/69K | SS | PVDF | N/A | YE | 2M/PP | D | 4 | A4 |
| **Ni10U-EM12WD-AP6X** 1634813 | Uprox+, Washdown | 10 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -40 to +100 | IP68/69K | SS | PVDF | N/A | YE | 2M/PP | E | 4 | A4 |



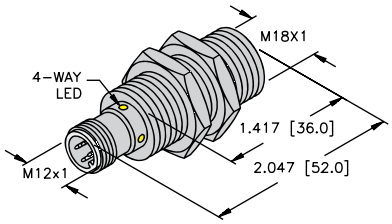
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Washdown

## Threaded Metal Barrels with Cable or Connector and 3-Wire DC Outputs

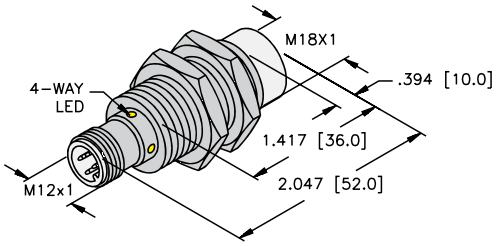
| Housing Style | Dimension Drawings |
|---|---|

A



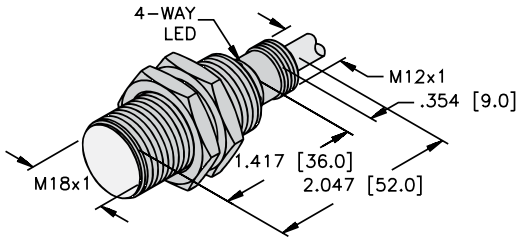

18 mm - Embeddable, M12 Eurofast Connection

B



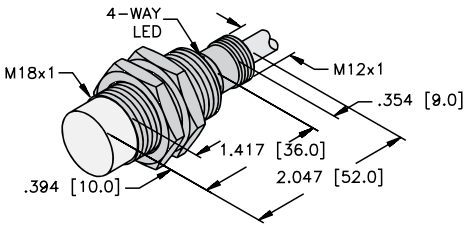

18 mm - Nonembeddable, M12 Eurofast Connection

C




18 mm - Embeddable, Potted-in Cable

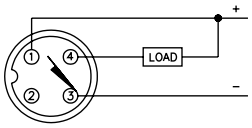
D




18 mm - Nonembeddable, Potted-in Cable

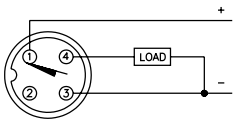
### Wiring Diagrams/Mating Cordsets

1



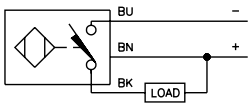

Mating Cordset: RKV 4T-*/S90

2

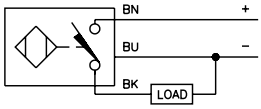



Mating Cordset: RKV 4T-*/S90

3




4




### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current |
| | ≥170 mA on 150 mA Load Current |
| | ≥120 mA on 100 mA Load Current |
| Off-State (Leakage) Current: | ≤0.1 mA |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) |
| | ≤20 mA (Uprox+, Uprox 3) |
| Time Delay Before Availability: | ≤8 ms |
| Power-On Effect: | Per IEC 947-5-2 |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Transient Protection: | Per EN 60947-5-2 |
| Temperature Drift: | ≤±10% |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Washdown

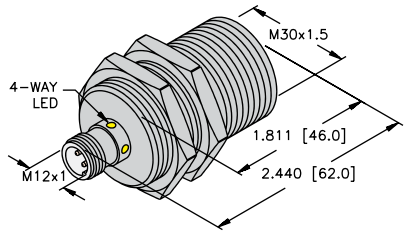
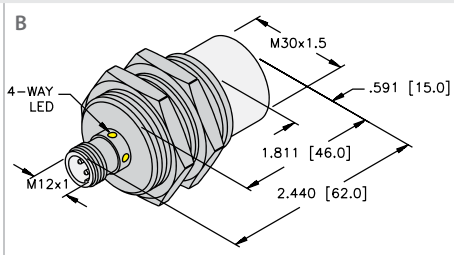
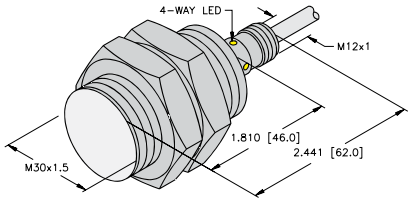
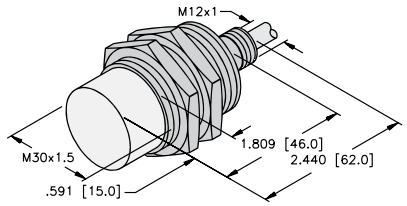
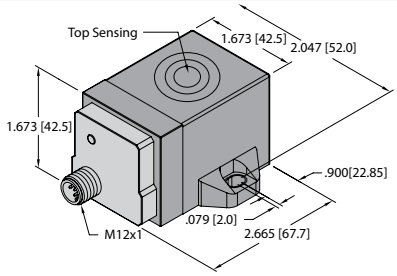
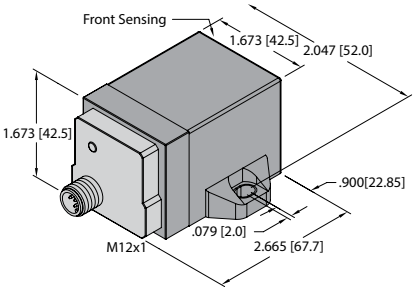
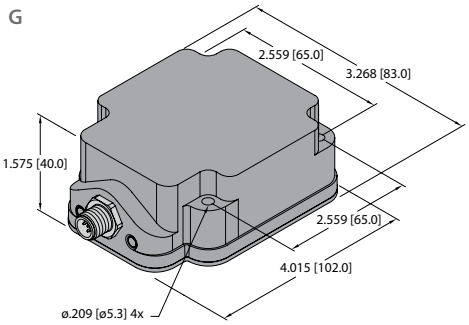
## Threaded Metal Barrels with Cable or Connector and 3-Wire DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi8U-EM18WD-AN6X-H1141** 1634839 | Uprox+, Washdown | 8 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -40 to +100 | IP68/69K | SS | LCP | N/A | YE | - - | A | 1 | A4 |
| **Bi8U-EM18WD-AP6X-H1141** 1634816 | Uprox+, Washdown | 8 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -40 to +100 | IP68/69K | SS | LCP | N/A | YE | - - | A | 2 | A4 |
| **Ni15U-EM18WD-AN6X-H1141** 1634835 | Uprox+, Washdown | 15 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -40 to +100 | IP68/69K | SS | LCP | N/A | YE | - - | B | 1 | A4 |
| **Ni15U-EM18WD-AP6X-H1141** 1634818 | Uprox+, Washdown | 15 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -40 to +100 | IP68/69K | SS | LCP | N/A | YE | - - | B | 2 | A4 |
| **Bi8U-EM18WD-AN6X** 1634840 | Uprox+, Washdown | 8 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -40 to +100 | IP68/69K | SS | LCP | N/A | YE | 2M/PP | C | 3 | A4 |
| **Bi8U-EM18WD-AP6X** 1634815 | Uprox+, Washdown | 8 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -40 to +100 | IP68/69K | SS | LCP | N/A | YE | 2M/PP | C | 4 | A4 |
| **Ni15U-EM18WD-AN6X** 1634836 | Uprox+, Washdown | 15 | 3-wire DC NPN | 10-30 VDC | 1500 | ≤200 | -40 to +100 | IP68/69K | SS | LCP | N/A | YE | 2M/PP | D | 3 | A4 |
| **Ni15U-EM18WD-AP6X** 1634817 | Uprox+, Washdown | 15 | 3-wire DC PNP | 10-30 VDC | 1500 | ≤200 | -40 to +100 | IP68/69K | SS | LCP | N/A | YE | 2M/PP | D | 4 | A4 |

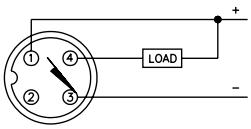
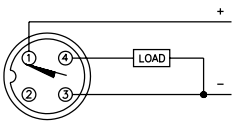
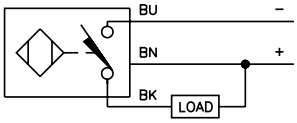
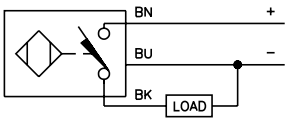
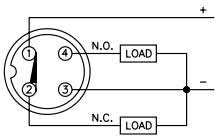
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Washdown

**Rectangular and Threaded Metal Barrels with Cable or Connector and 3-Wire DC Outputs**

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   30 mm - Embeddable, M12 Eurofast Connection | B   30 mm - Nonembeddable, M12 Eurofast Connection |
| C   30 mm - Embeddable, Potted-in Cable | D   30 mm - Nonembeddable, Potted-in Cable | E   Q42T - Nonembeddable, M12 Eurofast Connector |
| F   Q42F - Nonembeddable, M12 Eurofast Connector | G   Q80 - Nonembeddable, M12 Eurofast Connector | |

**Wiring Diagrams/Mating Cordsets**

| | | |
|---|---|---|
| 1   Mating Cordset: RKV 4T-*/S90 | 2   Mating Cordset: RKV 4T-*/S90 | 3   |
| 4   | 5   Mating Cordset: RKV 4.4T-* | |

**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox, Q42) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox 3, Q80) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Washdown

## Rectangular and Threaded Metal Barrels with Cable or Connector and 3-Wire DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi15U-EM30WD-AN6X-H1141** 1634834 | Uprox+, Washdown | 15 | 3-wire DC NPN | 10-30 VDC | 750 | ≤200 | -40 to +100 | IP68/69K | SS | LCP | N/A | YE | - - | A | 1 | A4 |
| **Bi15U-EM30WD-AP6X-H1141** 1634820 | Uprox+, Washdown | 15 | 3-wire DC PNP | 10-30 VDC | 750 | ≤200 | -40 to +100 | IP68/69K | SS | LCP | N/A | YE | - - | A | 2 | A4 |
| **Ni30U-EM30WD-AN6X-H1141** 1634832 | Uprox+, Washdown | 30 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -40 to +100 | IP68/69K | SS | LCP | N/A | YE | - - | B | 1 | A4 |
| **Ni30U-EM30WD-AP6X-H1141** 1634822 | Uprox+, Washdown | 30 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -40 to +100 | IP68/69K | SS | LCP | N/A | YE | - - | B | 2 | A4 |
| **Bi15U-EM30WD-AN6X** 1634843 | Uprox+, Washdown | 15 | 3-wire DC NPN | 10-30 VDC | 750 | ≤200 | -40 to +100 | IP68/69K | SS | LCP | N/A | YE | 2M/PP | C | 3 | A4 |
| **Bi15U-EM30WD-AP6X** 1634819 | Uprox+, Washdown | 15 | 3-wire DC PNP | 10-30 VDC | 750 | ≤200 | -40 to +100 | IP68/69K | SS | LCP | N/A | YE | 2M/PP | C | 4 | A4 |
| **Ni30U-EM30WD-AN6X** 1634833 | Uprox+, Washdown | 30 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -40 to +100 | IP68/69K | SS | LCP | N/A | YE | 2M/PP | D | 3 | A4 |
| **Ni30U-EM30WD-AP6X** 1634821 | Uprox+, Washdown | 30 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -40 to +100 | IP68/69K | SS | LCP | N/A | YE | 2M/PP | D | 4 | A4 |
| **NI50U-Q42TWD-VP6X-H1141** 1538306 | Uprox+, Washdown | 50 | 4-wire DC PNP | 10-30 VDC | 250 | ≤200 | -40 to +100 | IP68/69K | PA 12 | PA 12 | N/A | YE | - - | E | 5 | A4 |
| **NI50U-Q42FWD-VP6X-H1141** 1538305 | Uprox+, Washdown | 50 | 4-wire DC PNP | 10-30 VDC | 250 | ≤200 | -40 to +100 | IP68/69K | PA 12 | PA 12 | N/A | YE | - - | F | 5 | A4 |
| **NI75U-Q80WD-VP6X2-H1141** 1625920 | Uprox+, Washdown | 75 | 4-wire DC PNP | 10-30 VDC | 250 | ≤200 | -25 to +70 | IP68/69K | PPS | PPS | GN | YE | - - | G | 5 | A4 |

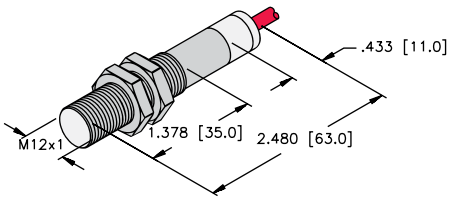
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | High Temperature

## Threaded Metal Barrels with Cable and AC or DC Outputs

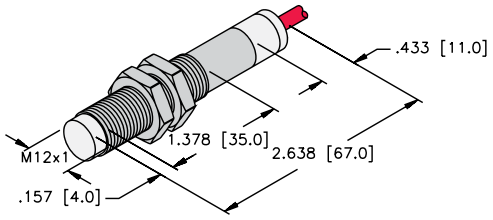
| Housing Style | Dimension Drawings |
|---|---|

A



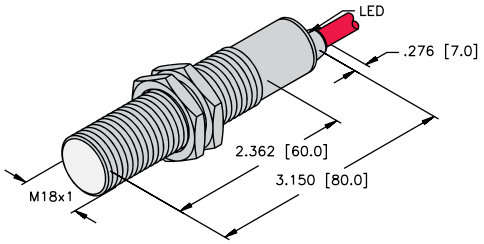

12 mm - Embeddable, Potted-In Cable

B



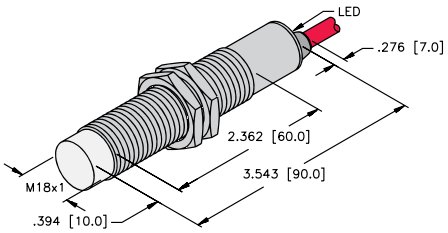

12 mm - Nonembeddable, Potted-In Cable

C




18 mm - Embeddable, Partial Threading, Potted-In Cable

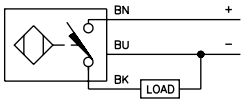
D



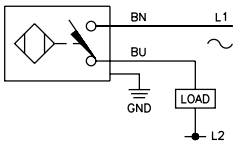

18 mm - Nonembeddable, Partial Threading, Potted-In Cable

### Wiring Diagrams/Mating Cordsets

1




2




### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox 3) | Repeatability: | ≤2% of Rated Operating Distance |

### A6 — 2-wire AC/DC w/o Short-Circuit Protection - (AZ,RZ,FZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Power-On Effect: | Per IEC 947-5-2 |
| | AC: ≤100 mA; DC: ≤100 mA | Transient Protection: | Per EN 60947-5-2 |
| Off-State (Leakage) Current: | ≤1.7 mA | Shock: | 30 g, 11 ms |
| Minimum Load Current: | ≥3.0 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | High Temperature

## Threaded Metal Barrels with Cable and AC or DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | End Cap | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi2-EM12D-AP6/S120** 4614512 | High Temp. 120 °C | 2 | 3-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +120 | IP67 | SS | PTFE | PTFE | N/A | N/A | 2M/PTFE | A | 1 | A4 |
| **Ni4-EM12D-AP6/S120** 1633110 | High Temp. 120 °C | 4 | 3-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +120 | IP67 | SS | PTFE | PTFE | N/A | N/A | 2M/PTFE | B | 1 | A4 |
| **Bi5-M18-AP6X/S120** 4611030 | High Temp. 120 °C | 5 | 3-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +120 | IP67 | CPB | PA 12 | EPTR | N/A | YE | 2M/Silicone | C | 1 | A4 |
| **Bi5-M18-AZ3X/S120** 4310410 | High Temp. 120 °C | 5 | 2-wire AC | 20-250 VAC | 20 | ≤100 | -25 to +120 | IP67 | CPB | PA 12 | EPTR | N/A | YE | 2M/Silicone | C | 2 | A6 |
| **Ni8-M18-AZ3X/S120** 4310530 | High Temp. 120 °C | 8 | 2-wire AC | 20-250 VAC | 20 | ≤400 | -25 to +120 | IP67 | CPB | PA 12 | EPTR | N/A | YE | 2M/Silicone | D | 2 | A6 |
| **Ni8-M18-AP6X/S120** 4611230 | High Temp. 120 °C | 8 | 3-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +120 | IP67 | CPB | PA 12 | EPTR | N/A | YE | 2M/Silicone | D | 1 | A4 |

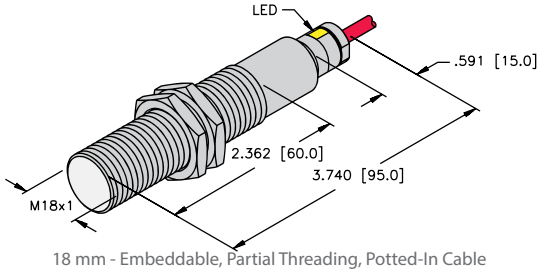
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | High Temperature

## Threaded Metal Barrels with Cable and AC or DC Outputs

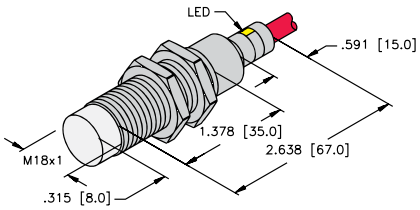
| Housing Style | Dimension Drawings |
|---|---|

A



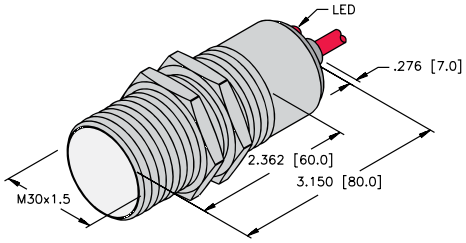

18 mm - Embeddable, Partial Threading, Potted-In Cable

B



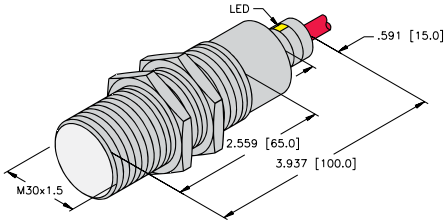

18 mm - Nonembeddable, Partial Threading, Potted-In Cable

C




30 mm - Embeddable, Partial Threading, Potted-In Cable

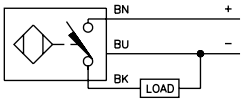
D



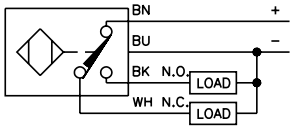

30 mm - Embeddable, Partial Threading, Potted-In Cable

### Wiring Diagrams/Mating Cordsets

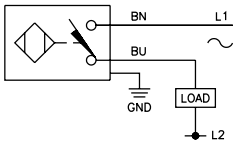
1




2




3




### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox 3) | Repeatability: | ≤2% of Rated Operating Distance |

### A6 — 2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Power-On Effect: | Per IEC 947-5-2 |
| | AC: ≤100 mA; DC: ≤100 mA | Transient Protection: | Per EN 60947-5-2 |
| Off-State (Leakage) Current: | ≤1.7 mA | Shock: | 30 g, 11 ms |
| Minimum Load Current: | ≥3.0 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | High Temperature

## Threaded Metal Barrels with Cable and AC or DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | End Cap | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi5-EM18D-VP6X/S120** 4614900 | High Temp. 120 °C | 5 | 4-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +120 | IP68/69K | SS | PTFE | PTFE | N/A | YE | 2M/PTFE | A | 2 | A4 |
| **Ni7-EM18D-VP6X/S120** 4632100 | High Temp. 120 °C | 7 | 4-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +120 | IP68/69K | SS | PTFE | PTFE | N/A | YE | 2M/PTFE | B | 2 | A4 |
| **Bi10-M30-AP6X/S120** 4617010 | High Temp. 120 °C | 10 | 3-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +120 | IP67 | CPB | PA 12 | PA 12 | N/A | YE | 2M/Silicone | C | 1 | A4 |
| **Bi10-M30-AZ3X/S120** 4316410 | High Temp. 120 °C | 10 | 2-wire AC | 20-250 VAC | 20 | ≤400 | -25 to +120 | IP67 | CPB | PA 12 | PA 12 | N/A | YE | 2M/Silicone | C | 3 | A6 |
| **Bi10-EM30D-VP6X/S120** 4617035 | High Temp. 120 °C | 10 | 4-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +120 | IP68/69K | SS | PTFE | PTFE | N/A | YE | 2M/PTFE | D | 2 | A4 |

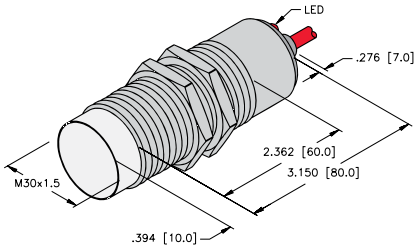
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | High Temperature

## Threaded Metal Barrels with Cable and AC or DC Outputs

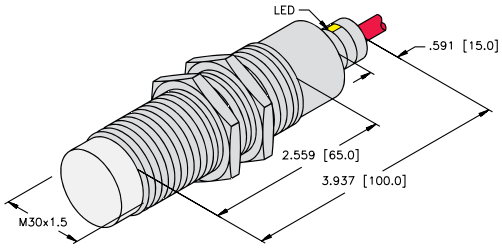
| Housing Style | Dimension Drawings |
|---|---|

A



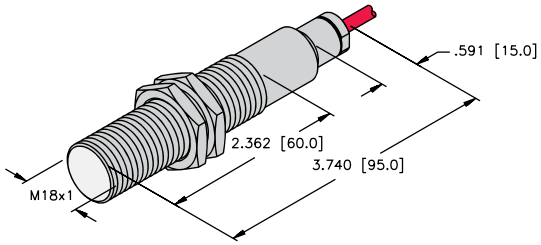

30 mm - Nonembeddable, Potted-In Cable

B



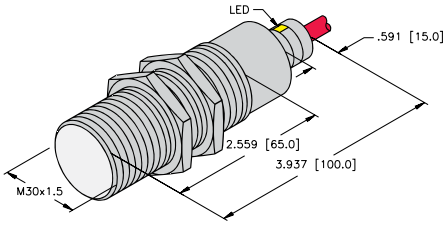

30 mm - Nonembeddable, Potted-In Cable

C



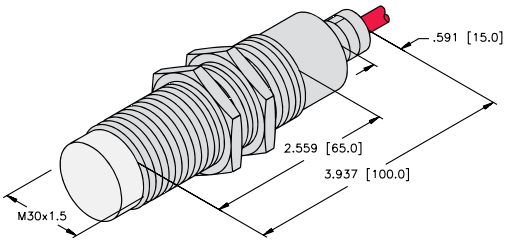

18 mm - Embeddable, Partial Threading, Potted-In Cable

D




30 mm - Embeddable, Partial Threading, Potted-In Cable

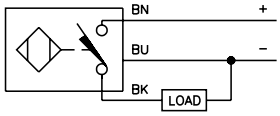
E




30 mm - Non-embeddable, Partial Threading, Potted-In Cable

### Wiring Diagrams/Mating Cordsets

1

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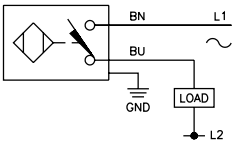
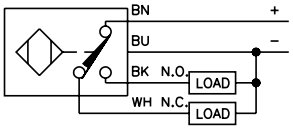



3




### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox 3) | Repeatability: | ≤2% of Rated Operating Distance |

### A6 — 2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Power-On Effect: | Per IEC 947-5-2 |
| | AC: ≤100 mA; DC: ≤100 mA | Transient Protection: | Per EN 60947-5-2 |
| Off-State (Leakage) Current: | ≤1.7 mA | Shock: | 30 g, 11 ms |
| Minimum Load Current: | ≥3.0 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | High Temperature

## Threaded Metal Barrels with Cable and AC or DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | End Cap | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni15-M30-AP6X/S120** 4617210 | High Temp. 120 °C | 15 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +120 | IP67 | CPB | PA 12 | PA 12 | N/A | YE | 2M/Silicone | A | 1 | A4 |
| **Ni15-M30-AZ3X/S120** 4316506 | High Temp. 120 °C | 15 | 2-wire AC | 20-250 VAC | 20 | ≤400 | -25 to +120 | IP67 | CPB | PA 12 | PA 12 | N/A | YE | 2M/Silicone | A | 2 | A6 |
| **Ni15-EM30D-VP6X/S120** 4617410 | High Temp. 120 °C | 15 | 4-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +120 | IP68/69K | SS | PTFE | PTFE | N/A | YE | 2M/PTFE | B | 3 | A4 |
| **Bi5-EM18-AP6/S907** 4617425 | High Temp. 160 °C | 5 | 3-wire DC PNP | 10-30 VDC | 200 | ≤200 | -25 to +160 | IP67 | SS | PEEK | PTFE | N/A | N/A | 2M/PTFE | C | 1 | A4 |
| **Bi10-EM30-AP6/S907** 4614513 | High Temp. 160 °C | 10 | 3-wire DC PNP | 10-30 VDC | 200 | ≤200 | -25 to +160 | IP67 | SS | PEEK | PTFE | N/A | N/A | 2M/PTFE | D | 1 | A4 |
| **Ni15-EM30-AP6/S907** 4617412 | High Temp. 160 °C | 15 | 3-wire DC PNP | 10-30 VDC | 200 | ≤200 | -25 to +160 | IP67 | SS | PEEK | PTFE | N/A | N/A | 2M/PTFE | E | 1 | A4 |

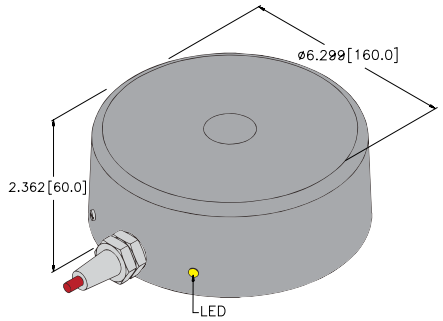
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | High Temperature

## Rectangular and Round Housings

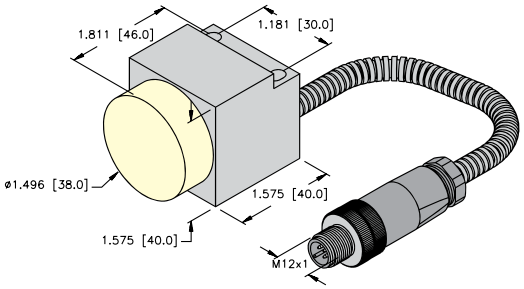
| Housing Style | Dimension Drawings |
|---|---|

A



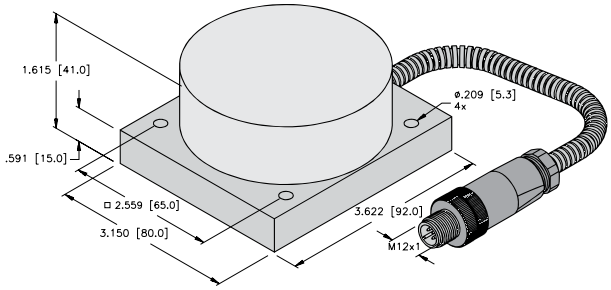

160 mm -Nonembeddable

B



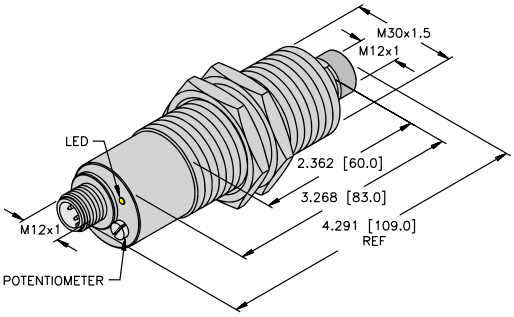

CQ40 - Nonembeddable

C




CQ80 - Nonembeddable

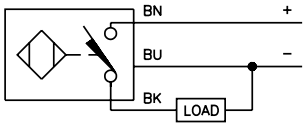
D




30 mm - Signal Processor

### Wiring Diagrams/Mating Cordsets

1

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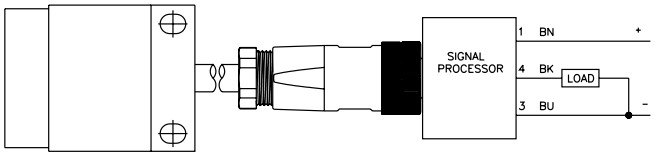



### A20 — 3-wire DC -High Temp (AP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Temperature Drift: | ≤±20% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤2 V (120 °C) | Wire-Break Protection: | Incorporated |
| | ≤1.8 V (250 °C) | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥420 mA on 400 mA Load Current | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | ≥220 mA on 200 mA Load Current | Repeatability: | ≤2% of Rated Operating Distance |
| Off-State (Leakage) Current: | ≤0.1 mA | | |

**Note**:
CQ40 and CQ80 sensors require signal processor for operation.

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | High Temperature

## Rectangular and Round Housings

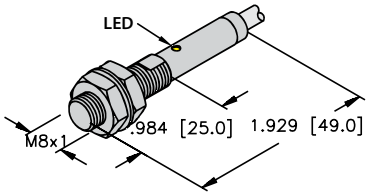
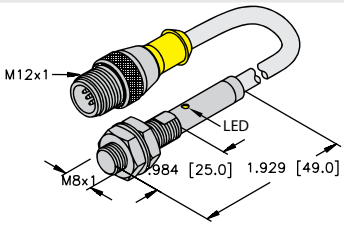
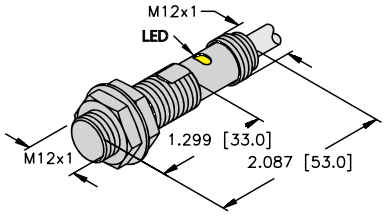
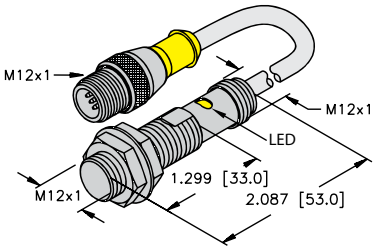
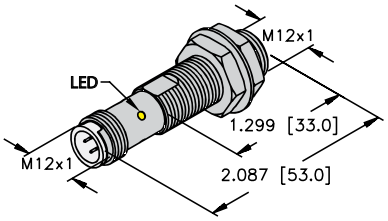
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | End Cap | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni100-Q160-AP44X/S120** 1440012 | High Temp. 120 °C | 100 | 3-wire DC PNP | 10-55 VDC | 50 | ≤400 | -25 to +120 | IP67 | PPO | PPO | - - | N/A | YE | 2M/Silicone | A | 1 | A20 |
| **Ni25-CQ40/S1102 5M** 1602410 | High Temp. 250 °C | 25 | Remote | - - | 40 | Remote | 0 to +250 | IP60 | AL | PEEK | PEEK | N/A | N/A | 5M/PTFE | B | 2 | - - |
| **Ni25-CQ40/S1102 10M** 1602403 | High Temp. 250 °C | 25 | Remote | - - | 40 | Remote | 0 to +250 | IP60 | AL | PEEK | PEEK | N/A | N/A | 10M/PTFE | B | 2 | - - |
| **Ni40-CQ80/S1102 5M** 1602404 | High Temp. 250 °C | 40 | Remote | - - | 40 | Remote | 0 to +250 | IP60 | AL | PEEK | PEEK | N/A | N/A | 5M/PTFE | C | 2 | - - |
| **EM30-AP6X2-H1141/S1102** 1602411 | Signal Processor | N/A | 3-wire DC PNP | 10-30 VDC | 40 | ≤200 | -20 to +70 | IP67 | SS | SS | - - | GN | YE | - - | D | 2 | A20 |



We reserve the right to make technical alterations without prior notice.

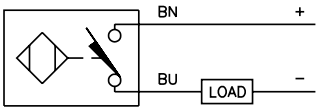
# Specialty Sensors | Stainless Front Face

**Embeddable Threaded Metal Barrels with 2-Wire DC Outputs**

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   8 mm - Embeddable, Stainless Steel Barrel, Potted-In Cable | B   8 mm - Embeddable, Stainless Steel Barrel, M12 Eurofast Quick Disconnect |
| C   8 mm - Embeddable, Stainless Steel Barrel, Potted-In Cable | D   12 mm - Embeddable, Stainless Steel Barrel, Potted-In Cable | E   12 mm - Embeddable, Stainless Steel Barrel, M12 Eurofast Quick Disconnect |

**Wiring Diagrams/Mating Cordsets**

1

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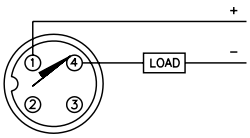



Mating Cordset: RKV 4.23T-*

**A21** — **2-wire DC Stainless Front Face (AG)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Temperature Drift: | ≤±20% |
| Differential Travel (Hysteresis): | 1-15% (5% typical) | Off-State (Leakage) Current: | ≤0.8 mA |
| Voltage Drop Across Conducting Sensor: | ≤3.5 V Polarized | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA on 100 mA Load Current | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Minimum Load Current: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Stainless Front Face

## Embeddable Threaded Metal Barrels with 2-Wire DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi1.5-EG08F-AG6X** 4614628 | Full Stainless Steel | 1.5 | 2-wire DC | 10-30 VDC | 200 | ≤100 | -25 to +70 | IP68/69K | SS | SS | GN | RD | 2M/ PVC | A | 1 | A21 |
| **Bi1.5-EGT08F-AG6X** 4614677 | Full Stainless Steel, PTFE | 1.5 | 2-wire DC | 10-30 VDC | 200 | ≤100 | -25 to +70 | IP68/69K | TC | SS | GN | RD | 2M/ PVC | A | 1 | A21 |
| **Bi1.5-EG08F-AG6X-0.3-RS4.23T** 4614684 | Full Stainless Steel | 1.5 | 2-wire DC | 10-30 VDC | 200 | ≤100 | -25 to +70 | IP68/69K | SS | SS | GN | RD | 0.3M/ PVC | B | 2 | A21 |
| **Bi1.5-EGT08F-AG6X-0.2-RS4.23T** 4614686 | Full Stainless Steel, PTFE | 1.5 | 2-wire DC | 10-30 VDC | 200 | ≤100 | -25 to +70 | IP68/69K | TC | SS | GN | RD | 0.2M/ PVC | B | 2 | A21 |
| **Bi2-EG08F-AG6X** 4614664 | Full Stainless Steel | 2 | 2-wire DC | 10-30 VDC | 200 | ≤100 | -25 to +70 | IP67 | SS | SS | N/A | RD | 2M/ PVC | A | 1 | A21 |
| **Bi2-EG12F-AG6X** 4614634 | Full Stainless Steel | 2 | 2-wire DC | 10-30 VDC | 100 | ≤100 | -25 to +70 | IP68/69K | SS | SS | GN | RD | 2M/ PVC | C | 1 | A21 |
| **Bi2-EGT12F-AG6X** 46146651 | Full Stainless Steel, PTFE | 2 | 2-wire DC | 10-30 VDC | 100 | ≤100 | -25 to +70 | IP68/69K | TC | SS | GN | RD | 2M/ PVC | C | 1 | A21 |
| **Bi2-EG12F-AG6X-0.3-RS4.23T** 4614693 | Full Stainless Steel | 2 | 2-wire DC | 10-30 VDC | 100 | ≤100 | -25 to +70 | IP68/69K | SS | SS | GN | RD | 0.3M/ PVC | D | 2 | A21 |
| **Bi3-EG12F-AG6X** 4614665 | Full Stainless Steel | 3 | 2-wire DC | 10-30 VDC | 80 | ≤100 | -25 to +70 | IP67 | SS | SS | N/A | RD | 2M/ PVC | C | 1 | A21 |
| **Bi2-EG12F-AG6X-H1141** 4614637 | Full Stainless Steel | 2 | 2-wire DC | 10-30 VDC | 100 | ≤100 | -25 to +70 | IP68/69K | SS | SS | GN | RD | - - | E | 2 | A21 |
| **Bi2-EGT12F-AG6X-H1141** 4614698 | Full Stainless Steel, PTFE | 2 | 2-wire DC | 10-30 VDC | 100 | ≤100 | -25 to +70 | IP68/69K | TC | SS | GN | RD | - - | E | 2 | A21 |



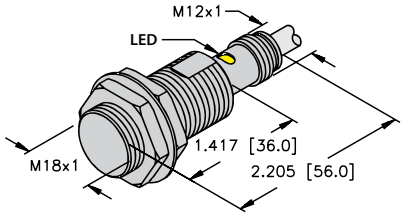
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Stainless Front Face

**Embeddable Threaded Metal Barrels with 2-Wire DC Outputs**

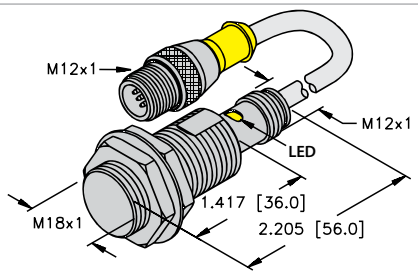
| Housing Style | Dimension Drawings |
|---|---|

A



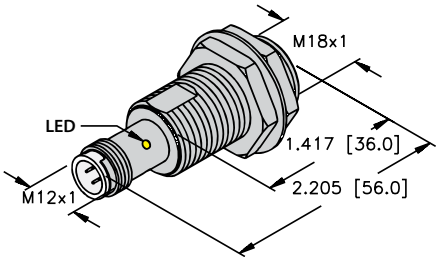

18 mm - Embeddable, Stainless Steel Barrel, Potted-In Cable

B



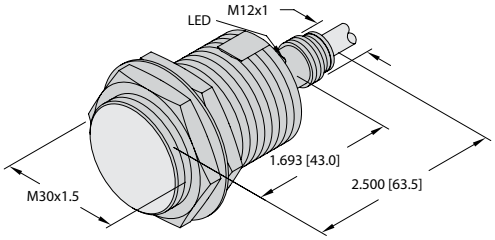

18 mm - Embeddable, Stainless Steel Barrel, M12 Eurofast Quick Disconnect

C



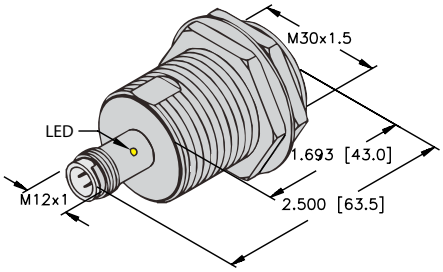

18 mm - Embeddable, Stainless Steel Barrel, M12 Eurofast Quick Disconnect

D




30 mm - Embeddable, Stainless Steel Barrel, Potted-In Cable

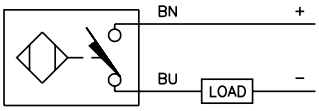
E




30 mm - Embeddable, M12 Eurofast Connection, Stainless Steel

**Wiring Diagrams/Mating Cordsets**

1

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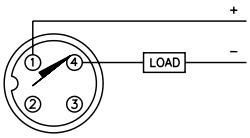



Mating Cordset: RKV 4T-*; RKV 4.23T-*

**A21** — **2-wire DC Stainless Front Face (AG)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Temperature Drift: | ≤±20% |
| Differential Travel (Hysteresis): | 1-15% (5% typical) | Off-State (Leakage) Current: | ≤0.8 mA |
| Voltage Drop Across Conducting Sensor: | ≤3.5 V Polarized | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Pro- | ≥120 mA on 100 mA Load Current | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| tection: | ≥3.0 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Minimum Load Current: | | | |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Stainless Front Face

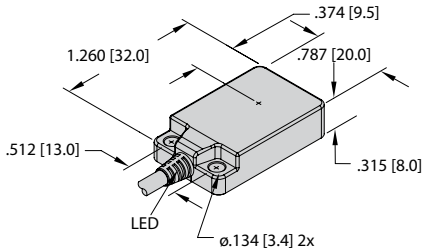
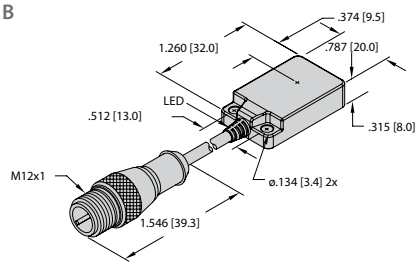
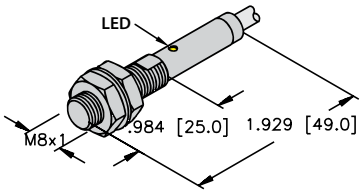
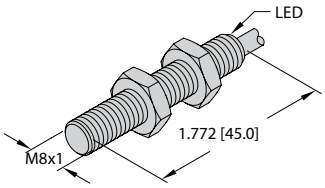
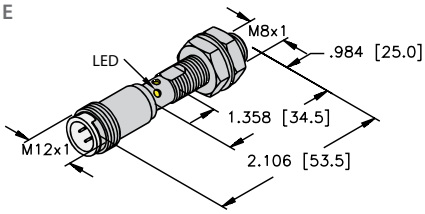
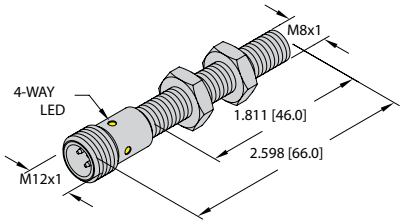
## Embeddable Threaded Metal Barrels with 2-Wire DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi5-EG18F-AG6X** 4614640 | Full Stainless Steel | 5 | 2-wire DC | 10-30 VDC | 100 | ≤100 | -25 to +70 | IP68/69K | SS | SS | GN | RD | 2M/PVC | A | 1 | A21 |
| **Bi5-EGT18F-AG6X** 46146400 | Full Stainless Steel, PTFE | 5 | 2-wire DC | 10-30 VDC | 100 | ≤100 | -25 to +70 | IP68/69K | TC | SS | GN | RD | 2M/PVC | A | 1 | A21 |
| **Bi5-EG18F-AG6X-0.3-RS4.23T** 4614694 | Full Stainless Steel | 5 | 2-wire DC | 10-30 VDC | 100 | ≤100 | -25 to +70 | IP68/69K | SS | SS | GN | RD | 0.3M/ PVC | B | 2 | A21 |
| **Bi7-EG18F-AG6X** 4614666 | Full Stainless Steel | 7 | 2-wire DC | 10-30 VDC | 100 | ≤100 | -25 to +70 | IP67 | SS | SS | N/A | RD | 2M/PVC | A | 1 | A21 |
| **Bi5-EG18F-AG6X-H1141** 4614643 | Full Stainless Steel | 5 | 2-wire DC | 10-30 VDC | 100 | ≤100 | -25 to +70 | IP68/69K | SS | SS | GN | RD | - - | C | 2 | A21 |
| **Bi12-EG30F-AG6X** 4614667 | Full Stainless Steel | 12 | 2-wire DC | 10-30 VDC | 50 | ≤100 | -25 to +70 | IP67 | SS | SS | N/A | RD | 2M/PVC | D | 1 | A21 |
| **Bi10-EG30F-AG6X-H1141** 4614649 | Full Stainless Steel | 10 | 2-wire DC | 10-30 VDC | 50 | ≤100 | -25 to +70 | IP68/69K | SS | SS | GN | RD | - - | E | 2 | A21 |
| **Bi10-EGT30F-AG6X-H1141/ S1589** 46146490 | Full Stainless Steel, PTFE, Weldguard | 10 | 2-wire DC | 10-30 VDC | 50 | ≤100 | -25 to +70 | IP68/69K | TC | WG | GN | RD | - - | E | 2 | A21 |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Stainless Front Face

**Embeddable Rectangular and Threaded Metal Barrels with 3-Wire DC Outputs**

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   8 mm - Embeddable, Stainless Steel, Potted-In Cable | B   8 mm - Embeddable, Stainless Steel, M12 Eurofast Quick Disconnect |
| C   8 mm - Embeddable, Stainless Steel Barrel, Potted-In Cable | D   8 mm - Embeddable, Stainless Steel Barrel, Potted-In Cable | E   8 mm - Embeddable, Stainless Steel Barrel, M12 Eurofast Quick Disconnect |
| F   8 mm - Embeddable, Stainless Steel Barrel, M12 Eurofast Quick Disconnect | | |

**Wiring Diagrams/Mating Cordsets**

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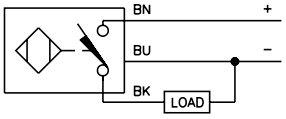


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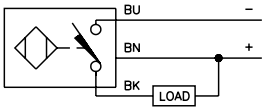


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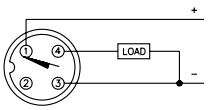

Mating Cordset: RKV 4T-*

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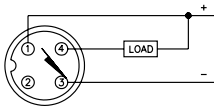


Mating Cordset: RKV 4T-*

**A22** — **3-wire DC Stainless Front Face (AP, AN, RP, RN)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Temperature Drift: | ≤±10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Off-State (Leakage) Current: | ≤0.1 mA | Repeatability: | ≤2% of Rated Operating Distance |

**A23** — **3-wire DC Stainless Front Face Ext Range (AP, AN, RP, RN)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Temperature Drift: | ≤±10% |
| Differential Travel (Hysteresis): | 20% | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤2 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤10 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Off-State (Leakage) Current: | ≤0.1 mA | Repeatability: | ≤5% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Stainless Front Face

## Embeddable Rectangular and Threaded Metal Barrels with 3-Wire DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi7-Q08F-AN6X** 1608914 | Full Stainless Steel | 7 | 3-wire DC NPN | 10-30 VDC | 200 | ≤200 | -25 to +70 | IP68/69K | SS | SS | N/A | YE | 2M/TPE | A | 2 | A23 |
| **Bi7-Q08F-AP6X** 1608916 | Full Stainless Steel | 7 | 3-wire DC PNP | 10-30 VDC | 200 | ≤200 | -25 to +70 | IP68/69K | SS | SS | N/A | YE | 2M/TPE | A | 1 | A23 |
| **Bi7-Q08F-AP6X-0.2-RS4T** 16089160 | Full Stainless Steel | 7 | 3-wire DC PNP | 10-30 VDC | 200 | ≤200 | -25 to +70 | IP68/69K | SS | SS | N/A | YE | 0.2M/ TPE | B | 3 | A23 |
| **Bi1.5-EG08F-AN6X** 4614627 | Full Stainless Steel | 1.5 | 3-wire DC NPN | 10-30 VDC | 200 | ≤200 | -25 to +70 | IP68/69K | SS | SS | N/A | YE | 2M/PVC | C | 2 | A22 |
| **Bi3-EG08FE-AN6X** 4614712 | Full Stainless Steel | 3 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | SS | SS | N/A | YE | 2M/PVC | D | 2 | A23 |
| **Bi1.5-EG08F-AP6X** 4614626 | Full Stainless Steel | 1.5 | 3-wire DC PNP | 10-30 VDC | 200 | ≤200 | -25 to +70 | IP68/69K | SS | SS | N/A | YE | 2M/PVC | C | 1 | A22 |
| **Bi1.5-EGT08F-AP6X** 4614678 | Full Stainless Steel, PTFE | 1.5 | 3-wire DC PNP | 10-30 VDC | 200 | ≤200 | -25 to +70 | IP68/69K | TC | SS | N/A | YE | 2M/PVC | C | 1 | A22 |
| **Bi3-EG08FE-AP6X** 4614704 | Full Stainless Steel | 3 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | SS | SS | N/A | YE | 2M/PVC | D | 1 | A23 |
| **Bi3-EGT08FE-AP6X** 46147043 | Full Stainless Steel, PTFE | 3 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | TC | SS | N/A | YE | 2M/PVC | D | 1 | A23 |
| **Bi1.5-EG08F-AN6X-H1341** 4614630 | Full Stainless Steel | 1.5 | 3-wire DC NPN | 10-30 VDC | 200 | ≤200 | -25 to +70 | IP68/69K | SS | SS | N/A | YE | - - | E | 4 | A22 |
| **Bi3-EG08FE-AN6X-H1341** 4614711 | Full Stainless Steel | 3 | 3-wire DC NPN | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | SS | SS | N/A | YE | - - | F | 4 | A23 |
| **Bi1.5-EG08F-AP6X-H1341** 4614629 | Full Stainless Steel | 1.5 | 3-wire DC PNP | 10-30 VDC | 200 | ≤200 | -25 to +70 | IP68/69K | SS | SS | N/A | YE | - - | E | 3 | A22 |
| **Bi3-EG08FE-AP6X-H1341** 4614703 | Full Stainless Steel | 3 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | SS | SS | N/A | YE | - - | F | 3 | A23 |
| **Bi3-EGT08FE-AP6X-H1341** 46147030 | Full Stainless Steel, PTFE | 3 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | TC | SS | N/A | YE | - - | F | 3 | A23 |
| **Bi3-EGT08FE-AP6X-H1341/S1589** 46147032 | Full Stainless Steel, PTFE, Weldguard | 3 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | TC | WG | N/A | YE | - - | F | 3 | A23 |

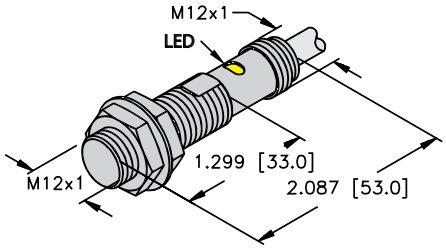
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Stainless Front Face

**Embeddable Threaded Metal Barrels with 3-Wire DC Outputs**

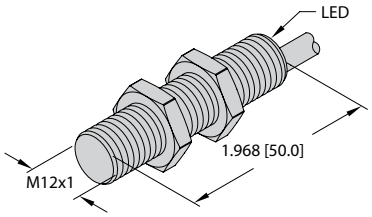
| Housing Style | Dimension Drawings |
|---|---|

A



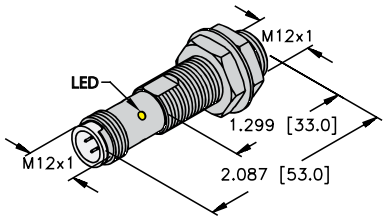

12 mm - Embeddable, Stainless Steel Barrel, Potted-In Cable

B



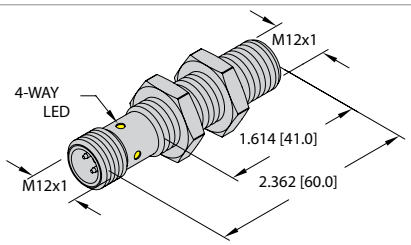

12 mm - Embeddable, Stainless Steel Barrel, Potted-In Cable

C




12 mm - Embeddable, Stainless Steel Barrel, M12 Eurofast Quick Disconnect

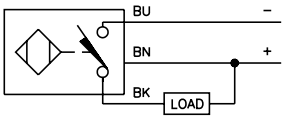
D




12 mm - Embeddable, Stainless Steel Barrel, M12 Eurofast Quick Disconnect

**Wiring Diagrams/Mating Cordsets**

1

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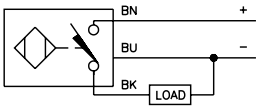


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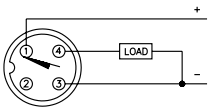
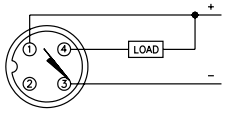



Mating Cordset: RKV 4T-*

4




Mating Cordset: RKV 4T-*

| A22 | 3-wire DC Stainless Front Face (AP, AN, RP, RN) | | |
|---|---|---|---|
| Ripple: | ≤10% | Temperature Drift: | ≤±10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Off-State (Leakage) Current: | ≤0.1 mA | Repeatability: | ≤2% of Rated Operating Distance |

| A23 | 3-wire DC Stainless Front Face Ext Range (AP, AN, RP, RN) | | |
|---|---|---|---|
| Ripple: | ≤10% | Temperature Drift: | ≤±10% |
| Differential Travel (Hysteresis): | 20% | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤2 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤10 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Off-State (Leakage) Current: | ≤0.1 mA | Repeatability: | ≤5% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Stainless Front Face

## Embeddable Threaded Metal Barrels with 3-Wire DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi2-EG12F-AN6X** 4614633 | Full Stainless Steel | 2 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP68/69K | SS | SS | N/A | YE | 2M/PVC | A | 2 | A22 |
| **Bi6-EG12FE-AN6X** 4614721 | Full Stainless Steel | 6 | 3-wire DC NPN | 10-30 VDC | 600 | ≤200 | -25 to +70 | IP68/69K | SS | SS | N/A | YE | 2M/PVC | B | 2 | A23 |
| **Bi2-EG12F-AP6X** 4614632 | Full Stainless Steel | 2 | 3-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP68/69K | SS | SS | N/A | YE | 2M/PVC | A | 1 | A22 |
| **Bi6-EG12FE-AP6X** 4614720 | Full Stainless Steel | 6 | 3-wire DC PNP | 10-30 VDC | 600 | ≤200 | -25 to +70 | IP68/69K | SS | SS | N/A | YE | 2M/PVC | B | 1 | A23 |
| **Bi2-EG12F-AN6X-H1141** 4614636 | Full Stainless Steel | 2 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP68/69K | SS | SS | N/A | YE | - - | C | 4 | A22 |
| **Bi6-EG12FE-AN6X-H1141** 4614714 | Full Stainless Steel | 6 | 3-wire DC NPN | 10-30 VDC | 600 | ≤200 | -25 to +70 | IP68/69K | SS | SS | N/A | YE | - - | D | 4 | A23 |
| **Bi6-EGT12FE-AN6X-H1141** 46147140 | Full Stainless Steel, PTFE | 6 | 3-wire DC NPN | 10-30 VDC | 600 | ≤200 | -25 to +70 | IP68/69K | TC | SS | N/A | YE | - - | D | 4 | A23 |
| **Bi2-EG12F-AP6X-H1141** 4614635 | Full Stainless Steel | 2 | 3-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP68/69K | SS | SS | N/A | YE | - - | C | 3 | A22 |
| **Bi2-EGT12F-AP6X-H1141** 46146971 | Full Stainless Steel, PTFE | 2 | 3-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP68/69K | TC | SS | N/A | YE | - - | C | 3 | A22 |
| **Bi6-EG12FE-AP6X-H1141** 4614706 | Full Stainless Steel | 6 | 3-wire DC PNP | 10-30 VDC | 600 | ≤200 | -25 to +70 | IP68/69K | SS | SS | N/A | YE | - - | D | 3 | A23 |
| **Bi6-EGT12FE-AP6X-H1141** 46147060 | Full Stainless Steel, PTFE | 6 | 3-wire DC PNP | 10-30 VDC | 600 | ≤200 | -25 to +70 | IP68/69K | TC | SS | N/A | YE | - - | D | 3 | A23 |
| **Bi6-EGT12FE-AP6X-H1141/S1589** 46147061 | Full Stainless Steel, PTFE, Weldguard | 6 | 3-wire DC PNP | 10-30 VDC | 600 | ≤200 | -25 to +70 | IP68/69K | TC | WG | N/A | YE | - - | D | 3 | A23 |

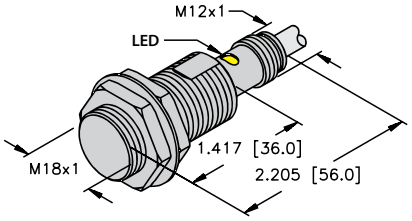
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Stainless Front Face

**Embeddable Threaded Metal Barrels with 3-Wire DC Outputs**

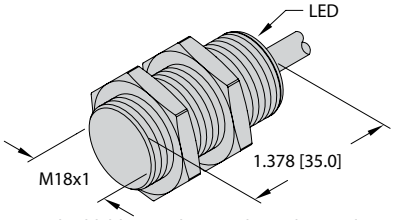
| Housing Style | Dimension Drawings |
|---|---|

A



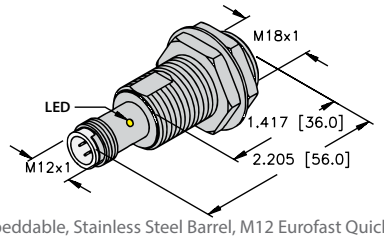

18 mm - Embeddable, Stainless Steel Barrel, Potted-In Cable

B



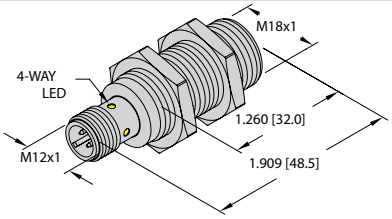

18 mm - Embeddable, Stainless Steel Barrel, Potted-In Cable

C



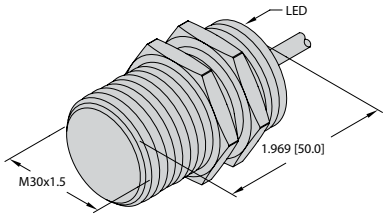

18 mm - Embeddable, Stainless Steel Barrel, M12 Eurofast Quick Disconnect

D



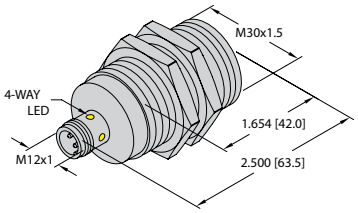

18 mm - Embeddable, Stainless Steel Barrel, M12 Eurofast Quick Disconnect

E




30 mm - Embeddable, Stainless Steel Barrel, Potted-In Cable

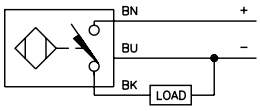
F




30 mm - Embeddable, M12 Eurofast Connection, Stainless Steel

## Wiring Diagrams/Mating Cordsets

1

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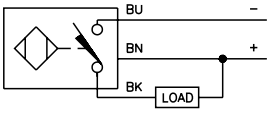


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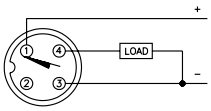
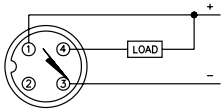



Mating Cordset: RKV 4T-*

4




Mating Cordset: RKV 4T-*

## A22 — 3-wire DC Stainless Front Face (AP, AN, RP, RN)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Temperature Drift: | ≤±10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Off-State (Leakage) Current: | ≤0.1 mA | Repeatability: | ≤2% of Rated Operating Distance |

## A23 — 3-wire DC Stainless Front Face Ext Range (AP, AN, RP, RN)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Temperature Drift: | ≤±10% |
| Differential Travel (Hysteresis): | 20% | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤2 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤10 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Off-State (Leakage) Current: | ≤0.1 mA | Repeatability: | ≤5% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Stainless Front Face

## Embeddable Threaded Metal Barrels with 3-Wire DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi5-EG18F-AN6X** 4614639 | Full Stainless Steel | 5 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP68/69K | SS | SS | N/A | YE | 2M/PVC | A | 2 | A22 |
| **Bi10-EG18F-AN6X** 4614723 | Full Stainless Steel | 10 | 3-wire DC NPN | 10-30 VDC | 200 | ≤200 | -25 to +70 | IP68/69K | SS | SS | N/A | YE | 2M/PVC | B | 2 | A23 |
| **Bi10-EG18F-AP6X** 4614722 | Full Stainless Steel | 10 | 3-wire DC PNP | 10-30 VDC | 200 | ≤200 | -25 to +70 | IP68/69K | SS | SS | N/A | YE | 2M/PVC | B | 1 | A23 |
| **Bi5-EG18F-AN6X-H1141** 4614642 | Full Stainless Steel | 5 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP68/69K | SS | SS | N/A | YE | - - | C | 4 | A22 |
| **Bi5-EGT18F-AN6X-H1141** 4614672 | Full Stainless Steel, PTFE | 5 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP68/69K | TC | SS | N/A | YE | - - | C | 4 | A22 |
| **Bi10-EG18F-AN6X-H1141** 4614716 | Full Stainless Steel | 10 | 3-wire DC NPN | 10-30 VDC | 200 | ≤200 | -25 to +70 | IP68/69K | SS | SS | N/A | YE | - - | D | 4 | A23 |
| **Bi5-EG18F-AP6X-H1141** 4614641 | Full Stainless Steel | 5 | 3-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP68/69K | SS | SS | N/A | YE | - - | C | 3 | A22 |
| **Bi5-EGT18F-AP6X-H1141** 4614675 | Full Stainless Steel, PTFE | 5 | 3-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP68/69K | TC | SS | N/A | YE | - - | C | 3 | A22 |
| **Bi10-EG18F-AP6X-H1141** 4614708 | Full Stainless Steel | 10 | 3-wire DC PNP | 10-30 VDC | 200 | ≤200 | -25 to +70 | IP68/69K | SS | SS | N/A | YE | - - | D | 3 | A23 |
| **Bi10-EGT18F-AP6X-H1141** 46147080 | Full Stainless Steel, PTFE | 10 | 3-wire DC PNP | 10-30 VDC | 200 | ≤200 | -25 to +70 | IP68/69K | TC | SS | N/A | YE | - - | D | 3 | A23 |
| **Bi10-EGT18F-AP6X-H1141/S1589** 46147081 | Full Stainless Steel, PTFE, Weldguard | 10 | 3-wire DC PNP | 10-30 VDC | 200 | ≤200 | -25 to +70 | IP68/69K | TC | WG | N/A | YE | - - | D | 3 | A23 |
| **Bi20-EG30F-AP6X** 4614724 | Full Stainless Steel | 20 | 3-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP68/69K | SS | SS | N/A | YE | 2M/PVC | E | 1 | A23 |
| **Bi20-EG30F-AP6X-H1141** 4614710 | Full Stainless Steel | 20 | 3-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP68/69K | SS | SS | N/A | YE | - - | F | 3 | A23 |
| **Bi20-EGT30F-AP6X-H1141** 46147100 | Full Stainless Steel, PTFE | 20 | 3-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP68/69K | TC | SS | N/A | YE | - - | F | 3 | A23 |
| **Bi20-EGT30F-AP6X-H1141/S1589** 46147101 | Full Stainless Steel, PTFE, Weldguard | 20 | 3-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP68/69K | TC | WG | N/A | YE | - - | F | 3 | A23 |

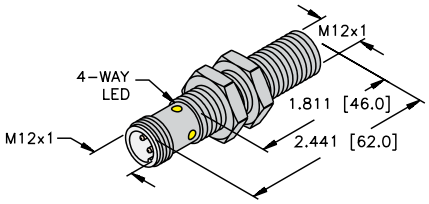
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Mobile Equipment

**Barrel Sensors Designed for use on Vehicles and Equipment**

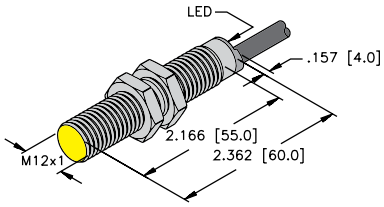
| Housing Style | Dimension Drawings |
|---|---|

A



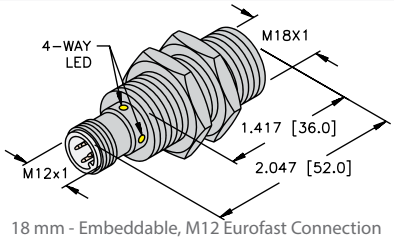

12 mm - Embeddable, M12 Eurofast Connection

B



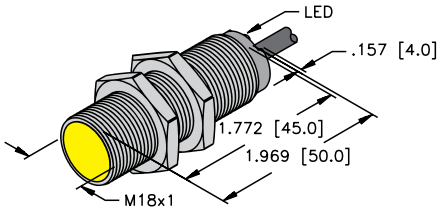

12 mm - Embeddable, Partial Threading, Potted-In Cable

C



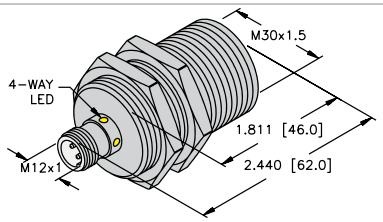

18 mm - Embeddable, M12 Eurofast Connection

D



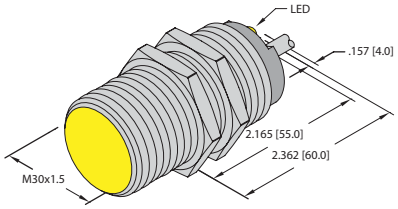

18 mm - Embeddable, Partial Threading, Potted-In Cable

E




30 mm - Embeddable, M12 Eurofast Connection

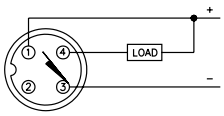
F




30 mm - Embeddable, Partial Threading, Potted-In Cable

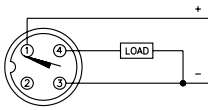
**Wiring Diagrams/Mating Cordsets**

1



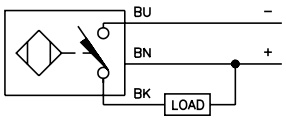

Mating Cordset: RK 4T-*/S90

2

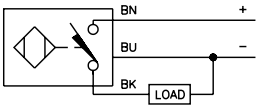



Mating Cordset: RK 4T-*/S90

3




4




**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox 3) | Repeatability: | ≤2% of Rated Operating Distance |

**Features**

- Load Dump Protection
- Shock Resistant
- EMC Immunity
- Extended Temperature Range
- Broader Operating Voltage
- Improved Sealing and Environmental Protection
- Longer Sensing Range

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Mobile Equipment

## Barrel Sensors Designed for use on Vehicles and Equipment

| Part Number/ ID Number | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi4-EM12E-AN45XLD-H1141** 1584003 | 4 | 3-wire DC NPN | 8.4-65 VDC | 2000 | ≤200 | -40 to +85 | IP68/69K | SS | PA12 | N/A | YE | - - | A | 1 | A4 |
| **Bi4-EM12E-AP45XLD-H1141** 1584000 | 4 | 3-wire DC PNP | 8.4-65 VDC | 2000 | ≤200 | -40 to +85 | IP68/69K | SS | PA12 | N/A | YE | - - | A | 2 | A4 |
| **Bi4-EM12E-AN45XLD** 1584004 | 4 | 3-wire DC NPN | 8.4-65 VDC | 2000 | ≤200 | -40 to +85 | IP68/69K | SS | PA12 | N/A | YE | 2M/TPE | B | 3 | A4 |
| **Bi4-EM12E-AP45XLD** 1584001 | 4 | 3-wire DC PNP | 8.4-65 VDC | 2000 | ≤200 | -40 to +85 | IP68/69K | SS | PA12 | N/A | YE | 2M/TPE | B | 4 | A4 |
| **Bi8-EM18-AN45XLD-H1141** 1584017 | 8 | 3-wire DC NPN | 8.4-65 VDC | 500 | ≤200 | -40 to +85 | IP68/69K | SS | PA12 | N/A | YE | - - | C | 1 | A4 |
| **Bi8-EM18-AP45XLD-H1141** 1584010 | 8 | 3-wire DC PNP | 8.4-65 VDC | 500 | ≤200 | -40 to +85 | IP68/69K | SS | PA12 | N/A | YE | - - | C | 2 | A4 |
| **Bi8-EM18-AN45XLD** 1584014 | 8 | 3-wire DC NPN | 8.4-65 VDC | 500 | ≤200 | -40 to +85 | IP68/69K | SS | PA12 | N/A | YE | 2M/TPE | D | 3 | A4 |
| **Bi8-EM18-AP45XLD** 1584011 | 8 | 3-wire DC PNP | 8.4-65 VDC | 500 | ≤200 | -40 to +85 | IP68/69K | SS | PA12 | N/A | YE | 2M/TPE | D | 4 | A4 |
| **Bi15-EM30-AN45XLD-H1141** 1584024 | 15 | 3-wire DC NPN | 8.4-65 VDC | 500 | ≤200 | -40 to +85 | IP68/69K | SS | PA12 | N/A | YE | - - | E | 1 | A4 |
| **Bi15-EM30-AP45XLD-H1141** 1584020 | 15 | 3-wire DC PNP | 8.4-65 VDC | 500 | ≤200 | -40 to +85 | IP68/69K | SS | PA12 | N/A | YE | - - | E | 2 | A4 |
| **Bi15-EM30-AN45XLD** 1584022 | 15 | 3-wire DC NPN | 8.4-65 VDC | 500 | ≤200 | -40 to +85 | IP68/69K | SS | PA12 | N/A | YE | 2M/TPE | F | 1 | A4 |
| **Bi15-EM30-AP45XLD** 1584021 | 15 | 3-wire DC PNP | 8.4-65 VDC | 500 | ≤200 | -40 to +85 | IP68/69K | SS | PA12 | N/A | YE | 2M/TPE | F | 2 | A4 |

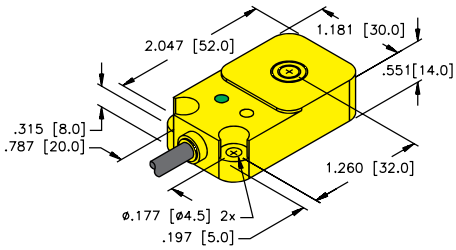
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Mobile Equipment

**Rectangular Sensors Designed for use on Vehicles and Equipment**

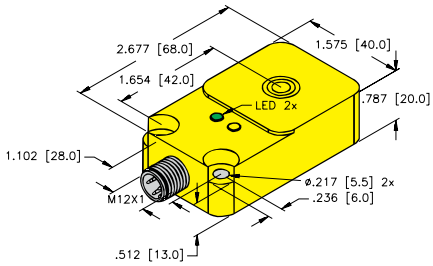
| Housing Style | Dimension Drawings |
|---|---|

A



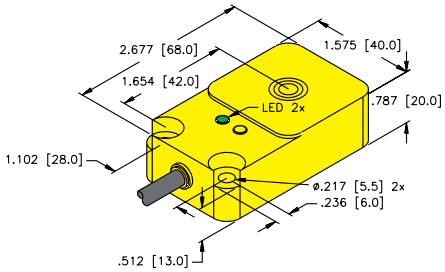

14 mm - Embeddable, Potted-In Cable

B




20 mm - Embeddable, M12 Eurofast Connection

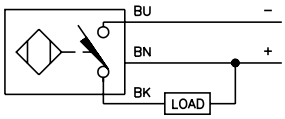
C




20 mm - Embeddable, Potted-In Cable

## Wiring Diagrams/Mating Cordsets

1

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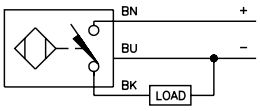


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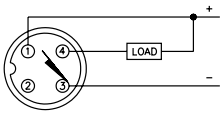
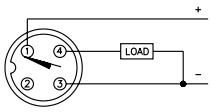


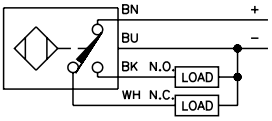

Mating Cordset: RK 4T-*/S90

4




Mating Cordset: RK 4T-*/S90

5




## A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current |
| | ≥170 mA on 150 mA Load Current |
| | ≥120 mA on 100 mA Load Current |
| Off-State (Leakage) Current: | ≤0.1 mA |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) |
| | ≤20 mA (Uprox+, Uprox 3) |
| Time Delay Before Availability: | ≤8 ms |
| Power-On Effect: | Per IEC 947-5-2 |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Transient Protection: | Per EN 60947-5-2 |
| Temperature Drift: | ≤±10% |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

## Features

- Load Dump Protection
- Shock Resistant
- EMC Immunity
- Extended Temperature Range
- Broader Operating Voltage
- Improved Sealing and Environmental Protection
- Longer Sensing Range

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Mobile Equipment

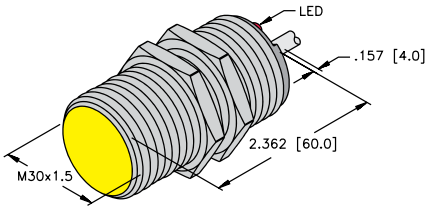
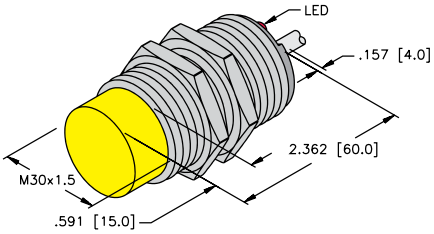
**Rectangular Sensors Designed for use on Vehicles and Equipment**

| Part Number/ ID Number | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi10-Q14-AN45X2LD** 1584032 | 10 | 3-wire DC NPN | 8.4-65 VDC | 500 | ≤200 | -40 to +85 | IP68/69K | PBT | PBT | GN | YE | 2M/TPE | A | 1 | A4 |
| **Bi10-Q14-AP45X2LD** 1584031 | 10 | 3-wire DC PNP | 8.4-65 VDC | 500 | ≤200 | -40 to +85 | IP68/69K | PBT | PBT | GN | YE | 2M/TPE | A | 2 | A4 |
| **Bi20-Q20-AN45X2LD-H1141** 1584042 | 20 | 3-wire DC NPN | 8.4-65 VDC | 500 | ≤200 | -40 to +85 | IP68/69K | PBT | PBT | GN | YE | - - | B | 3 | A4 |
| **Bi20-Q20-AP45X2LD-H1141** 1584040 | 20 | 3-wire DC PNP | 8.4-65 VDC | 500 | ≤200 | -40 to +85 | IP68/69K | PBT | PBT | GN | YE | - - | B | 4 | A4 |
| **Bi20-Q20-AN45X2LD** 1584043 | 20 | 3-wire DC NPN | 8.4-65 VDC | 500 | ≤200 | -40 to +85 | IP68/69K | PBT | PBT | GN | YE | 2M/TPE | C | 1 | A4 |
| **Bi20-Q20-AP45X2LD** 1584041 | 20 | 3-wire DC PNP | 8.4-65 VDC | 500 | ≤200 | -40 to +85 | IP68/69K | PBT | PBT | GN | YE | 2M/TPE | C | 2 | A4 |
| **Bi20-Q20-VP45X2LD** 1584047 | 20 | 4-wire DC PNP | 8.4-65 VDC | 500 | ≤200 | -40 to +85 | IP68/69K | PBT | PBT | GN | YE | 2M/TPE | C | 5 | A4 |

We reserve the right to make technical alterations without prior notice.

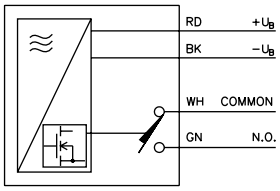
# Specialty Sensors | 6A Solid State

## Threaded Metal Barrel Sensors with Cable

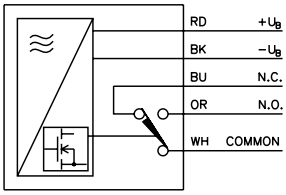
| Housing Style | Dimension Drawings |
|---|---|
| | A   30 mm - Embeddable, Potted-In Cable |
| B   30 mm - Nonembeddable, Potted-In Cable | |

### Wiring Diagrams/Mating Cordsets

1




2




### A10 — Solid State Relay (AM6, VM6)

| | |
|---|---|
| Ripple: | ≤10% |
| Output Voltage: | ≤35 V AC, ≤50 V DC |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤0.4 V |
| Continuous Load Current: | ≤6 Amp |
| Off-State (Leakage) Current: | ≤0.1 mA |
| Inrush Current: | ≤8.0 A (≤10.0 ms max 5 Hz) |
| No-Load Current: | ≤25 mA |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Short Circuit Protected: | No |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | 6A Solid State

## Threaded Metal Barrel Sensors with Cable

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi12-G30-AM6/37X/S97** 1711200 | High current rated | 12 | 4-wire DC | 10-30 VDC | 20 | ≤6000 | -40 to 70 | IP67 | CPB | PA12 | N/A | YE | 2M/PVC | A | 1 | A10 |
| **Bi12-G30-VM6/37X/S97** 1711290 | High current rated | 12 | 5-wire DC | 10-30 VDC | 20 | ≤6000 | -40 to 70 | IP67 | CPB | PA12 | N/A | YE | 2M/PVC | A | 2 | A10 |
| **Ni20-G30-VM6/37X/S97** 4205472 | High current rated | 20 | 5-wire DC | 10-30 VDC | 20 | ≤6000 | -40 to 70 | IP67 | CPB | PA12 | N/A | YE | 2M/PVC | B | 2 | A10 |



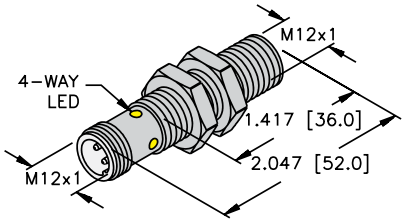
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | FM Approved Class I Div 2

**Threaded Metal Barrels with 3-Wire DC Outputs**

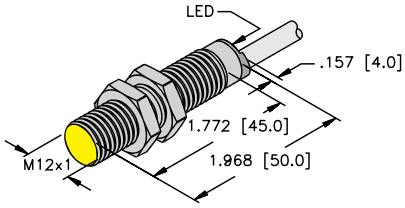
| Housing Style | Dimension Drawings |
|---|---|

A



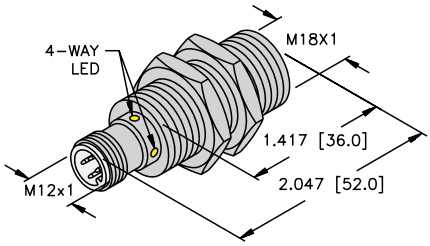

12 mm - Embeddable, M12 Eurofast Connector

B



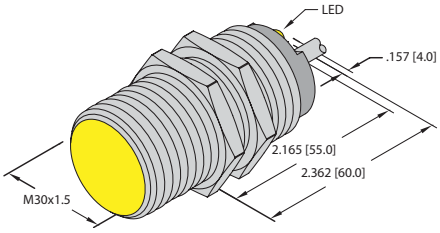

12 mm - Embeddable, Potted-In Cable

C



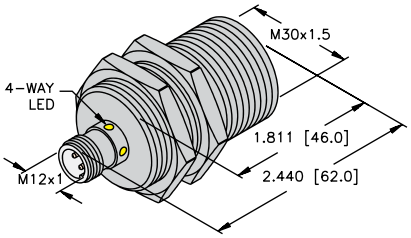

18 mm - Embeddable, M12 Eurofast Connector

D




30 mm - Embeddable, Potted-In Cable

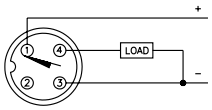
E




30 mm - Embeddable, M12 Eurofast Connector

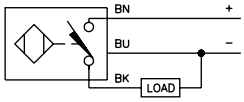
**Wiring Diagrams/Mating Cordsets**

1




Mating Cordset: P-RKGV 4.43T-1699XL-*

2




**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox 3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | FM Approved Class I Div 2

## Threaded Metal Barrels with 3-Wire DC Outputs

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi4-M12-AP6X-H1141/S1751** 4607075 | FM Approved | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | - - | A | 1 | A4 |
| **Bi4-M12-AP6X/S1751** 4607073 | FM Approved | 4 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/ PVC | B | 2 | A4 |
| **Bi8-M18-AP6X-H1141/S1751** 4615078 | FM Approved | 8 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | - - | C | 1 | A4 |
| **Bi15-M30-AP6X-H1141/S97/S1751** 4618574 | FM Approved | 15 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -40 to +70 | IP67 | CPB | PA 12 | N/A | YE | - - | E | 1 | A4 |
| **Bi15-M30-AP6X/S1751** 46185302 | FM Approved | 15 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | 2M/ PVC | D | 2 | A4 |

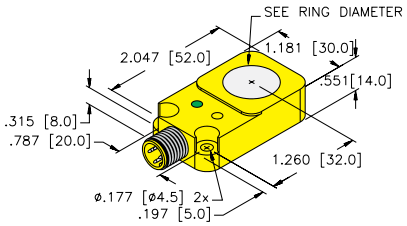
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Ring Sensors

## Plastic Housing Sensors with Cable or Connector and 3-Wire DC Output

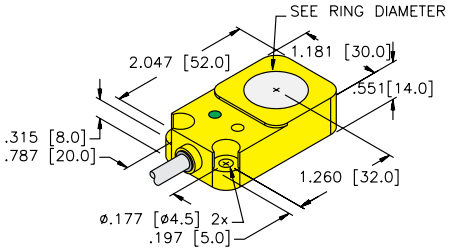
| Housing Style | Dimension Drawings |
|---|---|

A



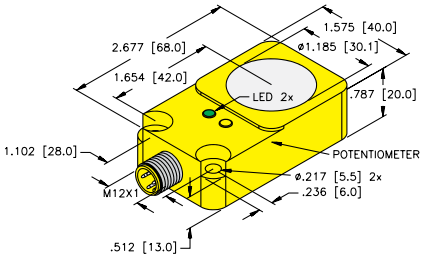

14 mm - Rectangular, Ring Sensor, M12 Eurofast Connector

B



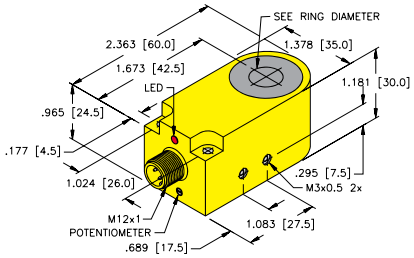

14 mm - Rectangular, Ring Sensor, Potted-In Cable

C




20 mm - Rectangular, Ring Sensor, M12 Eurofast Connector

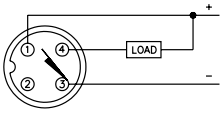
D




30 mm - Rectangular, Ring Sensor, M12 Eurofast Connector

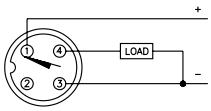
### Wiring Diagrams/Mating Cordsets

1



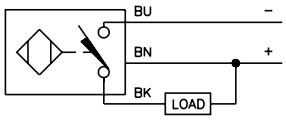

Mating Cordset: RK 4T-*

2

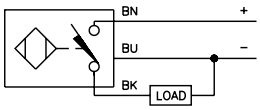



Mating Cordset: RK 4T-*

3




4




### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox 3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Ring Sensors

## Plastic Housing Sensors with Cable or Connector and 3-Wire DC Output

| Part Number/ ID Number | Features | Minimum Target Diameter | Ring Diameter (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi10R-Q14-AN6X2-H1141** 1407120 | Static Output | ≥ 2 mm | 10 | 3-wire DC NPN | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PBT | POM | GN | YE | - - | A | 1 | A4 |
| **Bi15R-Q14-AN6X2-H1141** 1407220 | Static Output | ≥ 3 mm | 15 | 3-wire DC NPN | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PBT | POM | GN | YE | - - | A | 1 | A4 |
| **Bi20R-Q14-AN6X2-H1141** 1407320 | Static Output | ≥ 4 mm | 20 | 3-wire DC NPN | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PBT | POM | GN | YE | - - | A | 1 | A4 |
| **Bi6R-Q14-AP6X2-H1141** 14070 | Static Output | ≥ 2 mm | 6 | 3-wire DC PNP | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PBT | POM | GN | YE | - - | A | 2 | A4 |
| **Bi10R-Q14-AP6X2-H1141** 14071 | Static Output | ≥ 2 mm | 10 | 3-wire DC PNP | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PBT | POM | GN | YE | - - | A | 2 | A4 |
| **Bi15R-Q14-AP6X2-H1141** 14072 | Static Output | ≥ 3 mm | 15 | 3-wire DC PNP | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PBT | POM | GN | YE | - - | A | 2 | A4 |
| **Bi20R-Q14-AP6X2-H1141** 14073 | Static Output | ≥ 4 mm | 20 | 3-wire DC PNP | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PBT | POM | GN | YE | - - | A | 2 | A4 |
| **Bi10R-Q14-AN6X2** 1406120 | Static Output | ≥ 2 mm | 10 | 3-wire DC NPN | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PBT | POM | GN | YE | 2M/PVC | B | 3 | A4 |
| **Bi15R-Q14-AN6X2** 1406220 | Static Output | ≥ 3 mm | 15 | 3-wire DC NPN | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PBT | POM | GN | YE | 2M/PVC | B | 3 | A4 |
| **Bi20R-Q14-AN6X2** 1406320 | Static Output | ≥ 4 mm | 20 | 3-wire DC NPN | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PBT | POM | GN | YE | 2M/PVC | B | 3 | A4 |
| **Bi10R-Q14-AP6X2** 14061 | Static Output | ≥ 2 mm | 10 | 3-wire DC PNP | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PBT | POM | GN | YE | 2M/PVC | B | 4 | A4 |
| **Bi15R-Q14-AP6X2** 14062 | Static Output | ≥ 3 mm | 15 | 3-wire DC PNP | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PBT | POM | GN | YE | 2M/PVC | B | 4 | A4 |
| **Bi20R-Q14-AP6X2** 14063 | Static Output | ≥ 4 mm | 20 | 3-wire DC PNP | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PBT | POM | GN | YE | 2M/PVC | B | 4 | A4 |
| **Bi30R-Q20-AN6X2-H1141** 1407520 | Static Output | ≥ 6 mm | 30 | 3-wire DC NPN | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PBT | POM | GN | YE | - - | C | 1 | A4 |
| **Bi30R-Q20-AP6X2-H1141** 14075 | Static Output | ≥ 6 mm | 30 | 3-wire DC PNP | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PBT | POM | GN | YE | - - | C | 2 | A4 |
| **Bi6R-W30-DAN6X-H1141** 14037 | Dynamic Output | ≥ 0.6 mm | 6 | 3-wire DC NPN | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PA 12 | POM | N/A | YE | - - | D | 1 | A4 |
| **Bi10R-W30-DAN6X-H1141** 14039 | Dynamic Output | ≥ 1 mm | 10 | 3-wire DC NPN | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PA 12 | POM | N/A | YE | - - | D | 1 | A4 |
| **Bi15R-W30-DAN6X-H1141** 14041 | Dynamic Output | ≥ 1.5 mm | 15 | 3-wire DC NPN | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PA 12 | POM | N/A | YE | - - | D | 1 | A4 |
| **Bi20R-W30-DAN6X-H1141** 14043 | Dynamic Output | ≥ 2 mm | 20 | 3-wire DC NPN | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PA 12 | POM | N/A | YE | - - | D | 1 | A4 |
| **Bi30R-W30-DAN6X-H1141** 1404501 | Dynamic Output | ≥ 3 mm | 30 | 3-wire DC NPN | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PA 12 | POM | N/A | YE | - - | D | 1 | A4 |
| **Bi6R-W30-DAP6X-H1141** 14036 | Dynamic Output | ≥ 0.6 mm | 6 | 3-wire DC PNP | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PA 12 | POM | N/A | YE | - - | D | 2 | A4 |
| **Bi10R-W30-DAP6X-H1141** 14038 | Dynamic Output | ≥ 1 mm | 10 | 3-wire DC PNP | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PA 12 | POM | N/A | YE | - - | D | 2 | A4 |
| **Bi15R-W30-DAP6X-H1141** 14040 | Dynamic Output | ≥ 1.5 mm | 15 | 3-wire DC PNP | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PA 12 | POM | N/A | YE | - - | D | 2 | A4 |
| **Bi20R-W30-DAP6X-H1141** 14042 | Dynamic Output | ≥ 2 mm | 20 | 3-wire DC PNP | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PA 12 | POM | N/A | YE | - - | D | 2 | A4 |
| **Bi30R-W30-DAP6X-H1141** 14045 | Dynamic Output | ≥ 3 mm | 30 | 3-wire DC PNP | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP67 | PA 12 | POM | N/A | YE | - - | D | 2 | A4 |

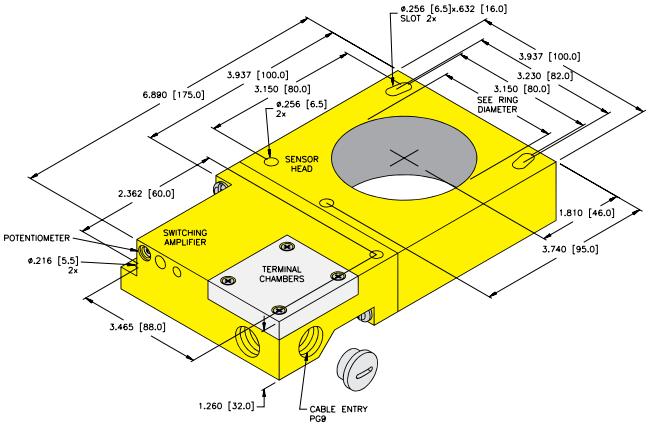
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Ring Sensors

**Plastic Housing Sensors with a Large Diameter Ring and 3 or 4-Wire DC Output**

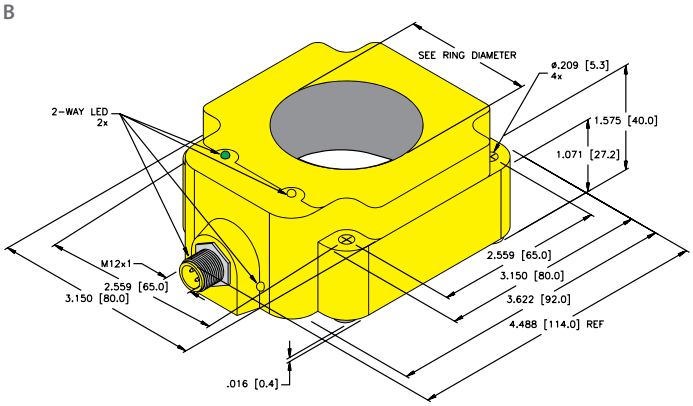
| Housing Style | Dimension Drawings |
|---|---|

A



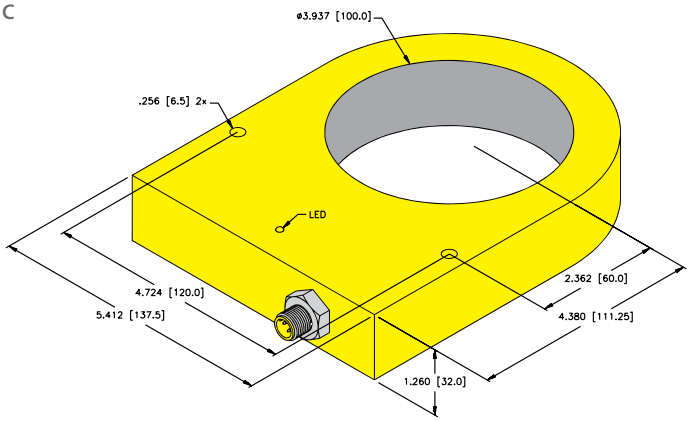

32 mm - Rectangular, Ring Sensor, Terminal Chamber

B




80 mm - Rectangular, Ring Sensor, M12 Eurofast Connector

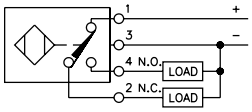
C




100 mm - Rectangular, Ring Sensor, M12 Eurofast Connector

**Wiring Diagrams/Mating Cordsets**

1

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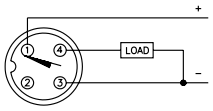
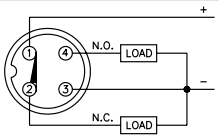



Mating Cordset: RK 4T-*

3




Mating Cordset: RK 4.4T-*

**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox 3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Ring Sensors

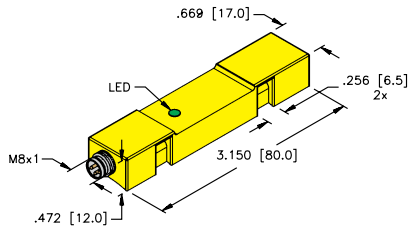
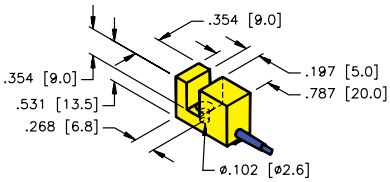
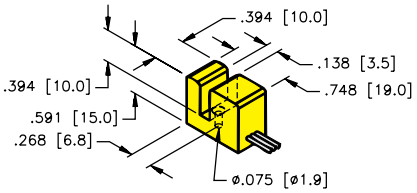
**Plastic Housing Sensors with a Large Diameter Ring and 3 or 4-Wire DC Output**

| Part Number/ ID Number | Features | Minimum Target Diameter | Ring Diameter (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni20R-S32SR-VP44X** 1440001 | Static Output | ≥ 0.4 mm | 20 | 4-wire DC PNP | 10-55 VDC | 8 | ≤200 | -25 to +70 | IP67 | ABS | ABS | N/A | YE | A | 1 | A4 |
| **Ni40R-S32SR-VP44X** 1440005 | Static Output | ≥ 1 mm | 40 | 4-wire DC PNP | 10-55 VDC | 8 | ≤200 | -25 to +70 | IP67 | ABS | ABS | N/A | YE | A | 1 | A4 |
| **Ni65R-S32SR-VP44X** 1440008 | Static Output | ≥ 12 mm | 65 | 4-wire DC PNP | 10-55 VDC | 8 | ≤200 | -25 to +70 | IP67 | ABS | ABS | N/A | YE | A | 1 | A4 |
| **Bi50R-Q80-AP6X2-H1141** 1407530 | Static Output | ≥ 8 mm | 50 | 3-wire DC PNP | 10-30 VDC | 10 | ≤200 | -25 to +70 | IP67 | PBT | PA 66 | GN | YE | B | 2 | A4 |
| **Bi65R-Q80-AP6X2-H1141** 1407531 | Static Output | ≥ 10 mm | 65 | 3-wire DC PNP | 10-30 VDC | 10 | ≤200 | -25 to +70 | IP67 | PBT | PA 66 | GN | YE | B | 2 | A4 |
| **Ni100R-S32XL-VP44X-H1141** 1510301 | Static Output | ≥ 10mm | 100 | 4-wire DC PNP | 10-55 VDC | 8 | ≤200 | -25 to +70 | IP67 | POM | POM | N/A | YE | C | 3 | A4 |

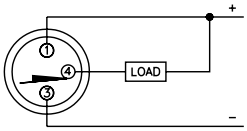
We reserve the right to make technical alterations without prior notice.

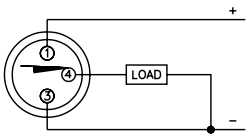
# Specialty Sensors | Tube and Slot Sensors

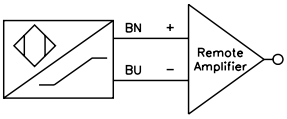
## Plastic Housing Sensors with Cable or Connector

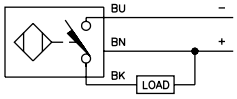
| Housing Style | Dimension Drawings |
|---|---|
| | A   Tube Sensing Nonembeddable, M8 Picofast Connector |
| B   9 mm - Slot Sensor, Potted-In Cable | C   10 mm - Slot Sensor, Potted-In Cable |

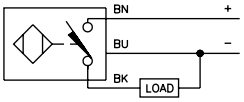
### Wiring Diagrams/Mating Cordsets

1  
Mating Cordset: PKG 3M-*

2  
Mating Cordset: PKG 3M-*

3  

4  

5  

### A1 — 2-wire DC NAMUR - (Y0 and Y1)

| | |
|---|---|
| Differential Travel (Hysteresis): | 1-10% (5% typical) |
| Nominal Voltage: | 8.2 VDC (EN60947-5-6) |
| Load Resistance: | 1000 Ω |
| Non-activated Current Consumption: | ≥2.1 mA |
| Activated Current Consumption: | ≤1.2 mA |
| Recommended Switching Point for Remote Amplifier: | >1.2 to <2.1 mA, typ. 1.55 mA ON/1.75 mA OFF |
| Power-On Effect: | Realized in Amplifier |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Realized in Amplifier |
| Transient Protection: | Realized in Amplifier |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current<br>≥170 mA on 150 mA Load Current<br>≥120 mA on 100 mA Load Current |
| Off-State (Leakage) Current: | ≤0.1 mA |
| No-Load Current: | ≤15 mA (Ferrite, Uprox)<br>≤20 mA (Uprox+, Uprox 3) |
| Time Delay Before Availability: | ≤8 ms |
| Power-On Effect: | Per IEC 947-5-2 |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Transient Protection: | Per EN 60947-5-2 |
| Temperature Drift: | ≤±10% |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Tube and Slot Sensors

## Plastic Housing Sensors with Cable or Connector

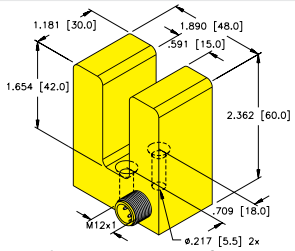
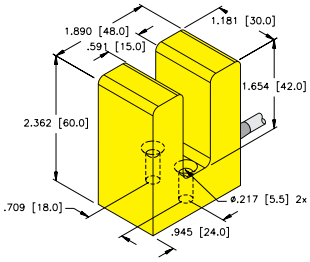
| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni20U-TS12-AN6X2-V1131** 1625822 | Uprox+ | 20 | 3-wire DC NPN | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP68 | PBT | PBT | GN | YE | - - | A | 1 | A4 |
| **Ni20U-TS12-AP6X2-V1131** 1646640 | Uprox+ | 20 | 4-wire DC PNP | 10-30 VDC | 8 | ≤200 | -25 to +70 | IP68 | PBT | PBT | GN | YE | - - | A | 2 | A4 |
| **Si5-K09-Y1 0.5M** 10240 | | 5 | 2-wire DC NAMUR | 5-30 VDC | 5000 | Remote | -25 to +70 | IP67 | PBT | PBT | N/A | N/A | 0.5M/PVC | B | 3 | A1 |
| **Si3.5-K10-AN7** 17190 | | 3.5 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | PBT | PBT | N/A | N/A | 2M/PVC | C | 4 | A4 |
| **Si3.5-K10-AP6X** 1650001 | | 3.5 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | PBT | PBT | N/A | YE | 2M/PVC | C | 5 | A4 |
| **Si3.5-K10-Y1** 10365 | | 3.5 | 2-wire DC NAMUR | 5-30 VDC | 3000 | Remote | -25 to +70 | IP67 | PBT | PBT | N/A | N/A | 2M/PVC | C | 3 | A1 |



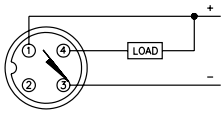
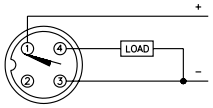
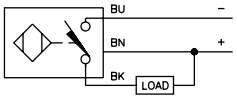
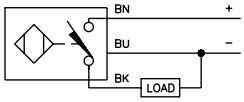
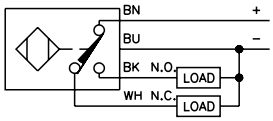
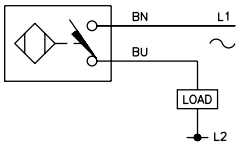
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Slot Sensors

## Plastic Housing Sensors with Cable or Connector

| Housing Style | Dimension Drawings |
|---|---|
| | A   30 mm - Slot Sensor, M12 Eurofast Connector |
| B   30 mm - Slot Sensor, Potted-In Cable | |

### Wiring Diagrams/Mating Cordsets

| 1 | 2 | 3 |
|---|---|---|
|   Mating Cordset: RK 4T-* |   Mating Cordset: RK 4T-* |   |
| **4** | **5** | **6** |
|   |   |   |

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox 3) | Repeatability: | ≤2% of Rated Operating Distance |

### A6 — 2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Power-On Effect: | Per IEC 947-5-2 |
| | AC: ≤100 mA; DC: ≤100 mA | Transient Protection: | Per EN 60947-5-2 |
| Off-State (Leakage) Current: | ≤1.7 mA | Shock: | 30 g, 11 ms |
| Minimum Load Current: | ≥3.0 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Slot Sensors

## Plastic Housing Sensors with Cable or Connector

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Si15-K30-AN6X-H1141** 1605107 | | 15 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PBT | PBT | N/A | YE | - - | A | 1 | A4 |
| **Si15-K30-AP6X-H1141** 1605007 | | 15 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PBT | PBT | N/A | YE | - - | A | 2 | A4 |
| **Si15-K30-AN6X** 1605003 | | 15 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PBT | PBT | N/A | YE | 2M/PVC | B | 3 | A4 |
| **Si15-K30-AP6X** 1605001 | | 15 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP67 | PBT | PBT | N/A | YE | 2M/PVC | B | 4 | A4 |
| **Si15-K30-VP6** 1605030 | Comp. Outputs | 15 | 4-wire DC PNP | 10-30 VDC | 350 | ≤200 | -25 to +70 | IP67 | PBT | PBT | N/A | N/A | 2M/PVC | B | 5 | A4 |
| **Si15-K30-AZ3** 13069 | | 15 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | N/A | N/A | 2M/PVC | B | 6 | A6 |

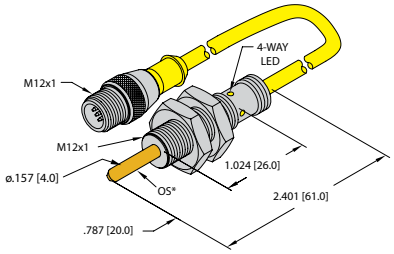
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Weld Nut Sensors

**Threaded Metal Barrel with Smooth Sensing Probe and 3-Wire DC Output**

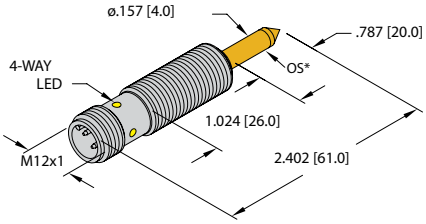
| Housing Style | Dimension Drawings |
|---|---|

A



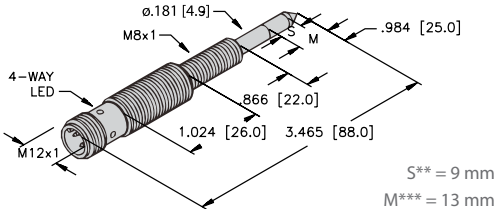

Nut Sensor, 5-12 mm Diameter Nut, Potted-In Cable

B



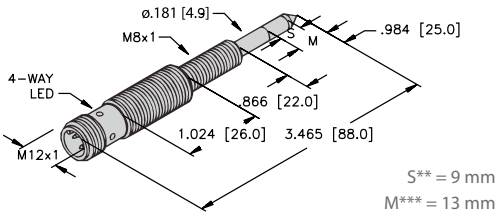

Nut Sensor, 5-12 mm Diameter Nut, M12 Eurofast Connector

C



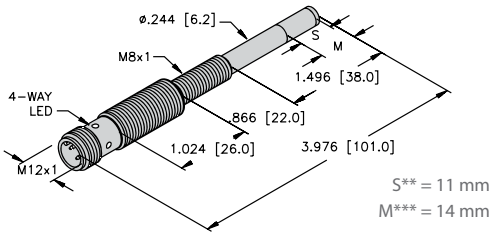

Nut Sensor, 6-12 mm Diameter Nut, M12 Eurofast Connector

D




Nut Sensor, 6-12 mm Diameter Nut, M12 Eurofast Connector

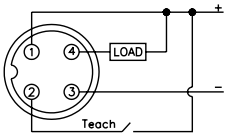
E




Nut Sensor, 10-20 mm Diameter Nut, M12 Eurofast Connector

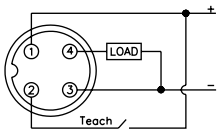
**Wiring Diagrams/Mating Cordsets**

1




Mating Cordset: RK 4.4T-*

2




Mating Cordset: RK 4.4T-*

**A24** — **3-wire DC Nut Detection Sensor (AP, AN)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Off-State (Leakage) Current: | ≤0.1 mA | | |

**Note**:
OS* The optimal sensitive area for the 4.0 mm diameter probes has a width of 0.5 mm and is laser-engraved on the tip of the probe, 11.9 mm above the M12 thread.
S** Sensitive area: Within this area the sensor signal changes when assembly parts are changed.
M*** Maximum area: The maximum signal intensity is reached if the sensitive area is completely covered.

Optional teach adapter available, part number VB2-SP1.

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Weld Nut Sensors

## Threaded Metal Barrel with Smooth Sensing Probe and 3-Wire DC Output

| Part Number/ ID Number | Features | Nut Diameter | Output | Voltage | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **NIMFE-EM12/4.0L61-UP6X-0.3XYE-RS4/S1182** 1600623 | Titanium Nitride | 5-12 mm | 3-wire DC PNP | 10-30 VDC | ≤200 | -25 to +70 | IP67 | SS | GN | YE | 0.3M/ TPE | A | 2 | A24 |
| **NIMFE-EM12/4.0L61-UN6X-0.3XYE-RS4/S1182** 1600624 | Titanium Nitride | 5-12 mm | 3-wire DC NPN | 10-30 VDC | ≤200 | -25 to +70 | IP67 | SS | GN | YE | 0.3M/ TPE | A | 1 | A24 |
| **NIMFE-EM12/4.0L61-UP6X-H1141/S1182** 1600621 | Titanium Nitride | 5-12 mm | 3-wire DC PNP | 10-30 VDC | ≤200 | -25 to +70 | IP67 | SS | GN | YE | - - | B | 2 | A24 |
| **NIMFE-EM12/4.0L61-UN6X-H1141/S1182** 1600622 | Titanium Nitride | 5-12 mm | 3-wire DC NPN | 10-30 VDC | ≤200 | -25 to +70 | IP67 | SS | GN | YE | - - | B | 1 | A24 |
| **NIMFE-M12/4.6L88-UN6X-H1141** 1600610 | | 6-12 mm | 3-wire DC NPN | 10-30 VDC | ≤200 | -25 to +70 | IP67 | CPB | GN | YE | - - | C | 1 | A24 |
| **NIMFE-EMT12/4.6L88-UN6X-H1141** 1600618 | PTFE Coated | 6-12 mm | 3-wire DC NPN | 10-30 VDC | ≤200 | -25 to +70 | IP67 | SS | GN | YE | - - | C | 1 | A24 |
| **NIMFE-EM12/4.6L88-UN6X-H1141/S1182** 1600617 | Titanium Nitride | 6-12 mm | 3-wire DC NPN | 10-30 VDC | ≤200 | -25 to +70 | IP67 | SS | GN | YE | - - | C | 1 | A24 |
| **NIMFE-M12/4.6L88-UP6X-H1141** 1600608 | | 6-12 mm | 3-wire DC PNP | 10-30 VDC | ≤200 | -25 to +70 | IP67 | CPB | GN | YE | - - | C | 2 | A24 |
| **NIMFE-EMT12/4.6L88-UP6X-H1141** 1600619 | PTFE Coated | 6-12 mm | 3-wire DC PNP | 10-30 VDC | ≤200 | -25 to +70 | IP67 | SS | GN | YE | - - | C | 2 | A24 |
| **NIMFE-EM12/4.6L88-UP6X-H1141/S1182** 1600620 | Titanium Nitride | 6-12 mm | 3-wire DC PNP | 10-30 VDC | ≤200 | -25 to +70 | IP67 | SS | GN | YE | - - | C | 2 | A24 |
| **NIMFE-EM12/4.9L88-UP6X-H1141/S1182** 1600616 | Titanium Nitride | 6-12 mm | 3-wire DC PNP | 10-30 VDC | ≤200 | -25 to +70 | IP67 | SS | GN | YE | - - | D | 2 | A24 |
| **NIMFE-M12/6.2L101-UN6X-H1141** 1600611 | | 10-20 mm | 3-wire DC NPN | 10-30 VDC | ≤200 | -25 to +70 | IP67 | CPB | GN | YE | - - | E | 1 | A24 |
| **NIMFE-EMT12/6.2L101-UN6X-H1141** 1600615 | PTFE Coated | 10-20 mm | 3-wire DC NPN | 10-30 VDC | ≤200 | -25 to +70 | IP67 | SS | GN | YE | - - | E | 1 | A24 |
| **NIMFE-M12/6.2L101-UP6X-H1141** 1600609 | | 10-20 mm | 3-wire DC PNP | 10-30 VDC | ≤200 | -25 to +70 | IP67 | CPB | GN | YE | - - | E | 2 | A24 |
| **NIMFE-EMT12/6.2L101-UP6X-H1141** 1600613 | PTFE Coated | 10-20 mm | 3-wire DC PNP | 10-30 VDC | ≤200 | -25 to +70 | IP67 | SS | GN | YE | - - | E | 2 | A24 |
| **NIMFE-EM12/6.2L101-UP6X-H1141/S1182** 1600612 | Titanium Nitride | 10-20 mm | 3-wire DC PNP | 10-30 VDC | ≤200 | -25 to +70 | IP67 | SS | GN | YE | - - | E | 2 | A24 |

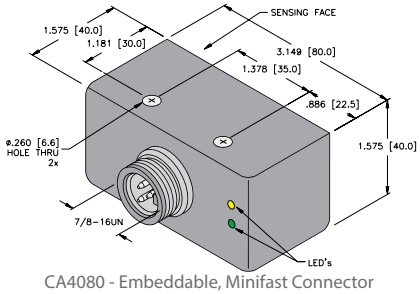
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Edge Detection Sensors

**Rectangular Metal Housing with AC or DC Outputs and Integral Connector**

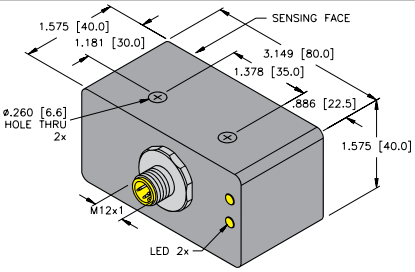
| Housing Style | Dimension Drawings |
|---|---|

A



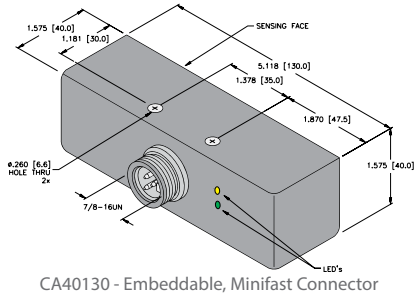

CA4080 - Embeddable, Minifast Connector

B



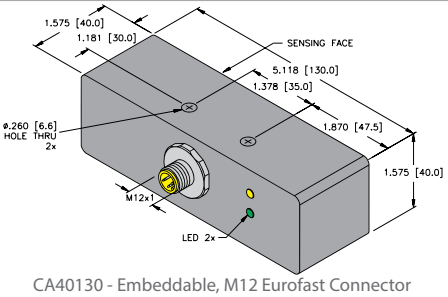

CA4080 - Embeddable, M12 Eurofast Connector

C




CA40130 - Embeddable, Minifast Connector

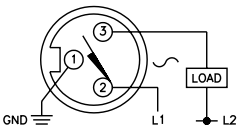
D




CA40130 - Embeddable, M12 Eurofast Connector

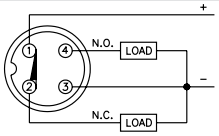
**Wiring Diagrams/Mating Cordsets**

1




Mating Cordset: RKM 30-*M

2




Mating Cordset: RK 4.4T-*

**A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox 3) | Repeatability: | ≤2% of Rated Operating Distance |

**A5 — 2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)**

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Minimum Load Current: | ≥3.0 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Inrush Current: | ≤3 A (≤20 ms, max 5 Hz) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | Power-On Effect: | Per IEC 947-5-2 |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA | Transient Protection: | Per EN 60947-5-2 |
| | AC: ≥120 mA; DC: ≥120 mA | Shock: | 30 g, 11 ms |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | AC: ≤100 mA; DC: ≤100 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Off-State (Leakage) Current: | ≤1.7 mA (AC) | | |
| | ≤1.5 mA (DC) | | |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Edge Detection Sensors

## Rectangular Metal Housing with AC or DC Outputs and Integral Connector

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi20-CA4080-ADZ30X2-B1131** 4283400 | | 20 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 30/100 | ≤400/300 | -25 to +70 | IP67 | TS | SF | GN | YE | A | 1 | A5 |
| **Bi20-CA4080-VP4X2-H1141** 1625591 | | 20 | 4-wire DC PNP | 10-65 VDC | 100 | ≤400 | -25 to +70 | IP67 | TS | SF | GN | YE | B | 2 | A4 |
| **BI20-CA4080-VP4X2-H1141/S1009** 1625590 | 250 ms Off Delay | 20 | 4-wire DC PNP | 10-65 VDC | 100 | ≤400 | -25 to +70 | IP67 | TS | SF | GN | YE | B | 2 | A4 |
| **Bi20-CA40130-ADZ30X2-B1131** 4283503 | | 20 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 30/100 | ≤400/300 | -25 to +70 | IP67 | TS | SF | GN | YE | C | 1 | A5 |
| **BI20-CA40130-ADZ30X2-B1131/S1009** 4283597 | 250 ms Off Delay | 20 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 30/100 | ≤400/300 | -25 to +70 | IP67 | TS | SF | GN | YE | C | 1 | A5 |
| **Bi20-CA40130-VP4X2-H1141** 4283599 | | 20 | 4-wire DC PNP | 10-65 VDC | 100 | ≤400 | -25 to +70 | IP67 | TS | SF | GN | YE | D | 2 | A4 |

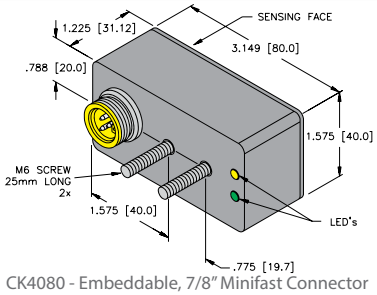
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Edge Detection Sensors

**Rectangular Plastic Housing with AC or DC Outputs and Integral Connector**

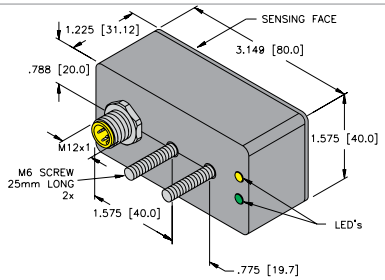
| Housing Style | Dimension Drawings |
|---|---|

A



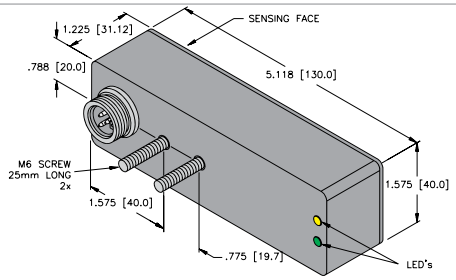

CK4080 - Embeddable, 7/8" Minifast Connector

B



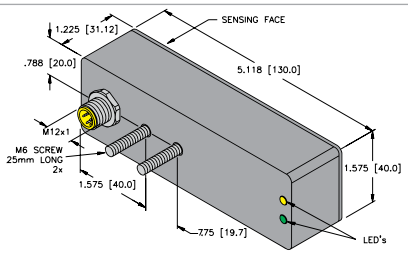

CK4080 - Embeddable, M12 Eurofast Connector

C




CK40130 - Embeddable, 7/8" Minifast Connector

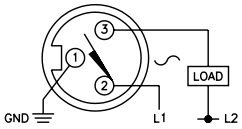
D




CK40130 - Embeddable, M12 Eurofast Connector

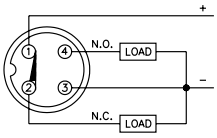
**Wiring Diagrams/Mating Cordsets**

1




Mating Cordset: RKM 30-*M

2




Mating Cordset: RK 4.4T-*

**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox 3) | Repeatability: | ≤2% of Rated Operating Distance |

**A5** — **2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)**

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Minimum Load Current: | ≥3.0 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Inrush Current: | ≤3 A (≤20 ms, max 5 Hz) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | Power-On Effect: | Per IEC 947-5-2 |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA | Transient Protection: | Per EN 60947-5-2 |
| | AC: ≥120 mA; DC: ≥120 mA | Shock: | 30 g, 11 ms |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | AC: ≤100 mA; DC: ≤100 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Off-State (Leakage) Current: | ≤1.7 mA (AC) | | |
| | ≤1.5 mA (DC) | | |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Edge Detection Sensors

## Rectangular Plastic Housing with AC or DC Outputs and Integral Connector

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi20-CK4080-ADZ30X2-B1131** 4283493 | | 20 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 30/100 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | RD | A | 1 | A5 |
| **BI20-CK4080-ADZ30X2-B1131/S1009** 4283495 | 250 ms Off Delay | 20 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 30/100 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | RD | A | 1 | A5 |
| **Bi20-CK4080-VP4X2-H1141** 4283491 | | 20 | 4-wire DC PNP | 10-65 VDC | 100 | ≤400 | -25 to +70 | IP67 | PBT | PBT | GN | YE | B | 2 | A4 |
| **BI20-CK4080-VP4X2-H1141/S1009** 4283496 | 250 ms Off Delay | 20 | 4-wire DC PNP | 10-65 VDC | 100 | ≤400 | -25 to +70 | IP67 | PBT | PBT | GN | YE | B | 2 | A4 |
| **Bi20-CK40130-ADZ30X2-B1131** 4283589 | | 20 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 30/100 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | C | 1 | A5 |
| **BI20-CK40130-ADZ30X2-B1131/S1009** 42835953 | 250 ms Off Delay | 20 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 30/100 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | C | 1 | A5 |
| **Bi20-CK40130-VP4X2-H1141** 42835911 | | 20 | 4-wire DC PNP | 10-65 VDC | 100 | ≤400 | -25 to +70 | IP67 | PBT | PBT | GN | YE | D | 2 | A4 |
| **BI20-CK40130-VP4X2-H1141/S1009** 42835963 | 250 ms Off Delay | 20 | 4-wire DC PNP | 10-65 VDC | 100 | ≤400 | -25 to +70 | IP67 | PBT | PBT | GN | YE | D | 2 | A4 |

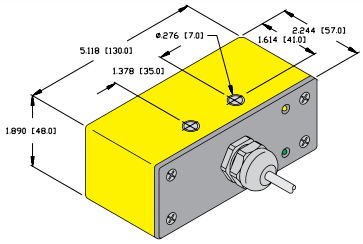
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Can Sensors

**Rectangular Plastic Housing with AC or DC Outputs and Integral Connector**

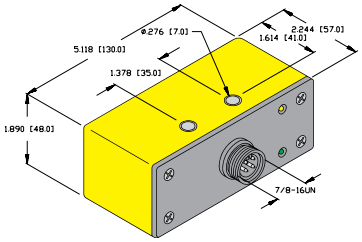
| Housing Style | Dimension Drawings |
|---|---|

A



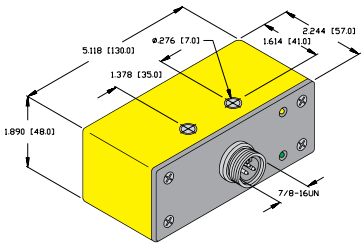

Q130 - Nonembeddable, Potted-In Cable

B




Q130 - Nonembeddable, 7/8" Minifast Connector

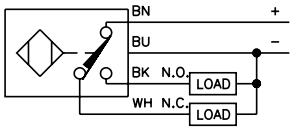
C



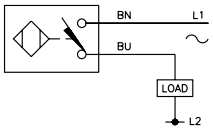

Q130 - Nonembeddable, 7/8" Minifast Connector

**Wiring Diagrams/Mating Cordsets**

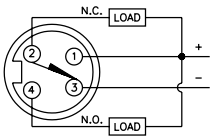
1




2

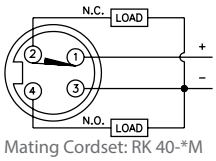



3



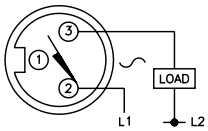

Mating Cordset: RK 40-*M

4




Mating Cordset: RK 40-*M

5




Mating Cordset: RK 30-*M

**A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current |
| | ≥170 mA on 150 mA Load Current |
| | ≥120 mA on 100 mA Load Current |
| Off-State (Leakage) Current: | ≤0.1 mA |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) |
| | ≤20 mA (Uprox+, Uprox 3) |
| Time Delay Before Availability: | ≤8 ms |
| Power-On Effect: | Per IEC 947-5-2 |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Transient Protection: | Per EN 60947-5-2 |
| Temperature Drift: | ≤±10% |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

**A5 — 2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)**

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA |
| | AC: ≥120 mA; DC: ≥120 mA |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA (AC) |
| | ≤1.5 mA (DC) |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤3 A (≤20 ms, max 5 Hz) |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Can Sensors

**Rectangular Plastic Housing with AC or DC Outputs and Integral Connector**

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni30-Q130-VP4X2** 15179 | Comp. Output | 30 | 4-wire DC PNP | 10-65 VDC | 60 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | 2M/ PVC | A | 1 | A4 |
| **Ni30-Q130-ADZ30X2** 42095 | | 30 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 30 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | RD | 2M/ PVC | A | 2 | A5 |
| **Ni30-Q130-VN4X2-B2141** 15180 | Comp. Output | 30 | 4-wire DC NPN | 10-65 VDC | 60 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | - - | B | 3 | A4 |
| **Ni30-Q130-VP4X2-B2141** 1518001 | Comp. Output | 30 | 4-wire DC PNP | 10-65 VDC | 60 | ≤200 | -25 to +70 | IP67 | PBT | PBT | GN | YE | - - | B | 4 | A4 |
| **Ni30-Q130-ADZ30X2-B1131** 42100 | | 30 | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 30 | ≤400/300 | -25 to +70 | IP67 | PBT | PBT | GN | YE | - - | C | 5 | A5 |



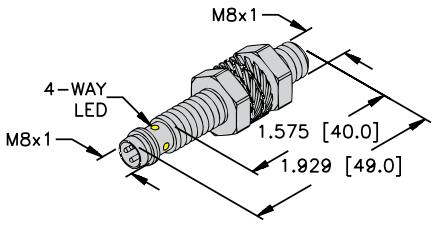
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Inductive Magnetic Sensors

**Threaded Metal Barrels Designed to Sense a Magnetic Field**

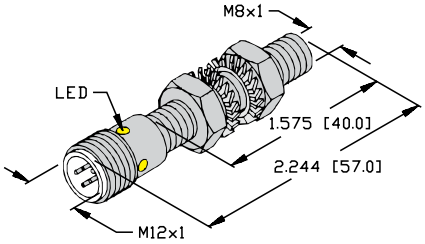
| Housing Style | Dimension Drawings |
|---|---|

A



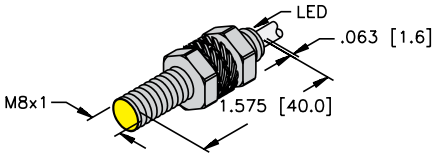

8 mm - Barrel, M8 Picofast Connector

B




8 mm - Barrel, M12 Eurofast Connector

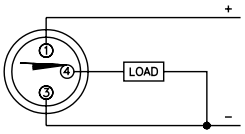
C




8 mm - Barrel, Potted-In Cable

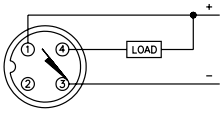
**Wiring Diagrams/Mating Cordsets**

1



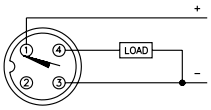

Mating Cordset: PKG 3M-*

2



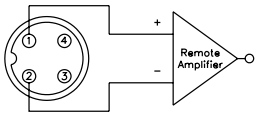

Mating Cordset: RK 4T-*

3



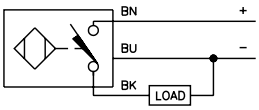

Mating Cordset: RK 4T-*

4




Mating Cordset: RK 4.21T-*

5




**A25** — **3-wire DC Magnetic Barrel (AP, AN)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Temperature Drift: | ≤±15% |
| Differential Travel (Hysteresis): | 1-10% | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Shock: | 30 g, 11 ms |
| | ≥170 mA on 150 mA Load Current | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| No-Load Current: | ≤15 mA | Repeatability: | ≤0.3% of Full Scale |
| Off-State (Leakage) Current: | ≤0.1 mA | | |

**A27** — **2-wire DC Namur Magnetic Barrel (Y1)**

| | | | |
|---|---|---|---|
| Differential Travel (Hysteresis): | 1-10% | Temperature Drift: | ≤±10% |
| Nominal Voltage: | 8.2 VDC (EN60947-5-6) | Reverse Polarity Protection: | Incorporated |
| Load Resistance: | 1000 Ω | Wire-Break Protection: | Realized in Amplifier |
| Non-activated Current Consumption: | ≤1.2 mA | Transient Protection: | Realized in Amplifier |
| Activated Current Consumption: | ≥2.1 mA | Shock: | 30 g, 11 ms |
| Recommended Switching Point for Remote | >1.2 to <2.1 mA, | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Amplifier: | typ. 1.55 mA ON/1.75 mA OFF | Repeatability: | ≤0.3% of Full Scale |

**Note**:
Use with Turck actuation magnet to achieve longest switching distance.
See page I18 for part numbers and details.

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Inductive Magnetic Sensors

**Threaded Metal Barrels Designed to Sense a Magnetic Field**

| Part Number/ ID Number | Features | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BIM-EG08-AP6X-V1131** 4621314 | Up to 78 mm Range | 3-wire DC PNP | 10-30 VDC | 1000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | - - | A | 1 | A25 |
| **BIM-EG08-AN6X-H1341** 4621301 | Up to 78 mm Range | 3-wire DC NPN | 10-30 VDC | 1000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | - - | B | 2 | A25 |
| **BIM-EG08-AP6X-H1341** 4621311 | Up to 78 mm Range | 3-wire DC PNP | 10-30 VDC | 1000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | - - | B | 3 | A25 |
| **BIM-EG08-Y1X-H1341** 1074001 | Up to 78 mm Range | 2-wire DC NAMUR | 5-30 VDC | 1000 | Remote | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | - - | B | 4 | A27 |
| **BIM-EG08-AP6X** 4621310 | Up to 78 mm Range | 3-wire DC PNP | 10-30 VDC | 1000 | ≤150 | -25 to +70 | IP67 | SS | PA 12 | N/A | YE | 2M/TPU | C | 5 | A25 |

We reserve the right to make technical alterations without prior notice.

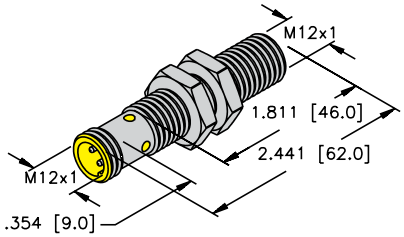
# Specialty Sensors | Inductive Magnetic Sensors

**Threaded Metal Barrels Designed to Sense a Magnetic Field**

**Housing Style**

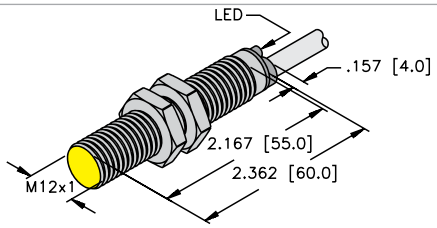
**Dimension Drawings**

A



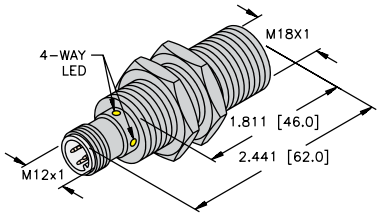

12 mm - M12 Eurofast Connector

B




12 mm - Potted-In Cable

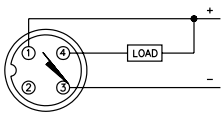
C




18 mm - M12 Eurofast Connector

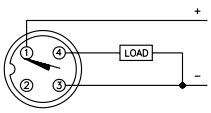
**Wiring Diagrams/Mating Cordsets**

1



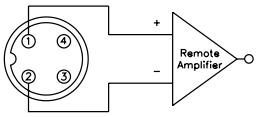

Mating Cordset: RK 4T-*

2



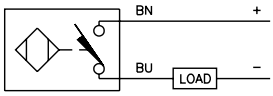

Mating Cordset: RK 4T-*; P-RKGV 4.43T-1699XL-*

3

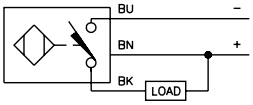



Mating Cordset: RK 4.21T-*

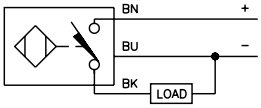
4



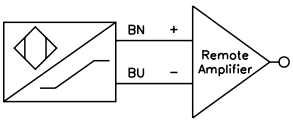

5




6




7




**A25** — **3-wire DC Magnetic Barrel (AP, AN)**

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | 1-10% |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current<br>≥170 mA on 150 mA Load Current |
| No-Load Current: | ≤15 mA |
| Off-State (Leakage) Current: | ≤0.1 mA |
| Temperature Drift: | ≤±15% |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤0.3% of Full Scale |

**A26** — **2-wire DC Magnetic Barrel (AG)**

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | 1-10% |
| Voltage Drop Across Conducting Sensor: | ≤4.2 V Polarized |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current |
| Minimum Load Current: | ≥3.0 mA |
| Temperature Drift: | ≤±15% |
| Off-State (Leakage) Current: | ≤0.8 mA |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤0.3% of Full Scale |

**A27** — **2-wire DC Namur Magnetic Barrel (Y1)**

| | |
|---|---|
| Differential Travel (Hysteresis): | 1-10% |
| Nominal Voltage: | 8.2 VDC (EN60947-5-6) |
| Load Resistance: | 1000 Ω |
| Non-activated Current Consumption: | ≤1.2 mA |
| Activated Current Consumption: | ≥2.1 mA |
| Recommended Switching Point for Remote Amplifier: | >1.2 to <2.1 mA, typ. 1.55 mA ON/1.75 mA OFF |
| Temperature Drift: | ≤±10% |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Realized in Amplifier |
| Transient Protection: | Realized in Amplifier |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤0.3% of Full Scale |

**Note**:
Use with Turck actuation magnet to achieve longest switching distance.
See page I18 for part numbers and details.

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Inductive Magnetic Sensors

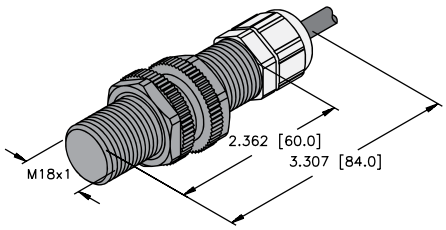
## Threaded Metal Barrels Designed to Sense a Magnetic Field

| Part Number/ ID Number | Features | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BIM-M12E-AN4X-H1141** 1579914 | Up to 90 mm Range | 3-wire DC NPN | 10-65 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 1 | A25 |
| **BIM-EM12E-AP4X-H1141** 1579915 | Up to 90 mm Range | 3-wire DC PNP | 10-65 VDC | 1000 | ≤200 | -25 to +70 | IP67 | SS | POM | N/A | YE | A | 2 | A25 |
| **BIM-M12E-AP4X-H1141** 1579913 | Up to 90 mm Range | 3-wire DC PNP | 10-65 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 2 | A25 |
| **BIM-M12E-AP6X-H1141/S1751** 4681289 | FM Approved | 3-wire DC PNP | 10-30 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 2 | A25 |
| **BIM-M12E-Y1X-H1141** 1074003 | Up to 90 mm Range | 2-wire DC NAMUR | 5-30 VDC | 1000 | Remote | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | A | 3 | A27 |
| **BIM-M12E-AG4X** 44302 | Up to 90 mm Range | 2-wire DC | 10-65 VDC | 1000 | ≤100 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | B | 4 | A26 |
| **BIM-M12E-AN4X** 1579912 | Up to 90 mm Range | 3-wire DC PNP | 10-65 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | B | 5 | A25 |
| **BIM-EM12E-AP4X** 1579918 | Up to 90 mm Range | 3-wire DC PNP | 10-65 VDC | 1000 | ≤200 | -25 to +70 | IP67 | SS | POM | N/A | YE | B | 6 | A25 |
| **BIM-M12E-AP4X/S90** 1579911 | Up to 90 mm Range | 3-wire DC PNP | 10-65 VDC | 1000 | ≤200 | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | B | 6 | A25 |
| **BIM-EM12E-Y1X** 1070036 | Up to 90 mm Range | 2-wire DC NAMUR | 5-30 VDC | 1000 | Remote | -25 to +70 | IP67 | SS | POM | N/A | YE | B | 7 | A27 |
| **BIM-M12E-Y1X** 1074002 | Up to 90 mm Range | 2-wire DC NAMUR | 5-30 VDC | 1000 | Remote | -25 to +70 | IP67 | CPB | PA 12 | N/A | YE | B | 7 | A27 |
| **BIM-EM18M-AP4X-H1141** 1579933 | Up to 90 mm Range | 3-wire DC PNP | 10-65 VDC | 1000 | ≤200 | -25 to +70 | IP67 | SS | POM | N/A | YE | C | 2 | A25 |

We reserve the right to make technical alterations without prior notice.

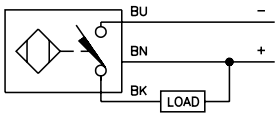
# Specialty Sensors | Submersible Sensors

**Threaded Plastic Barrel Sensors with Cable for Underwater Applications**

| Housing Style | Dimension Drawings |
|---|---|
| | A   18 mm - Embeddable, Full Threading, Potted-In Cable |

**Wiring Diagrams/Mating Cordsets**

1

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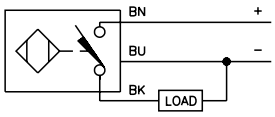
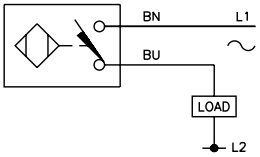



3




**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox3) | Repeatability: | ≤2% of Rated Operating Distance |

**A6** — **2-wire AC/DC w/o Short-Circuit Protection - (AZ, RZ, FZ)**

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Inrush Current: | ≤8 A (≤10ms max. 5 Hz) |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | | ≤1 A (≤10 ms max. 5 Hz) 12 mm |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | | ≤0.2 A (≤10 ms max. 0.2 Hz) 8 mm |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Power-On Effect: | Per IEC 947-5-2 |
| | AC: ≤100 mA; DC: ≤100 mA | Transient Protection: | Per EN 60947-5-2 |
| Off-State (Leakage) Current: | ≤1.7 mA | Shock: | 30 g, 11 ms |
| Minimum Load Current: | ≥3.0 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Submersible Sensors

## Threaded Plastic Barrel Sensors with Cable for Underwater Applications

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi5-P18-AN6/S139-S1261** 1650239 | Submersible | 5 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP68 | POM | PA 12 | N/A | N/A | 2M/TPE | A | 1 | A4 |
| **Bi5-P18-AP6/S139-S1261** 1650234 | Submersible | 5 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | -25 to +70 | IP68 | POM | PA 12 | N/A | N/A | 2M/TPE | A | 2 | A4 |
| **Bi8U-P18-AP6/S139-S1261** 1650230 | Submersible, Uprox | 8 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -30 to +85 | IP68 | POM | PA 12 | N/A | N/A | 2M/TPE | A | 2 | A4 |
| **Bi5-P18-AZ3/S139-S1261** 1384307 | Submersible | 5 | 2-wire AC | 20-250 VAC | 20 | ≤400 | -25 to +70 | IP68 | POM | PA 12 | N/A | N/A | 2M/TPE | A | 3 | A6 |

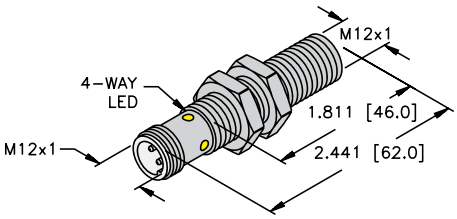
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Selective Metal Sensors

**Threaded Barrel Sensors Designed to Sense Nonferrous Metals Only**

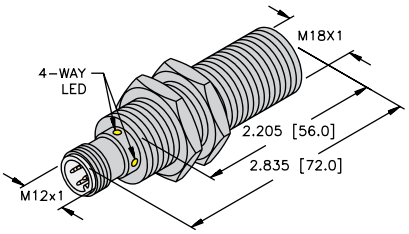
| Housing Style | Dimension Drawings |
|---|---|

A



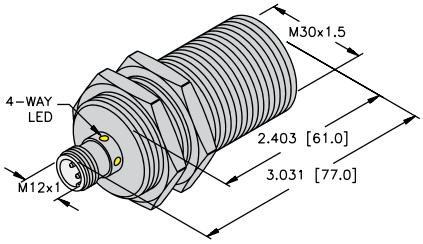

12 mm - Embeddable, M12 Eurofast Quick Disconnect

B



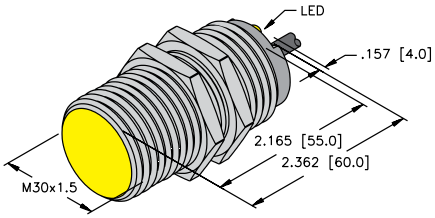

18 mm - Embeddable, M12 Eurofast Quick Disconnect

C



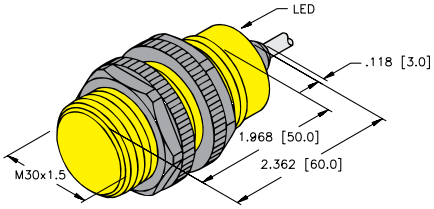

30 mm - Embeddable, M12 Eurofast Quick Disconnect

D




30 mm - Embeddable, Potted-In Cable

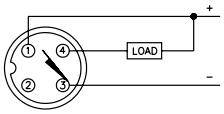
E




30 mm - Embeddable, Potted-In Cable, Partial Threading

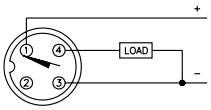
**Wiring Diagrams/Mating Cordsets**

1



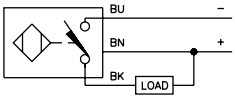

Mating Cordset: RKV 4T-*

2




Mating Cordset: RKV 4T-*

3

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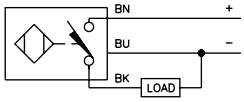



**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox 3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Selective Metal Sensors

## Threaded Barrel Sensors Designed to Sense Nonferrous Metals Only

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi3NF-EM12HE-AP6X2-H1141** 1615001 | Senses nonferrous metals only | 3 | 3-wire DC PNP | 10-30 VDC | 3000 | ≤200 | 0 to +60 | IP67 | SS | SF | GN | YE | - - | A | 2 | A4 |
| **Bi5NF-EM18HE-AN6X2-H1141** 1615004 | Senses nonferrous metals only | 5 | 3-wire DC NPN | 10-30 VDC | 2500 | ≤200 | 0 to +60 | IP67 | SS | SF | GN | YE | - - | B | 1 | A4 |
| **Bi5NF-EM18HE-AP6X2-H1141** 1615000 | Senses nonferrous metals only | 5 | 3-wire DC PNP | 10-30 VDC | 2500 | ≤200 | 0 to +60 | IP67 | SS | SF | GN | YE | - - | B | 2 | A4 |
| **Bi10NF-EM30HE-AN6X2-H1141** 1615005 | Senses nonferrous metals only | 10 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | 0 to +60 | IP67 | SS | SF | GN | YE | - - | C | 1 | A4 |
| **Bi10NF-EM30HE-AP6X2-H1141** 1615002 | Senses nonferrous metals only | 10 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | 0 to +60 | IP67 | SS | SF | GN | YE | - - | C | 2 | A4 |
| **Bi10NF-M30-AN6X** 16161 | Senses nonferrous metals only | 10 | 3-wire DC NPN | 10-30 VDC | 500 | ≤200 | 0 to +60 | IP67 | CPB | PA 12 | N/A | YE | 2M/ PVC | D | 3 | A4 |
| **Bi10NF-M30-AP6X** 16061 | Senses nonferrous metals only | 10 | 3-wire DC PNP | 10-30 VDC | 500 | ≤200 | 0 to +60 | IP67 | CPB | PA 12 | N/A | YE | 2M/ PVC | D | 4 | A4 |
| **Bi10NF-S30-AN6X** 16215 | Senses nonferrous metals only | 10 | 3-wire DC NPN | 10-30 VDC | 2000 | ≤200 | 0 to +60 | IP67 | PA 12 | PA 12 | N/A | YE | 2M/ PVC | E | 3 | A4 |
| **Bi10NF-S30-AP6X** 16115 | Senses nonferrous metals only | 10 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | 0 to +60 | IP67 | PA 12 | PA 12 | N/A | YE | 2M/ PVC | E | 4 | A4 |



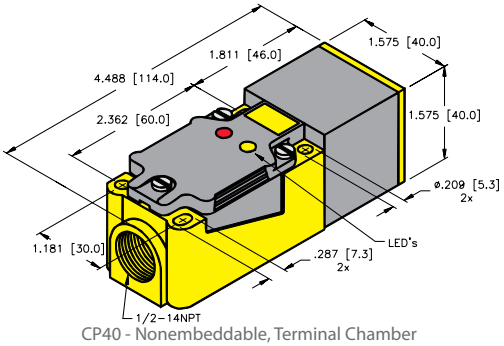
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Selective Metal Sensors

**Rectangular and Barrel Sensors Designed to Sense Nonferrous or Ferrous Metals Only**

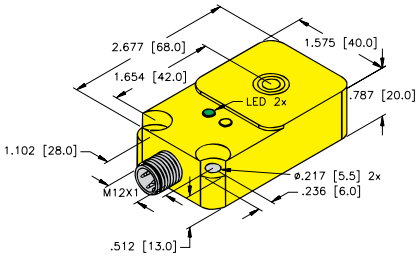
| Housing Style | Dimension Drawings |
|---|---|

A



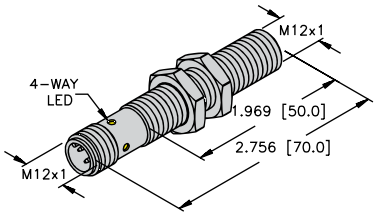

CP40 - Nonembeddable, Terminal Chamber

B



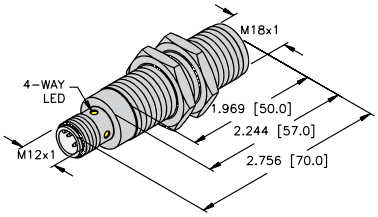

Q20 - Nomembeddable, M12 Eurofast Quick Disconnect

C




12 mm - Embeddable, M12 Eurofast Quick Disconnect

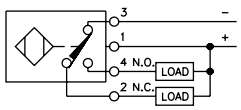
D



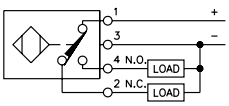

18 mm - Embeddable, M12 Eurofast Quick Disconnect

**Wiring Diagrams/Mating Cordsets**

1




2

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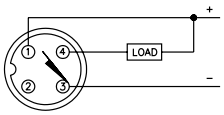
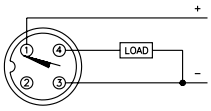



Mating Cordset: RK 4T-*

4




Mating Cordset: RK 4T-*

**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox 3) | Repeatability: | ≤2% of Rated Operating Distance |

**A28** — **3-wire DC Ferrous Only Sensing (AP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Temperature Drift: | ≤±10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤2.5 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥120 mA on 100 mA Load Current | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤20 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Off-State (Leakage) Current: | ≤0.1 mA | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Selective Metal Sensors

**Rectangular and Barrel Sensors Designed to Sense Nonferrous or Ferrous Metals Only**

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni20NF-CP40-VN4X2** 15282 | Senses nonferrous metals only | 20 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | 0 to +60 | IP67 | PBT | PBT | GN | YE | A | 1 | A4 |
| **Ni20NF-CP40-VP4X2** 15082 | Senses nonferrous metals only | 20 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | 0 to +60 | IP67 | PBT | PBT | GN | YE | A | 2 | A4 |
| **Ni25NF-Q20-AN6X2-H1141** 1602710 | Senses nonferrous metals only | 25 | 3-wire DC NPN | 10-30 VDC | 25 | ≤200 | 0 to +60 | IP67 | PBT | PBT | GN | YE | B | 3 | A4 |
| **Bi2.5FE-EM12FE-AP6X-H1141** 1615011 | Senses ferrous metals only | 2.5 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤100 | -25 to +70 | IP67 | SS | SS | N/A | YE | C | 4 | A28 |
| **Bi4.5FE-EM18FE-AP6X-H1141** 1615012 | Senses ferrous metals only | 4.5 | 3-wire DC PNP | 10-30 VDC | 1000 | ≤100 | -25 to +70 | IP67 | SS | SS | N/A | YE | D | 4 | A28 |

We reserve the right to make technical alterations without prior notice.

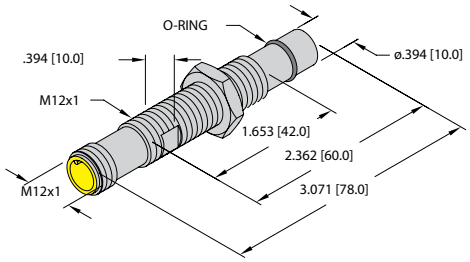
# Specialty Sensors | High Pressure

## Partially Threaded Metal Barrel Pressure Resistant Sensors

### Housing Style

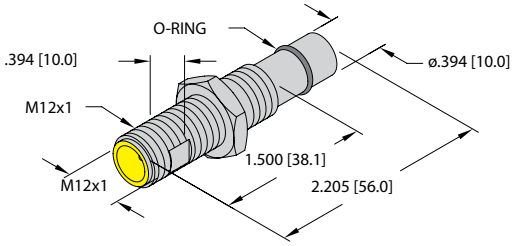
### Dimension Drawings

A



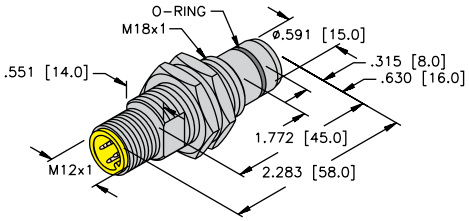

12 mm - Embeddable, M12 Eurofast Connection, Pressure Resistant Barrel Sensor

B



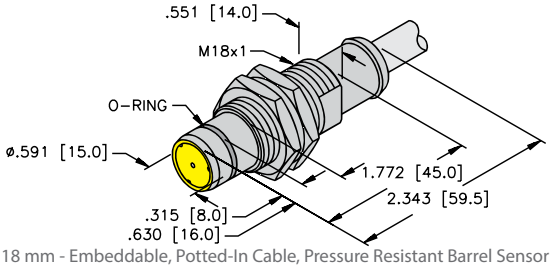

12 mm - Embeddable, M12 Eurofast Connection, Pressure Resistant Barrel Sensor

C




18 mm - Embeddable, M12 Eurofast Connection, Pressure Resistant Barrel Sensor

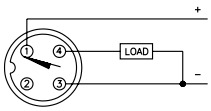
D




18 mm - Embeddable, Potted-In Cable, Pressure Resistant Barrel Sensor

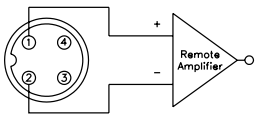
### Wiring Diagrams/Mating Cordsets

1



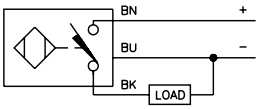

Mating Cordset: RKV 4T-*

2




Mating Cordset: RKV 4.21T-*

3




### A1 — 2-wire DC NAMUR - (Y0 and Y1)

| | |
|---|---|
| Differential Travel (Hysteresis): | 1-10% (5% typical) |
| Nominal Voltage: | 8.2 VDC (EN60947-5-6) |
| Load Resistance: | 1000 Ω |
| Non-Activated Current Consumption: | ≥2.1 mA |
| Activated Current Consumption: | ≤1.2 mA |
| Recommended Switching Point for Remote Amplifier: | >1.2 to <2.1 mA, typ. 1.55 mA ON/1.75 mA OFF |
| Power-On Effect: | Realized in Amplifier |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Realized in Amplifier |
| Transient Protection: | Realized in Amplifier |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

### A29 — 3-wire DC High Pressure (AP)

| | |
|---|---|
| Ripple: | ≤20% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤2 V, ≤1.8 V (Ext. Range) |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current |
| No-Load Current: | ≤10 mA, ≤15 mA (Ext. Range) |
| Off-State (Leakage) Current: | ≤0.1 mA |
| Temperature Drift: | ≤15%, ≤±10% (Ext. Range) |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | High Pressure

## Partially Threaded Metal Barrel Pressure Resistant Sensors

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BID1.5-G120KK-AP6-H1141** 1682001 | 500 bar | 1.5 | 3-wire DC PNP | 10-30 VDC | 600 | ≤200 | -25 to +80 | IP68 | SS | CER | N/A | N/A | - - | A | 1 | A29 |
| **BID1.5-G120-AP6-H1141** 1682000 | 500 bar | 1.5 | 3-wire DC PNP | 10-30 VDC | 600 | ≤200 | -25 to +80 | IP68 | SS | CER | N/A | N/A | - - | B | 1 | A29 |
| **BID2-G180-AP6-H1141/S212** 16885 | 500 bar static/350 bar dynamic | 2 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +85 | IP67 | SS | PA 12 | N/A | N/A | - - | C | 1 | A29 |
| **BID2-G180-Y0-H1141/S212** 1088500 | 500 bar static/350 bar dynamic | 2 | 2-wire Namur | 5-30 VDC | 2000 | ≤200 | -25 to +70 | IP67 | SS | PA 12 | N/A | N/A | - - | C | 2 | A1 |
| **BID2-G180-AP6/S212** 1688003 | 500 bar static/350 bar dynamic | 2 | 3-wire DC PNP | 10-30 VDC | 2000 | ≤200 | -25 to +85 | IP67 | SS | PA 12 | N/A | N/A | 2M/TPU | D | 3 | A29 |

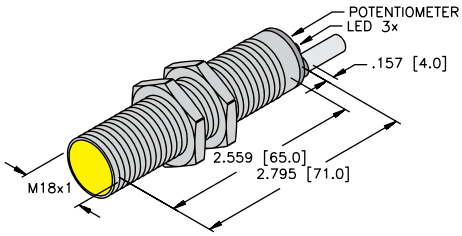
We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Rotational Speed Monitor

**Threaded Metal Barrel for Target Detection on a Spinning Shaft**

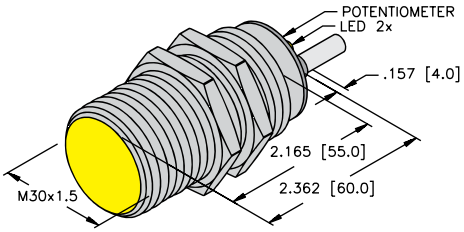
| Housing Style | Dimension Drawings |
|---|---|

A



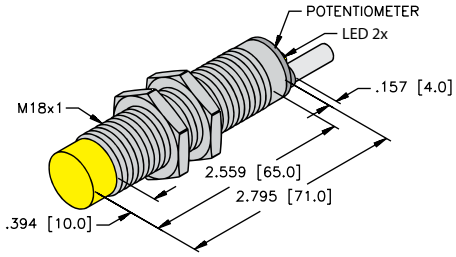

18 mm - Embeddable Rotational Speed Monitor, Potted-In Cable

B



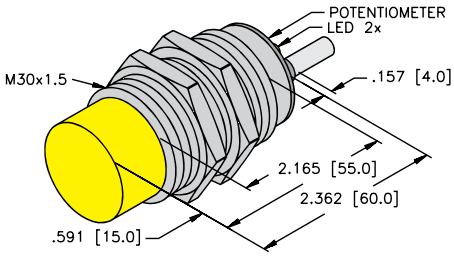

30 mm - Embeddable Rotational Speed Monitor, Potted-In Cable

C




18 mm - Nonembeddable Rotational Speed Monitor, Potted-In Cable

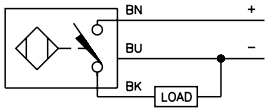
D




30 mm - Nonembeddable Rotational Speed Monitor, Potted-In Cable

**Wiring Diagrams/Mating Cordsets**

1




**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox 3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Specialty Sensors | Rotational Speed Monitor

**Threaded Metal Barrel for Target Detection on a Spinning Shaft**

| Part Number/ ID Number | Features | Sensing Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Face | End Cap | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **DBi5U-M18E-AP4X3** 1582236 | Rotational Speed Monitor | 5 | 3-wire DC PNP | 10-65 VDC | 0.05-50 | ≤200 | -30 to +85 | IP67 | CPB | PBT | EPTR | GN | YE/BU | 2M/PVC | A | 1 | A4 |
| **DBi10U-M30-AP4X2** 1582231 | Rotational Speed Monitor | 10 | 3-wire DC PNP | 10-65 VDC | 0.05-50 | ≤200 | -30 to +85 | IP67 | CPB | PBT | EPTR | GN | YE/BU | 2M/PVC | B | 1 | A4 |
| **DNI12U-M18E-AP4X3** 1582235 | Rotational Speed Monitor | 12 | 3-wire DC PNP | 10-65 VDC | 0.05-50 | ≤200 | -30 to +85 | IP67 | CPB | PBT | EPTR | GN | YE/BU | 2M/PVC | C | 1 | A4 |
| **DNI20U-M30-AP4X3** 1582233 | Rotational Speed Monitor | 20 | 3-wire DC PNP | 10-65 VDC | 0.05-50 | ≤200 | -30 to +85 | IP67 | CPB | PBT | EPTR | GN | YE/BU | 2M/PVC | D | 1 | A4 |



We reserve the right to make technical alterations without prior notice.

Notes

Notes

# Analog Sensors Selection Guide

| Embeddable/Nonembeddable Rectangular | | | |
|---|---|---|---|
| | | | |
| **Housing** | **8 mm** | **14 mm** | **20 mm** |
| **Sensing Range** | **7 mm** | **10 mm** | **15 mm** |
| **Pages** | **D5** | **D5** | **D5** |

| Embeddable/Nonembeddable Rectangular | | | |
|---|---|---|---|
| | | | |
| **Housing** | **40 mm** | **40 mm** | **80 mm** |
| **Sensing Range** | **15 - 25 mm** | **15 - 25 mm** | **50 mm** |
| **Pages** | **D7** | **D7** | **D7** |

| Embeddable/Nonembeddable Barrels | | | | |
|---|---|---|---|---|
| | | | | |
| **Housing** | **4 mm** | **5 mm** | **6.5 mm** | **8 mm** |
| **Sensing Range** | **1.5 mm** | **1.5 mm** | **1.5 mm** | **1.5 mm** |
| **Pages** | **D9** | **D9** | **D9** | **D9** |

We reserve the right to make technical alterations without prior notice.

# Analog Sensors Selection Guide

| Embeddable/Nonembeddable Barrels | | | |
|---|---|---|---|
| | | | |
| **Housing** | **12 mm** | **12 mm** | **18 mm** |
| **Sensing Range** | **2 - 5 mm** | **2 - 5 mm** | **5 - 10 mm** |
| **Pages** | **D11** | **D11** | **D11** |

| Embeddable/Nonembeddable Barrels | | | |
|---|---|---|---|
| | | | |
| **Housing** | **18 mm** | **30 mm** | **30 mm** |
| **Sensing Range** | **5 - 10 mm** | **10 - 15 mm** | **10 -15 mm** |
| **Pages** | **D13** | **D13** | **D13** |

| Rings and Probe Style | | | |
|---|---|---|---|
| | | | |
| **Housing** | **14 mm** | **80 mm** | **18 mm** |
| **Sensing Range** | **20 mm** | **50 mm** | **40 - 70 mm** |
| **Pages** | **D15** | **D15** | **D15** |

We reserve the right to make technical alterations without prior notice.

# Analog Sensor Part Number Key

| B | I | 15 | | - | | M | 30 | | - | LIU | | | Wiring Option* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

**Mounting**
B = embeddable
N = nonembeddable
W = position

**Principle of Operation**
I = inductive
IM = inductive magnet operated

**Rated Operating Distance (mm)**

**Sensing Characteristics**
**R** = ring sensor

**Housing Material Modifier**
**E** = stainless steel

**Housing Style**

**Barrel - Metal**
G = full threading, generally chrome plated brass
M = partial threading, chrome plated brass

**Rectangular**
Q = metal or plastic, various rectangular styles

**Limit Switch**
CK = Stubby®, short plastic, various rectangular styles
CP = Combiprox®, plastic housing, terminal chamber base with removable sensor

**Ring**
Q = small rectangular plastic housing, static output

**Housing Diameter or Height (mm)**

**Secondary Barrel Modifier**
E = extended barrel length

**Output**
LF = frequency output
LI(LU) = linear analog output current (LI, 15-30 VDC) or voltage (LU, 15-30 VDC)
LIU = linear analog output (current and voltage, 15-30 VDC)
SIU = analog output (non-linear)

**Modifier**

**Number of LEDs**
(blank) = no LEDs
X = 1 LED

**NOTE:**
Part number keys are to assist in identification only.
Verify new part numbers with factory; some configurations are not possible.

*See below for Wiring Options

We reserve the right to make technical alterations without prior notice.

## Wiring Options*

**A. Connectorized Sensor**

| BI15 - M30 - LIU - | H1 | 1 | 4 | 1 |
|---|---|---|---|---|

**Connector Family**
H1 = Eurofast®, M12x1, metal or plastic, male
V1 = Picofast®, snap and M8x1, metal, male (Q08 snap only)

**Connector/Sensor Transition**
1 = straight

**Number of Pins**

**Factory Code**
**Example:**
1 = standard wiring

**B. Potted Cable**

| Bi 5 - M18 - LIU - | 7M |
|---|---|

**Cable Length**
Blank = 2 Meter cable
7M = 7 Meter cable

# Analog Sensors

## Common Applications for Linear Analog Sensors

### Position Feeding Over an Angled Target

- Actuation over an angled surface
- Provide a 4-20 mA and/or 0-10 V output based upon target position

### Eccentricity Sensing or Absolute Angle Positioning

- Sense pieces of different shapes and sizes (of ferritic or nonferritic materials)
- Provide analog feedback on rotary cam position applications

### Direct Actuation

- The highest accuracy is achieved if the sensor is directly actuated by the target. In order to utilize the full measuring range, it is important to work with an appropriately sized target. This may also be a moving part of the machine.

### Part Deflection

- Tensile stress control applications
- Measure the deflection of a metal target by using a guide mechanism and an analog sensor.

### Probe Style Analog+ Proximity Sensor

- These sensors can be used to detect the depth of a blind hole or be used with a ring attached to a control arm that moves the ring over the probe

### Identification and Sorting of Small Parts

- When screws, rivets, or other small objects fall through a ring style sensor, each part generates a characteristic output signal which can be easily identified

### Position Control

- Position control can be easily accomplished by means of a cone shaped target. Measuring ranges can be adapted to specific sensing needs by using targets with an appropriate conical shape. These sensors enable precise and simple position detection, even if the targets feature a slight offset.

### Thickness Measurement

- Detection and measurement of tools (drill bits, taps, etc.) can be accomplished to ensure proper size

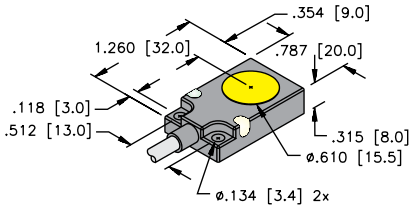
We reserve the right to make technical alterations without prior notice.

# Analog Sensors | Q08, Q14, & Q20

## Top Sensing Qpak Housing

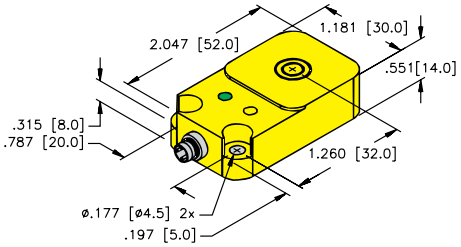
| Housing Style | Dimension Drawings |
|---|---|

A



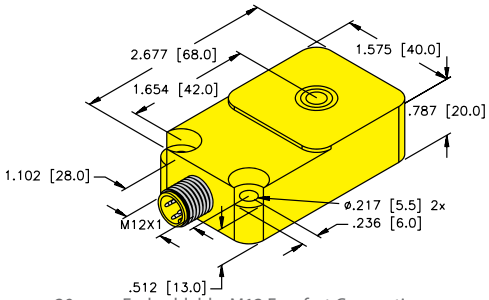

8 mm - Embeddable, Potted-In Cable

B




14 mm - Embeddable, M8 Picofast Connection

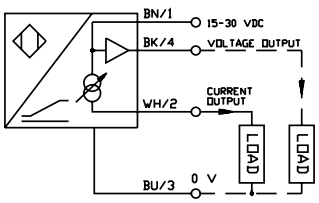
C



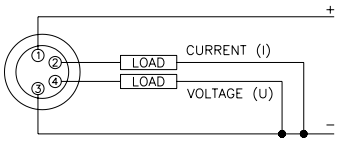

20 mm - Embeddable, M12 Eurofast Connection

### Wiring Diagrams/Mating Cordsets

1

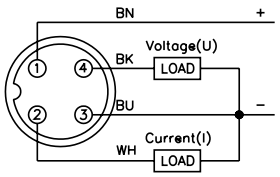



2



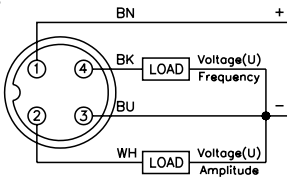

Mating Cordset: PKG 4M-*

3




Mating Cordset: RK 4.4T-*

4




Mating Cordset: RK 4.4T

### A7 — 3 and 4-wire DC Analog - (LIU, SIU)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Transient Protection: | Per EN 60947-5-2 |
| No-Load Current: | ≤8.0 mA | Shock: | 30 g, 11 ms |
| Load Resistance Voltage Output: | 0-10 V/$R_L$ ≥4.7 kΩ | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Load Resistance Current Output: | 0-20 mA/$R_L$ ≤0.4 kΩ | Repeatability: | ≤1% of measuring range \|A-B\| |
| Temperature Drift: | ±0.06% / °C | | (0.5% after 30 min. warm up) |
| LIU5: | 4-20 mA, 0-10 V | Short-Circuit Protection: | Yes |
| LIU2: | 4-20 mA, 2-10 V | Reverse Polarity Protection: | Incorporated |

### A8 — 3 and 4-wire DC Analog - (LU)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Short-Circuit Protection: | Yes |
| No-Load Current: | ≤8.0 mA | Wire-Break Protection: | Yes |
| Load Resistance Voltage Output: | 0-10 V/$R_L$ ≥4.7 kΩ | Shock: | 30 g, 11 ms |
| Temperature Drift: | ±0.06% / °C | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Reverse Polarity Protection: | Incorporated | Repeatability: | ≤1% of measuring range \|A-B\| |
| Transient Protection: | Per EN 60947-5-2 | | (0.5% after 30 min. warm up) |

We reserve the right to make technical alterations without prior notice.

# Analog Sensors | Q08, Q14, & Q20

## Top Sensing Qpak Housing

| Part Number/ ID Number | Features | Measuring Range (mm) | Response Freq. (Hz) | Linearity Deviation (% of full scale) | Output | Voltage | Output Voltage/ Current | Operating Temp. (°C) | Protection | Slew Rate V/ms, mA/ms | Housing | Face | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi7-Q08-LIU** 1534605 | | 1-4 | 200 | 0.05 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 4, 8 | Zinc | PA 12 | 2M/ TPU | A | 1 | A7 |
| **Bi10-Q14-LIU-V1141** 1534603 | | 3-8 | 140 | 0.03 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 2.8, 5.6 | PBT | PBT | - - | B | 2 | A7 |
| **Bi15-Q20-LIU-H1141** 1534601 | | 4-11 | 110 | 0.03 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 2.2, 4.4 | PBT | PBT | - - | C | 3 | A7 |
| **Bi15-Q20-2LU-H1141/S950** 1534611 | All Metal Detection | N/A | 110 | N/A | 4-wire DC Voltage | 15-30 VDC | 0-10 VDC Amplitude, 0-10 VDC Phase | -25 to +70 | IP67 | 2.2 | PBT | PBT | - - | C | 4 | A8 |

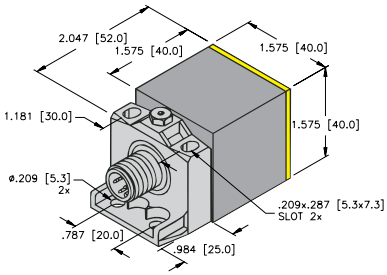
We reserve the right to make technical alterations without prior notice.

# Analog Sensors | CK40, CP40, & Q80

## Rectangular Housings with Long Range

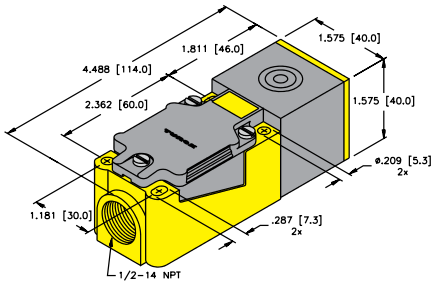
| Housing Style | Dimension Drawings |
|---|---|

A



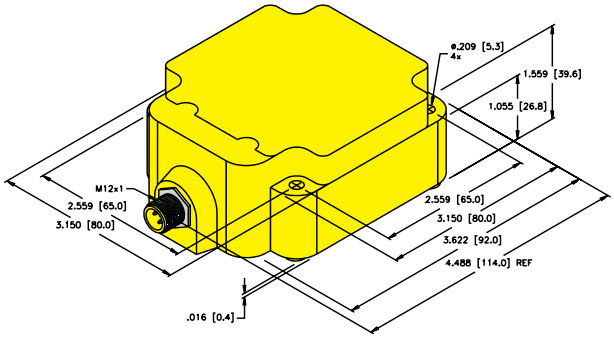

40 mm - Embeddable and Non-embeddable, M12 Eurofast Connection

B




40 mm - Embeddable and Nonembeddable, Terminal Chamber

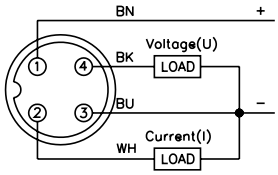
C




80 mm - Nonembeddable, M12 Eurofast Connector

### Wiring Diagrams/Mating Cordsets

1




Mating Cordset: RK 4.4T-*

### A7 — 3 and 4-wire DC Analog - (LIU, SIU)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Transient Protection: | Per EN 60947-5-2 |
| No-Load Current: | ≤8.0 mA | Shock: | 30 g, 11 ms |
| Load Resistance Voltage Output: | 0-10 V/$R_L$≥4.7 kΩ | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Load Resistance Current Output: | 0-20 mA/$R_L$≤0.4 kΩ | Repeatability: | ≤1% of measuring range \|A-B\| |
| Temperature Drift: | ±0.06% / °C | | (0.5% after 30 min. warm up) |
| LIU5: | 4-20 mA, 0-10 V | Short-Circuit Protection: | Yes |
| LIU2: | 4-20 mA, 2-10 V | Reverse Polarity Protection: | Incorporated |

We reserve the right to make technical alterations without prior notice.

# Analog Sensors | CK40, CP40, & Q80

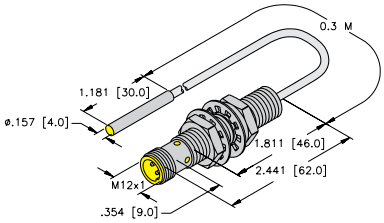
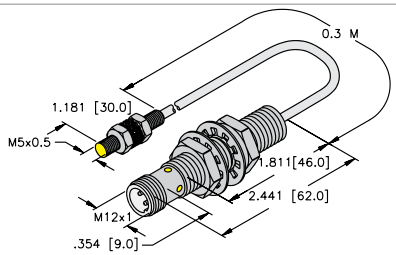
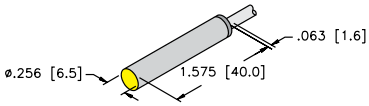
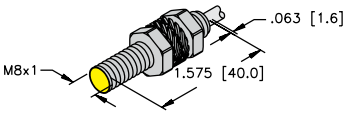
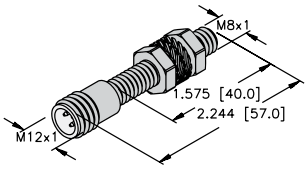
## Rectangular Housings with Long Range

| Part Number/ ID Number | Measuring Range (mm) | Response Freq. (Hz) | Linearity Deviation (% of full scale) | Output | Voltage | Output Voltage/ Current | Operating Temp. (°C) | Protection | Slew Rate V/ms, mA/ms | Housing | Face | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi15-CK40-LIU-H1141** 1537890 | 4-11 | 110 | 0.03 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 2.2, 4.4 | PBT | PBT | A | 1 | A7 |
| **Ni25-CK40-LIU-H1141** 1537891 | 5-25 | 30 | 0.05 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 0.6, 1.2 | PBT | PBT | A | 1 | A7 |
| **Ni25-CK40-LIU2-H1141** 1537892 | 5-25 | 30 | 0.05 | 4-wire DC Current or Voltage | 15-30 VDC | 2-10 V/4-20 mA | -10 to +70 | IP67 | 0.6, 0.96 | PBT | PBT | A | 1 | A7 |
| **Bi15-CP40-LIU** 1535700 | 4-11 | 110 | 0.03 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 2.2, 4.4 | PBT | PBT | B | 1 | A7 |
| **Ni25-CP40-LIU** 1535547 | 5-25 | 30 | 0.05 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 0.6, 1.2 | PBT | PBT | B | 1 | A7 |
| **Ni50-Q80-LIU-H1141** 1535545 | 10-50 | 30 | 0.05 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 0.6, 1.2 | PBT | PBT | C | 1 | A7 |

We reserve the right to make technical alterations without prior notice.

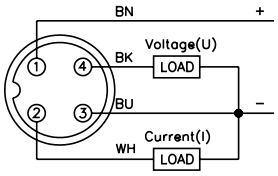
# Analog Sensors | EH04, EG05, EH6.5, & EG08

## Picoprox Barrel Styles

| Housing Style | Dimension Drawings |
|---|---|
| | A   4 mm - Embeddable M12 Eurofast Connection |
| B   5 mm - Embeddable M12 Eurofast Connection | C   6.5 mm - Embeddable, Potted-In Cable |
| D   8 mm - Embeddable, Potted-In Cable | E   8 mm - Embeddable, M12 Eurofast Connection |

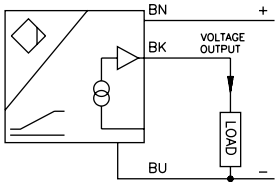
### Wiring Diagrams/Mating Cordsets

1

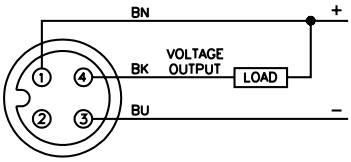



Mating Cordset: RK 4.4T-*

2




3




Mating Cordset: RK 4T-*

### A7 — 3 and 4-wire DC Analog - (LIU, SIU)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Transient Protection: | Per EN 60947-5-2 |
| No-Load Current: | ≤8.0 mA | Shock: | 30 g, 11 ms |
| Load Resistance Voltage Output: | 0-10 V/$R_L$≥4.7 kΩ | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Load Resistance Current Output: | 0-20 mA/$R_L$≤0.4 kΩ | Repeatability: | ≤1% of measuring range \|A-B\| |
| Temperature Drift: | ±0.06% / °C | | (0.5% after 30 min. warm up) |
| LIU5: | 4-20 mA, 0-10 V | Short-Circuit Protection: | Yes |
| LIU2: | 4-20 mA, 2-10 V | Reverse Polarity Protection: | Incorporated |

### A8 — 3 and 4-wire DC Analog - (LU)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Short-Circuit Protection: | Yes |
| No-Load Current: | ≤8.0 mA | Wire-Break Protection: | Yes |
| Load Resistance Voltage Output: | 0-10 V/$R_L$≥4.7 kΩ | Shock: | 30 g, 11 ms |
| Temperature Drift: | ±0.06% / °C | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Reverse Polarity Protection: | Incorporated | Repeatability: | ≤1% of measuring range \|A-B\| |
| Transient Protection: | Per EN 60947-5-2 | | (0.5% after 30 min. warm up) |

We reserve the right to make technical alterations without prior notice.

# Analog Sensors | EH04, EG05, EH6.5, & EG08

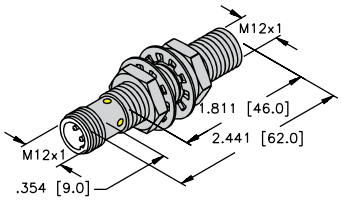
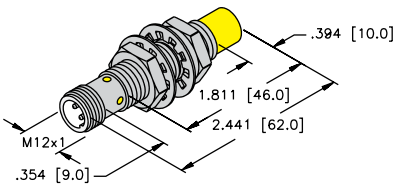
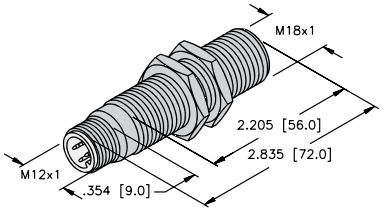
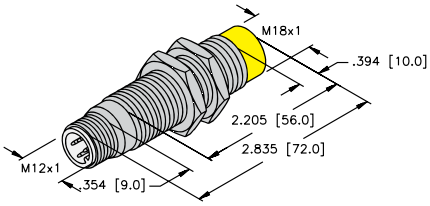
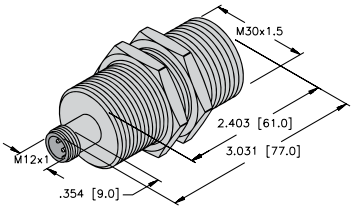
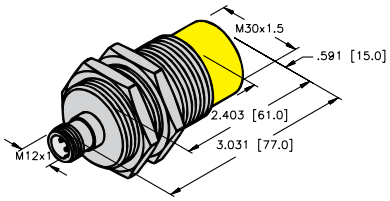
**Picoprox Barrel Styles**

| Part Number/ ID Number | Measuring Range (mm) | Response Freq. (Hz) | Linearity Deviation (% of full scale) | Output | Voltage | Output Voltage/ Current | Operating Temp. (°C) | Protection | Slew Rate V/ms, mA/ms | Housing | Face | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi1.5-EH04-0.3-M12-SIU-H1141** 1533001 | 0.1-1.5 | 200 | N/A | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 4, 8 | SS | PA 12 | A | 1 | A7 |
| **Bi1.5-EG05-0.3-M12-SIU-H1141** 1533005 | 0.1-1.5 | 200 | N/A | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 4, 8 | SS | PA 12 | B | 1 | A7 |
| **Bi1.5-EH6.5-LU** 1533002 | 0.25-1.25 | 200 | 0.03 | 3-wire DC Voltage | 15-30 VDC | 0-10 V | -10 to +70 | IP67 | 4, N/A | SS | PA 12 | C | 2 | A8 |
| **Bi1.5-EG08-LU** 1533003 | 0.25-1.25 | 200 | 0.03 | 3-wire DC Voltage | 15-30 VDC | 0-10 V | -10 to +70 | IP67 | 4, N/A | SS | PA 12 | D | 2 | A8 |
| **Bi1.5-EG08-LU-H1341** 1533004 | 0.25-1.25 | 200 | 0.03 | 3-wire DC Voltage | 15-30 VDC | 0-10 V | -10 to +70 | IP67 | 4, N/A | SS | PA 12 | E | 3 | A8 |

We reserve the right to make technical alterations without prior notice.

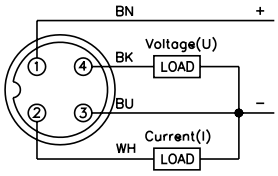
# Analog Sensors | M12, M18, & M30

## Threaded Barrel Styles with Connector

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   12 mm - Embeddable M12 Eurofast Connection | B   12 mm - Nonembeddable M12 Eurofast Connection |
| C   18 mm - Embeddable M12 Eurofast Connection | D   18 mm - Nonembeddable M12 Eurofast Connection | E   30 mm - Embeddable, M12 Eurofast Connection |
| F   30 mm - Nonembeddable, M12 Eurofast Connection | | |

### Wiring Diagrams/Mating Cordsets

1




Mating Cordset: RK 4.4T-*

### A7 — 3 and 4-wire DC Analog - (LIU, SIU)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Transient Protection: | Per EN 60947-5-2 |
| No-Load Current: | ≤8.0 mA | Shock: | 30 g, 11 ms |
| Load Resistance Voltage Output: | 0-10 V/$R_L$ ≥4.7 kΩ | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Load Resistance Current Output: | 0-20 mA/$R_L$ ≤0.4 kΩ | Repeatability: | ≤1% of measuring range \|A-B\| (0.5% after 30 min. warm up) |
| Temperature Drift: | ±0.06% / °C | | |
| LIU5: | 4-20 mA, 0-10 V | Short-Circuit Protection: | Yes |
| LIU2: | 4-20 mA, 2-10 V | Reverse Polarity Protection: | Incorporated |

We reserve the right to make technical alterations without prior notice.

# Analog Sensors | M12, M18, & M30

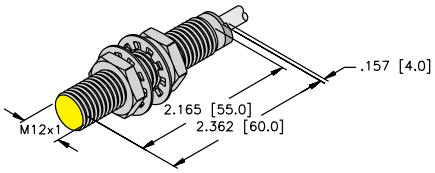
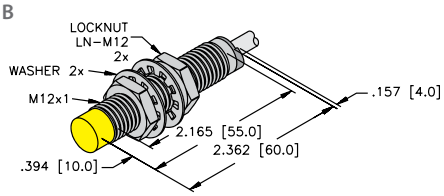
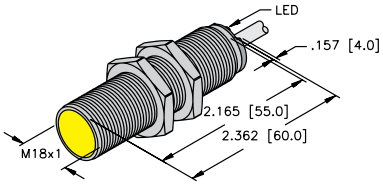
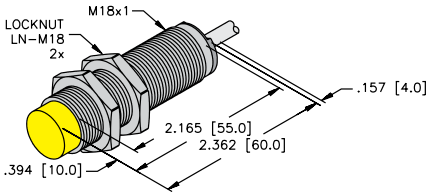
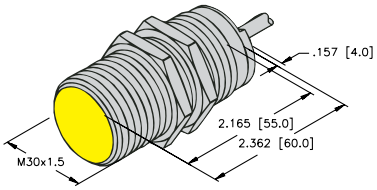
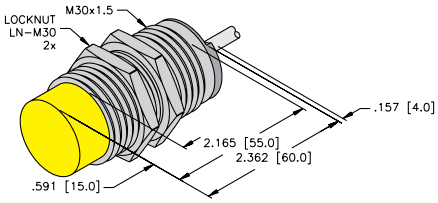
## Threaded Barrel Styles with Connector

| Part Number/ ID Number | Features | Measuring Range (mm) | Response Freq. (Hz) | Linearity Deviation (% of full scale) | Output | Voltage | Output Voltage/ Current | Operating Temp. (°C) | Protection | Slew Rate V/ms, mA/ms | Housing | Face | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi2-M12-LIU-H1141** 1535533 | | 1-2.5 | 200 | 0.03 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 4, 8 | CPB | PA 12 | A | 1 | A7 |
| **Bi4-M12-LIU-H1141** 1535531 | Ext. Range | 0.5-3 | 200 | 0.05 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 4, 8 | CPB | PA 12 | A | 1 | A7 |
| **Ni5-M12-LIU-H1141** 1535535 | | 0.5-4 | 100 | 0.05 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 2, 4 | CPB | PA 12 | B | 1 | A7 |
| **Bi5-M18E-LIU-H1141** 1536205 | | 2-4 | 200 | 0.03 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 4, 8 | CPB | PA 12 | C | 1 | A7 |
| **Bi8-M18E-LIU-H1141** 1535561 | Ext. Range | 1-5 | 200 | 0.05 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 4, 8 | CPB | PA 12 | C | 1 | A7 |
| **Ni8-M18E-LIU-H1141** 1536302 | | 1-5 | 100 | 0.03 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 2, 4 | CPB | PA 12 | D | 1 | A7 |
| **Ni10-M18E-LIU-H1141** 1535562 | Ext. Range | 1-7 | 100 | 0.05 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 2, 4 | CPB | PA 12 | D | 1 | A7 |
| **Bi10-M30E-LIU-H1141** 1537003 | | 3-8 | 140 | 0.03 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 2.8, 5.6 | CPB | PA 12 | E | 1 | A7 |
| **Bi15-M30E-LIU-H1141** 1535563 | Ext. Range | 2-10 | 140 | 0.05 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 2.8, 5.6 | CPB | PA 12 | E | 1 | A7 |
| **Ni15-M30E-LIU-H1141** 1535564 | | 2-12 | 60 | 0.03 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 1.2, 2.4 | CPB | PA 12 | F | 1 | A7 |

We reserve the right to make technical alterations without prior notice.

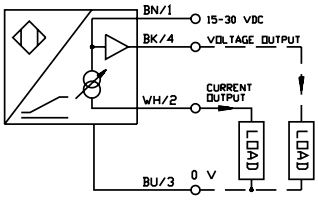
# Analog Sensors | M12, M18, & M30

## Threaded Barrel Styles with Cable

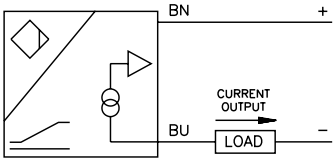
| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   12 mm - Embeddable, Potted-In Cable | B   12 mm - Nonembeddable, Potted-In Cable |
| C   18 mm - Embeddable, Potted-In Cable | D   18 mm - Nonembeddable, Potted-In Cable | E   30 mm - Embeddable, Potted-In Cable |
| F   30 mm - Nonembeddable, Potted-In Cable | | |

### Wiring Diagrams/Mating Cordsets

1




2




### A7 — 3 and 4-wire DC Analog - (LIU, SIU)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Transient Protection: | Per EN 60947-5-2 |
| No-Load Current: | ≤8.0 mA | Shock: | 30 g, 11 ms |
| Load Resistance Voltage Output: | 0-10 V/$R_L$ ≥4.7 kΩ | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Load Resistance Current Output: | 0-20 mA/$R_L$ ≤0.4 kΩ | Repeatability: | ≤1% of measuring range \|A-B\| (0.5% after 30 min. warm up) |
| Temperature Drift: | ±0.06% / °C | | |
| LIU5: | 4-20 mA, 0-10 V | Short-Circuit Protection: | Yes |
| LIU2: | 4-20 mA, 2-10 V | Reverse Polarity Protection: | Incorporated |

### A9 — 2-wire DC Analog NAMUR - (LI-EXI)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Temperature Drift: | ≤±0.06% °C |
| Current Output: | 4-20 mA | Shock: | 30 g, 11 ms |
| Nominal Voltage: | 8.2 VDC (EN60947-5-6) | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Power-On Effect: | Realized in Amplifier | Repeatability: | ≤1% of measuring range \|A-B\| (0.5% after 30 min. warm up) |
| Reverse Polarity Protection: | Incorporated | | |
| Wire-Break Protection: | No | | |
| Transient Protection: | Realized in Amplifier | | |

We reserve the right to make technical alterations without prior notice.

# Analog Sensors | M12, M18, & M30

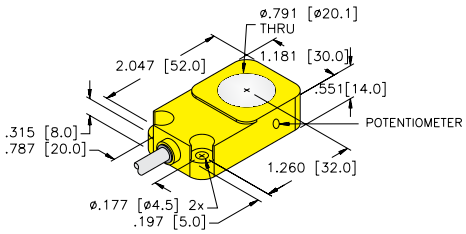
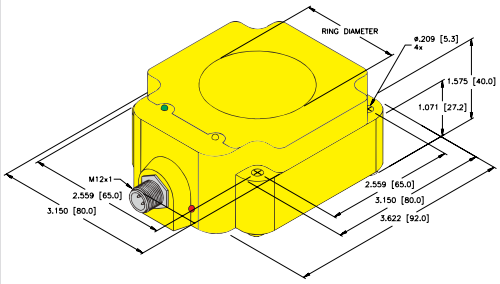
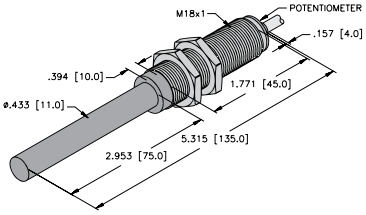
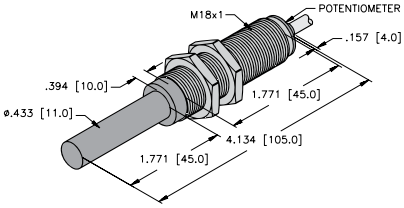
## Threaded Barrel Styles with Cable

| Part Number/ ID Number | Features | Measuring Range (mm) | Response Freq. (Hz) | Linearity Deviation (% of full scale) | Output | Voltage | Output Voltage/ Current | Operating Temp. (°C) | Protection | Slew Rate V/ms, mA/ms | Housing | Face | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi4-M12-LIU** 1535532 | Ext. Range | 0.5-3 | 200 | 0.05 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 4, 8 | CPB | PA 12 | 2M/ PVC | A | 1 | A7 |
| **Ni5-M12-LIU** 1535536 | | 0.5-4 | 100 | 0.05 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 2, 4 | CPB | PA 12 | 2M/ PVC | B | 1 | A7 |
| **Bi5-M18-LIU** 1536000 | | 2-4 | 200 | 0.03 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 4, 8 | CPB | PA 12 | 2M/ PVC | C | 1 | A7 |
| **Bi8-M18-LIU** 1535538 | Ext. Range | 1-5 | 200 | 0.05 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 4, 8 | CPB | PA 12 | 2M/ PVC | C | 1 | A7 |
| **Bi8-M18-LI-EXI** 1535528 | Ext. Range, Use Barriers IM33-11EX-HI or IM43-13-SR | 1-5 | 200 | 0.05 | 2-wire DC Current | 14-30 VDC | 4-20 mA | -10 to +70 | IP67 | N/A, 8 | CPB | PA 12 | 2M/ PVC | C | 2 | A9 |
| **Ni8-M18-LIU** 1536100 | Ext. Range | 1-5 | 100 | 0.03 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 2, 4 | CPB | PA 12 | 2M/ PVC | D | 1 | A7 |
| **Ni10-M18-LIU** 1535540 | Ext. Range | 1-7 | 100 | 0.05 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 2, 4 | CPB | PA 12 | 2M/ PVC | D | 1 | A7 |
| **Bi10-M30-LIU** 1535500 | | 3-8 | 140 | 0.03 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 2.8, 5.6 | CPB | PA 12 | 2M/ PVC | E | 1 | A7 |
| **Bi15-M30-LIU** 1535543 | Ext. Range | 2-10 | 140 | 0.05 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 2.8, 5.6 | CPB | PA 12 | 2M/ PVC | E | 1 | A7 |
| **Bi15-M30-LI-EXI** 1535554 | Ext. Range, Use Barriers IM33-11EX-HI or IM43-13-SR | 2-10 | 140 | 0.05 | 2-wire DC Current | 14-30 VDC | 4-20 mA | -10 to +70 | IP67 | N/A, 4.48 | CPB | PA 12 | 2M/ PVC | E | 2 | A9 |
| **Ni15-M30-LIU** 1535300 | Ext. Range | 2-12 | 60 | 0.03 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/0-20 mA | -10 to +70 | IP67 | 1.2, 2.4 | CPB | PA 12 | 2M/ PVC | F | 1 | A7 |

We reserve the right to make technical alterations without prior notice.

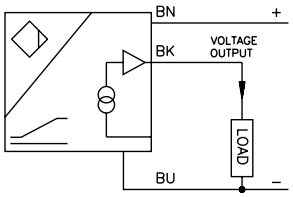
# Analog Sensors | Q14, Q80, & M18

## Probe and Ring Style Housings

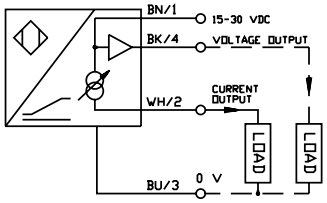
| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   14 mm - Embeddable, Ring Sensor, Potted-In Cable | B   80 mm - Embeddable, M12 Eurofast Connection |
| C   18 mm - Embeddable, Probe Style, Potted-In Cable | D   18 mm - Embeddable, Probe Style, Potted-In Cable | |

### Wiring Diagrams/Mating Cordsets

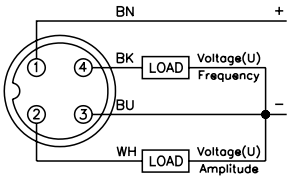
1




2




3




Mating Cordset: RK 4.4T

### A7 — 3 and 4-wire DC Analog - (LIU, SIU)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Transient Protection: | Per EN 60947-5-2 |
| No-Load Current: | ≤8.0 mA | Shock: | 30 g, 11 ms |
| Load Resistance Voltage Output: | 0-10 V/$R_L$ ≥4.7 kΩ | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Load Resistance Current Output: | 0-20 mA/$R_L$ ≤0.4 kΩ | Repeatability: | ≤1% of measuring range \|A-B\| |
| Temperature Drift: | ±0.06% / °C | | (0.5% after 30 min. warm up) |
| LIU5: | 4-20 mA, 0-10 V | Short-Circuit Protection: | Yes |
| LIU2: | 4-20 mA, 2-10 V | Reverse Polarity Protection: | Incorporated |

### A8 — 3 and 4-wire DC Analog - (LU)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Short-Circuit Protection: | Yes |
| No-Load Current: | ≤8.0 mA | Wire-Break Protection: | Yes |
| Load Resistance Voltage Output: | 0-10 V/$R_L$ ≥4.7 kΩ | Shock: | 30 g, 11 ms |
| Temperature Drift: | ±0.06% / °C | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Reverse Polarity Protection: | Incorporated | Repeatability: | ≤1% of measuring range \|A-B\| |
| Transient Protection: | Per EN 60947-5-2 | | (0.5% after 30 min. warm up) |

We reserve the right to make technical alterations without prior notice.

# Analog Sensors | Q14, Q80, & M18

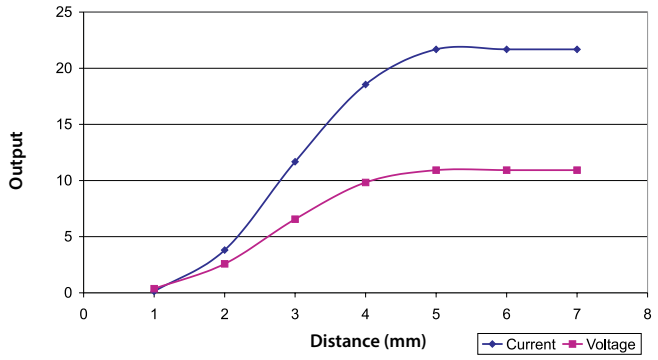
## Probe and Ring Style Housings

| Part Number/ ID Number | Features | Measuring Range (mm) | Response Freq. (Hz) | Linearity Deviation (% of full scale) | Output | Voltage | Output Voltage/ Current | Operating Temp. (°C) | Protection | Slew Rate V/ms, mA/ms | Housing | Face | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi20R-Q14-LU** 1535546 | | 1-19 | 80 | N/A | 3-wire DC Voltage | 15-30 VDC | 0-10 V | -25 to +70 | IP67 | 2.8, N/A | PBT | PBT | 2M/ PVC | A | 1 | A8 |
| **Bi50R-Q80-2LU-H1141/S950** 1534609 | All Metal Detection | N/A | 80 | N/A | 4-wire DC Voltage | 15-30 VDC | 0-10 VDC Ampli-tude, 1-10 VDC Phase | -25 to +70 | IP67 | 1.6 | PBT | PBT | - - | B | 3 | A8 |
| **Wi70-M18-LIU5** 1536600 | | 0-70 | 200 | 0.03 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/4-20 mA | -10 to +70 | IP67 | 4, 6.4 | CPB | PA 12 | 2M/ PVC | C | 2 | A7 |
| **Wi40-M18-LIU5** 1536603 | | 0-40 | 40 | 0.02 | 4-wire DC Current or Voltage | 15-30 VDC | 0-10 V/4-20 mA | -10 to +70 | IP67 | 0.8, 1.2 | CPB | PA 12 | 2M/ PVC | D | 2 | A7 |

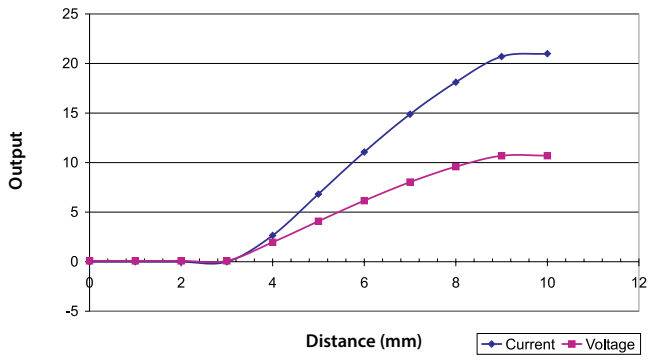
We reserve the right to make technical alterations without prior notice.

# Analog Sensors

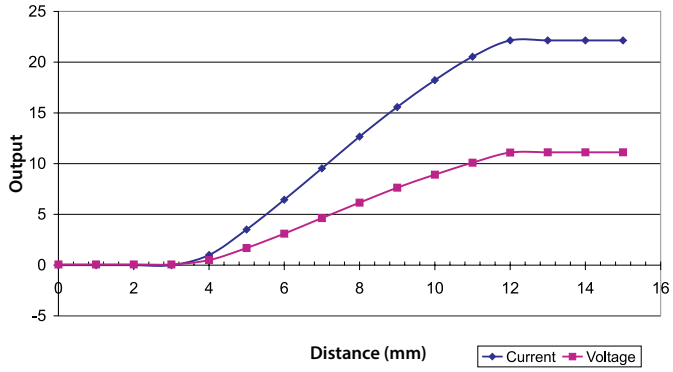
**Bi7-Q08-LIU**



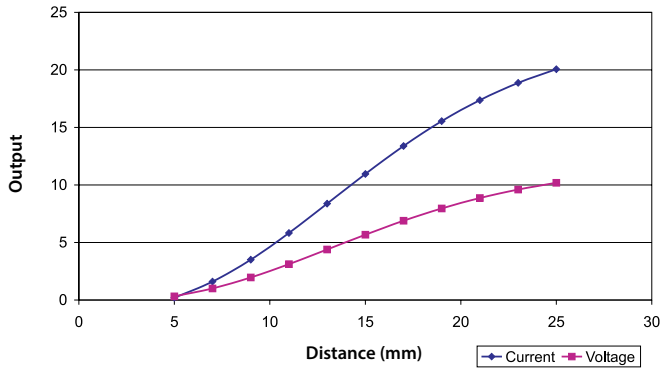

**Bi10-Q14-LIU-H1141**



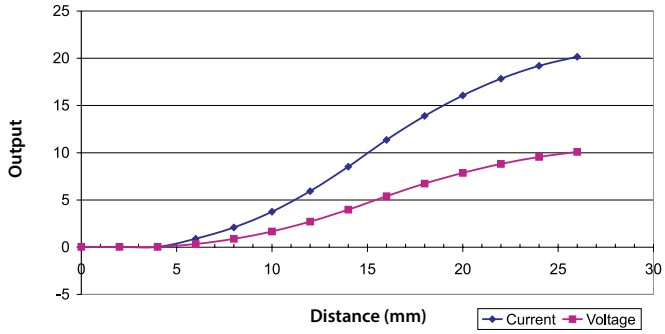

**Bi15-Q20-LIU-H1141**



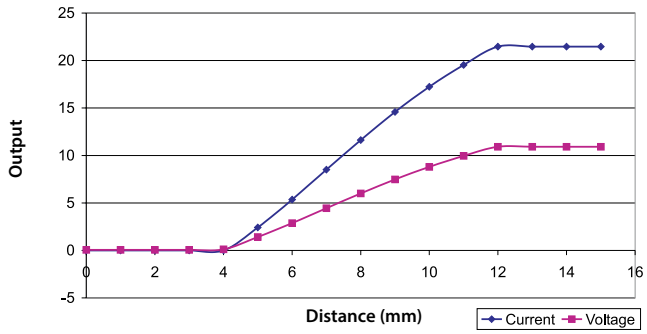

**Ni25-CP40-LIU**



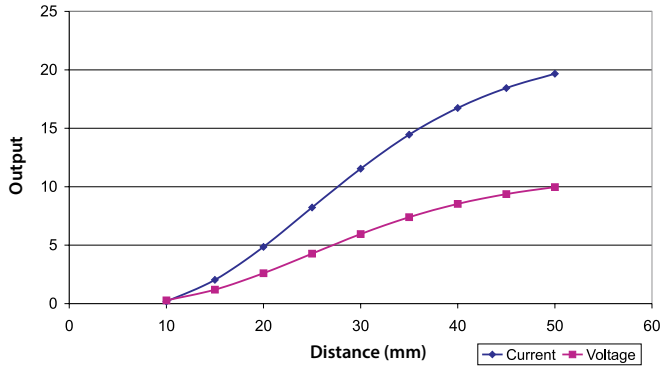

**Ni25-CK40-LIU-H1141**



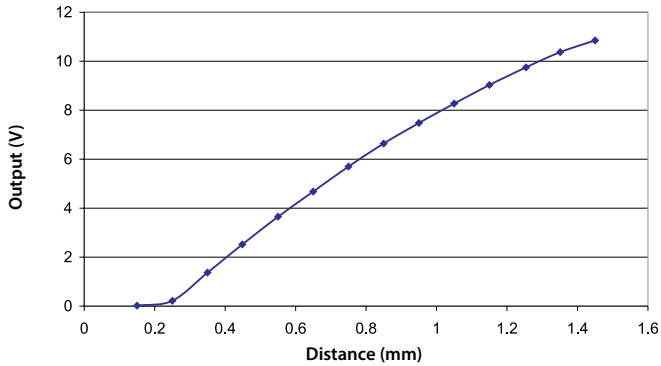

**Bi15-CP40-LIU**




**Ni50-Q80-LIU-H1141**



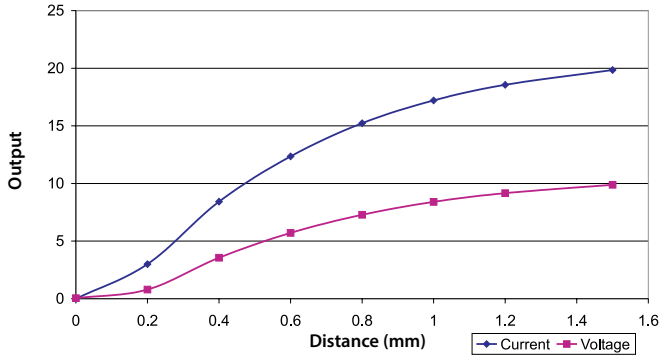

**Bi1.5-EG08(EH6.5)-LU**



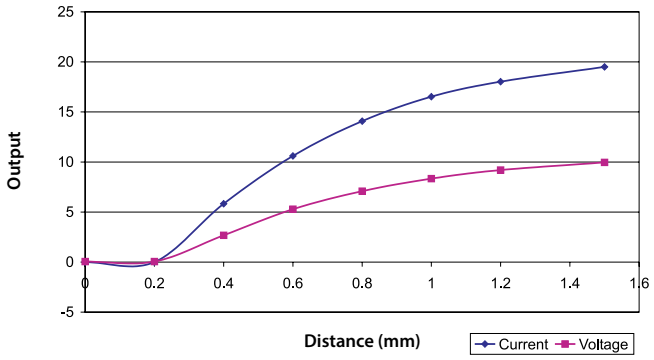

We reserve the right to make technical alterations without prior notice.

# Analog Sensors

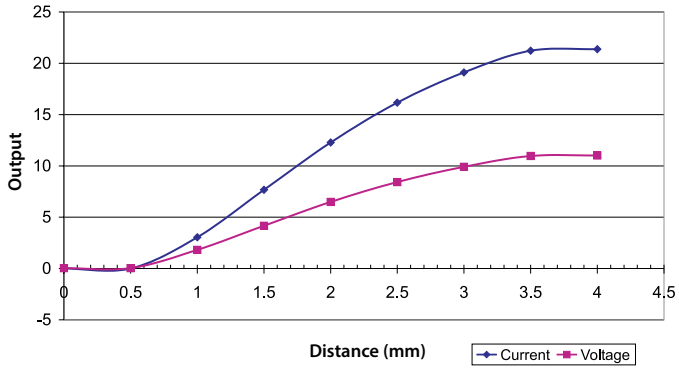
**Bi1.5-EH04-0.3-M12-SIU-H1141**




**Bi1.5-EG05-0.3-M12-SIU-H1141**




**Bi4-M12-LIU...**

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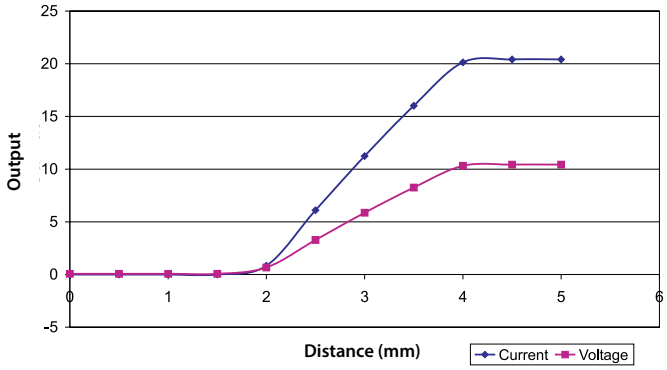
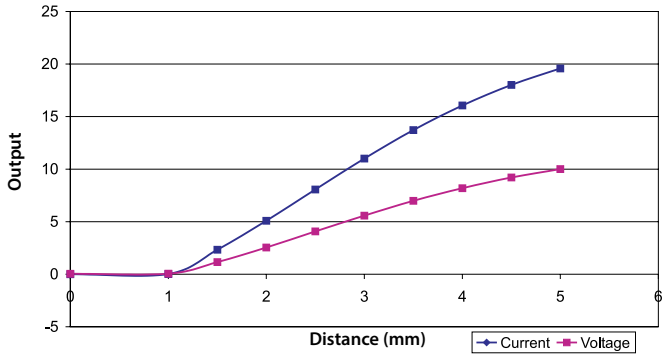
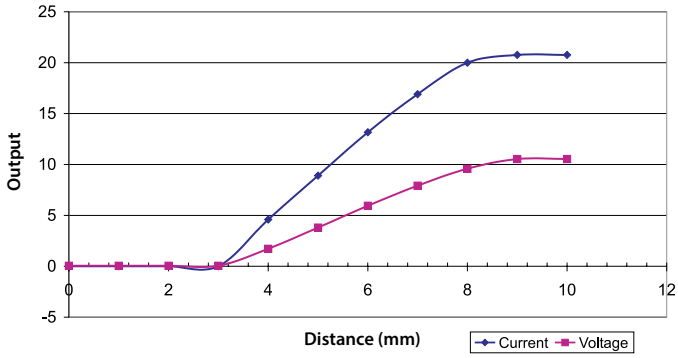


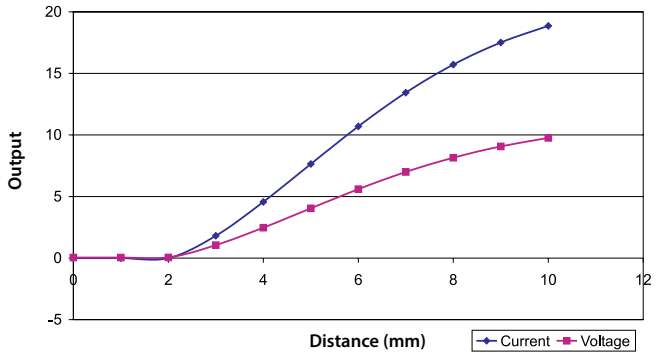

**Bi8-M18E-LIU...**



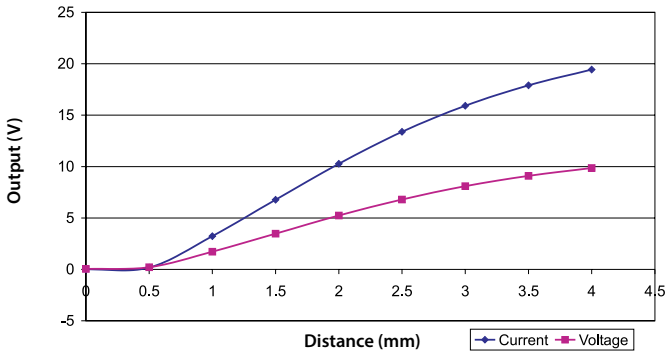

**Bi10-M30E-LIU...**




**Bi15-M30E-LIU...**

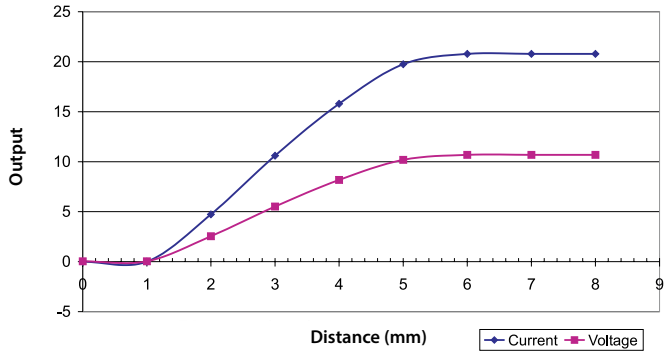



**Ni5-M12-LIU...**

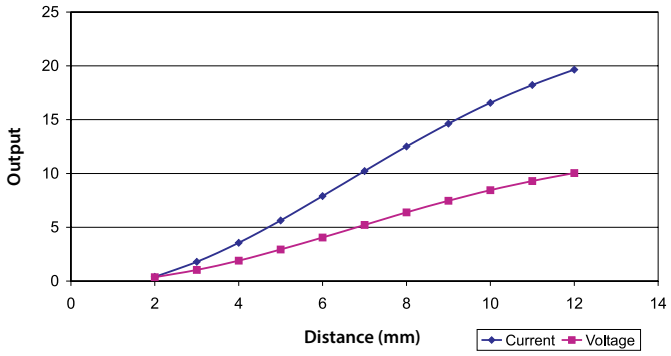



We reserve the right to make technical alterations without prior notice.

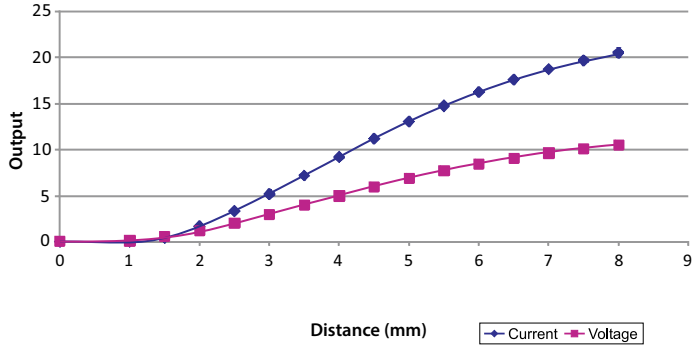
**Ni8-M18-LIU...**



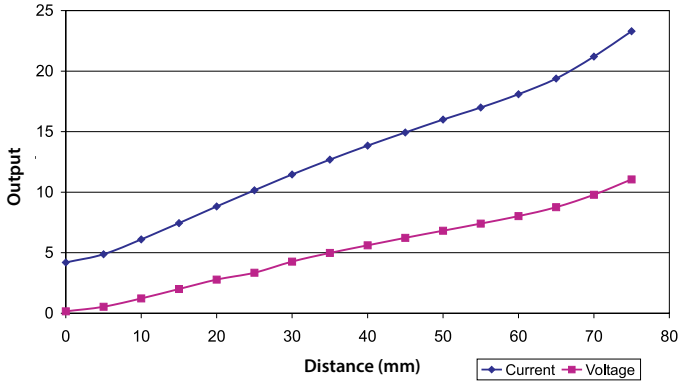

**Ni15-M30-LIU...**



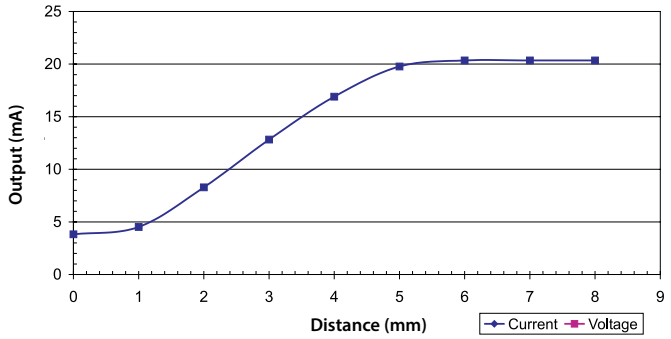

**Ni10-M18-LIU...**



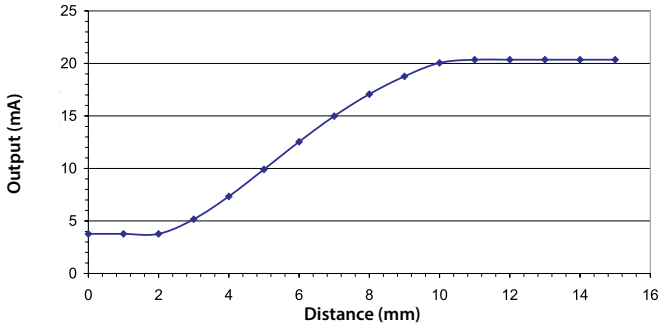

**Wi70-M18-LIU5**



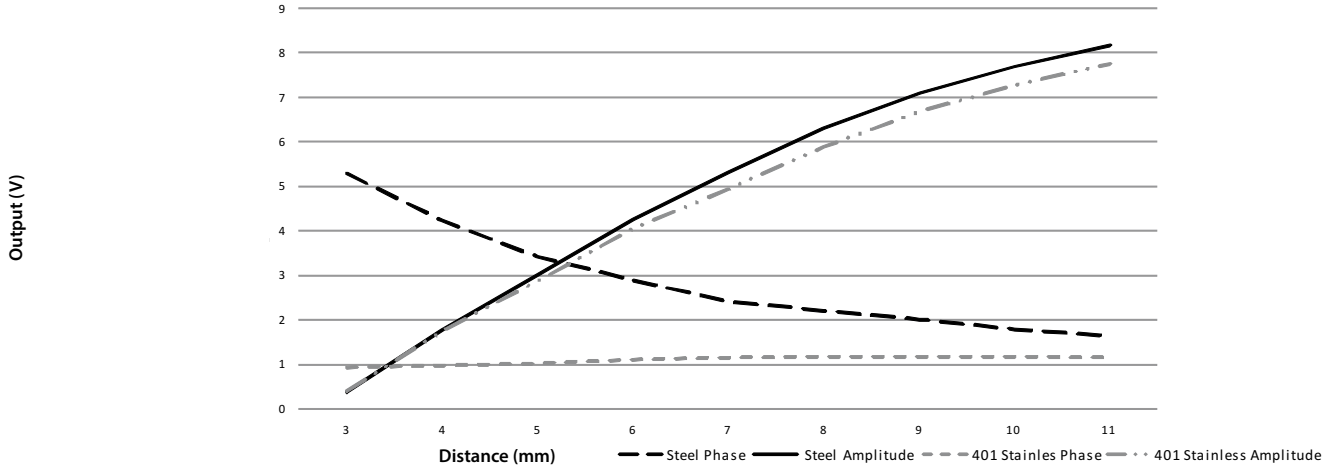

**Bi 8-M18-Li Exi**




**Bi15-M30-LI-Exi**




**Bi15-Q20-2LU-H1141/S950**




We reserve the right to make technical alterations without prior notice.

Notes

# Capacitive Sensor Selection Guide

| Embeddable/Nonembeddable Rectangular | | | | | |
|---|---|---|---|---|---|
| | | | | | |
| **Housing** | 5.5 mm | 8 mm | 10 mm | 14 mm | 20 mm |
| **Sensing Range** | 5 - 10 mm | 5 mm | 8 mm | 10 - 15 mm | 10 - 20 mm |
| **Pages** | E3 | E5 | E5 | E7 | E9 |

| Embeddable/Nonembeddable Rectangular and Barrels | | | | | |
|---|---|---|---|---|---|
| | | | | | |
| **Housing** | 40 mm | 80 mm | 12 mm | 12 mm | 18 mm |
| **Sensing Range** | 20 - 30 mm | 50 mm | 3 mm | 3 - 4.5 mm | 5 mm |
| **Pages** | E11 | E11 | E13 | E13 | E15 |

| Embeddable/Nonembeddable Barrels | | | | | |
|---|---|---|---|---|---|
| | | | | | |
| **Housing** | 18 mm | 18 mm BCT | 30 mm BCT | 30 mm | 30 mm |
| **Sensing Range** | 5 - 7.5 mm | 5 - 7.5 mm | 10 - 15 mm | 10 mm | 10 - 15 mm |
| **Pages** | E17 | E19 | E19 | E21 - 24 | E25 - 28 |

| Embeddable/Nonembeddable Plastic Barrels | | | |
|---|---|---|---|
| | | | IS |
| **Housing** | 34 mm | 40 mm | Variable |
| **Sensing Range** | 15 - 23 mm | 20 - 30 mm | 5 - 10 mm |
| **Pages** | E29 - 34 | E29 - 32 | E35 |

We reserve the right to make technical alterations without prior notice.

# Capacitive Sensor Part Number Key

| B | C | 10 | - | K | 40 | SR | - | F | Z | 3 | X2 | T | Wiring Options* | Special Option Codes** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

**Mounting**
B = embeddable
N = nonembeddable

**Principle of Operation**
C = capacitive
CC = capacitive (low dielectric targets)
CF = capacitive (noise immune)
CT = capacitive teach

**Rated Operating Distance (mm)**

**Housing Style**
**Barrel - Metal**
M = partial threading, chrome plated brass
**Barrel - Plastic**
K = smooth
KT = PVDF, smooth
P = full threading
PT = PVDF, full threading
S = partial threading
**Rectangular**
Q = metal or plastic, various rectangular styles
QF = plastic, Polypropylene rectangular style

**Housing Diameter or Height (mm)**

**Teach Button**

**Number of LEDs**
(blank) = no LEDs
X = 1 LED
X2 = 2 LEDs

**Voltage Range**
**AC/DC: (No SCP**)**
3 = 20-250 VAC
**DC:**
4 = 10-65 VAC, polarity protected, pulsed SCP**
6 = 10-30 VAC, polarity protected, pulsed SCP
**DC:**
4 = 10-65 VDC, polarity protected, pulsed SCP**
6 = 10-30 VDC, polarity protected, pulsed SCP
**SCP = short-circuit and overload protection

**Output**
N = NPN transistor (current sinking)
P = PNP transistor (current sourcing)
Z = 2-wire AC or 2-wire AC/DC

**Output Function**
A = normally open (N.O.)
F = connection programmable (N.O. or N.C.)
R = normally closed (N.C.)
V = complementary outputs: one N.O., one N.C.
Y0 = NAMUR output, requires switching amplifier
Y1 = NAMUR output, requires switching amplifier/ATEX approved

**Secondary Housing Modifier**
SR = straight terminal chamber

**NOTE:**
Part Number Keys are to assist in identification only.
Verify new part numbers with factory;
Some configurations are not possible.

We reserve the right to make technical alterations without prior notice.



## Wiring Options*

**A. Connectorized Sensor**

BC10 - M30 - AP4X - H1 1 4 1

**Connector Family**
B1 = Minifast®, Metal, Male
B2 = Minifast, Plastic, Male
B3 = Microfast®, Metal, Male
H1 = Eurofast®, Metal or Plastic, Male
V1 = Picofast®, Metal, Male

**Connector/Sensor Transition**
1 = straight

**Number of Pins**

**Wiring Configuration**
**Example:**
1 = Standard
3 = N.C. DC Output on Pin 4 (for US)

**B. Potted Cable**

BC5 - S18 - AP4X - 7M

**Cable Length**
Blank = 2 Meter cable
7M = 7 Meter cable

## Special Option Codes**

BC10 - Q14 - AN4X - /S250

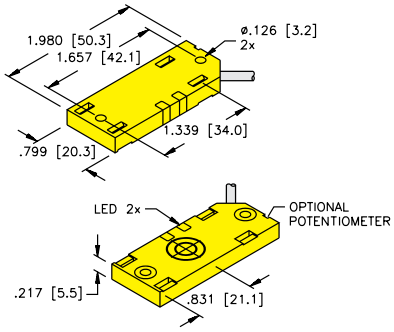
**Option Code**
**Example:**
/S250 = No Potentiometer
/S400 = Rear LEDs (for Q14 and Q20 only)

# Capacitive Sensors | QF5.5

## Top Sensing Thin Qpak Housing with DC Outputs

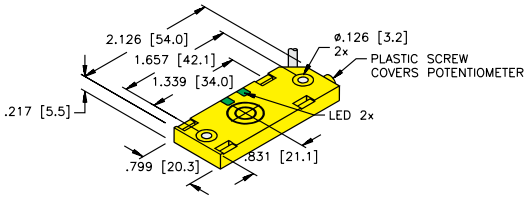
| Housing Style | Dimension Drawings |
|---|---|

A




5.5 mm - Potted-In Cable

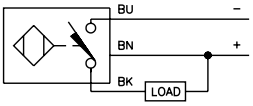
B



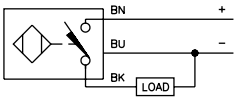

5.5 mm - Potted-In Cable, w/Potentiometer Cover

### Wiring Diagrams/Mating Cordsets

1




2

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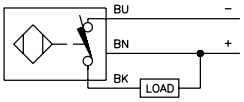
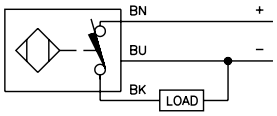



4




### A11 — 3 and 4-wire DC Capacitive - (AP, RP, AN, RN, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Reverse Polarity Protection: | Incorporated |
| Differential Travel (Hysteresis): | 2-20% (5% typical) | Wire-Break Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Transient Protection: | Per EN 60947-5-2 |
| Trigger Current for Short Circuit Protection: | ≥220 mA | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| No-Load Current: | ≤15 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Power-On Effect: | Per IEC 947-5-2 | Temperature Drift: | <±20% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | QF5.5

## Top Sensing Thin Qpak Housing with DC Outputs

| Part Number/ ID Number | Features | Embeddable Range (mm) | Nonembeddable Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing Material | Front Cap/Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BC5-QF5.5-AN6X2/S250** 2620120 | | 5 | 5 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PP | PP | GN | YE | 2M/TPU | A | 1 | A11 |
| **BC10-QF5.5-AN6X2** 2620121 | | 10 | 10 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PP | PP | GN | YE | 2M/TPU | A | 1 | A11 |
| **BC10-QF5.5-AN6X2/S250** 2620119 | | 10 | 10 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PP | PP | GN | YE | 2M/TPU | A | 1 | A11 |
| **BC10-QF5.5-RN6X2** 2620128 | Normally Closed | 10 | 10 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PP | PP | GN | YE | 2M/TPU | A | 3 | A11 |
| **BC5-QF5.5-AP6X2/S250** 2620116 | | 5 | 5 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PP | PP | GN | YE | 2M/TPU | A | 2 | A11 |
| **BC5-QF5.5-RP6X2/S250** 2620127 | Normally Closed | 5 | 5 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PP | PP | GN | YE | 2M/TPU | A | 4 | A11 |
| **BC10-QF5.5-AP6X2** 2620117 | | 10 | 10 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PP | PP | GN | YE | 2M/TPU | A | 2 | A11 |
| **BC10-QF5.5-AP6X2/S250** 2620115 | | 10 | 10 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PP | PP | GN | YE | 2M/TPU | A | 2 | A11 |
| **BC10-QF5.5-RP6X2** 2620126 | Normally Closed | 10 | 10 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PP | PP | GN | YE | 2M/TPU | A | 4 | A11 |
| **BC10-QF5.5-RP6X2/S250** 2620124 | Normally Closed | 10 | 10 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PP | PP | GN | YE | 2M/TPU | A | 4 | A11 |
| **BC10-QF5.5-AN6X2/S932** 2620137 | | 10 | 10 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PP | PP | GN | YE | 2M/TPU | B | 1 | A11 |
| **BC10-QF5.5-RN6X2/S932** 2620140 | Normally Closed | 10 | 10 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PP | PP | GN | YE | 2M/TPU | B | 3 | A11 |
| **BC10-QF5.5-AP6X2/S932** 2620109 | | 10 | 10 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PP | PP | GN | YE | 2M/TPU | B | 2 | A11 |
| **BC10-QF5.5-RP6X2/S932** 2620141 | Normally Closed | 10 | 10 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PP | PP | GN | YE | 2M/TPU | B | 4 | A11 |

**Notes:**

/S250: Without switch point adjustment potentiometer

/S932: Adjustment potentiometer with protective cover, and non-metallic mounting bushing

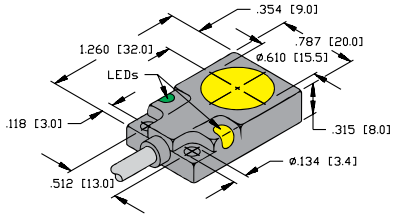
We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | Q08 & Q10

## Top Sensing Qpak Housing with DC Outputs

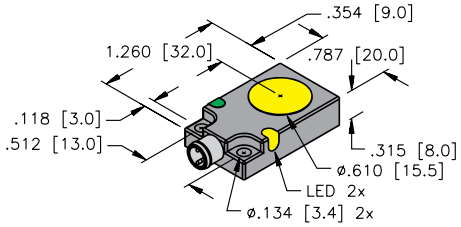
| Housing Style | Dimension Drawings |
|---|---|

A



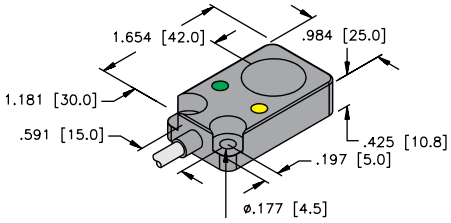

8 mm - Potted-In Cable

B



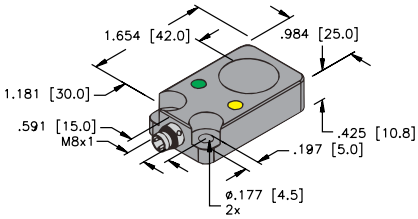

8 mm - Picofast Connector

C




10 mm - Potted-In Cable

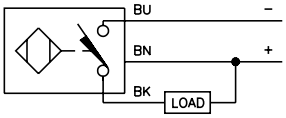
D




10 mm - Picofast Connector

### Wiring Diagrams/Mating Cordsets

1

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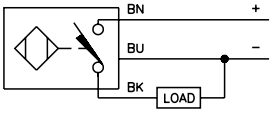
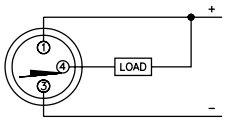
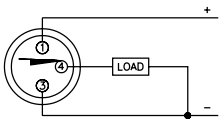



3




Mating Cordset: PKG 3Z-*

4




Mating Cordset: PKG 3Z-*; PKG 3M-*

### A11 — 3 and 4-wire DC Capacitive - (AP, RP, AN, RN, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Reverse Polarity Protection: | Incorporated |
| Differential Travel (Hysteresis): | 2-20% (5% typical) | Wire-Break Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Transient Protection: | Per EN 60947-5-2 |
| Trigger Current for Short Circuit Protection: | ≥220 mA | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| No-Load Current: | ≤15 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Power-On Effect: | Per IEC 947-5-2 | Temperature Drift: | <±20% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | Q08 & Q10

## Top Sensing Qpak Housing with DC Outputs

| Part Number/ ID Number | Embeddable Range (mm) | Nonembeddable Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing Material | Front Cap/Face | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BC5-Q08-AN6X2/S250** 26201 | 5 | 5 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | Zinc | PA 12 | GN | YE | 2M/TPU | A | 1 | A11 |
| **BC5-Q08-AP6X2/S250** 26200 | 5 | 5 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | Zinc | PA 12 | GN | YE | 2M/TPU | A | 2 | A11 |
| **BC5-Q08-AN6X2-V1131/S250** 26211 | 5 | 5 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | Zinc | PA 12 | GN | YE | -- | B | 3 | A11 |
| **BC5-Q08-AP6X2-V1131/S250** 26210 | 5 | 5 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | Zinc | PA 12 | GN | YE | -- | B | 4 | A11 |
| **BC8-Q10-AN6X2/S250** 2621203 | 8 | 8 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | -- | GN | YE | 2M/PVC | C | 1 | A11 |
| **BC8-Q10-AP6X2/S250** 2621200 | 8 | 8 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | -- | GN | YE | 2M/PVC | C | 2 | A11 |
| **BC8-Q10-AP6X2-V1131/S250** 2621201 | 8 | 8 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | -- | GN | YE | -- | D | 4 | A11 |

**Notes:**

/S250: Without switch point adjustment potentiometer

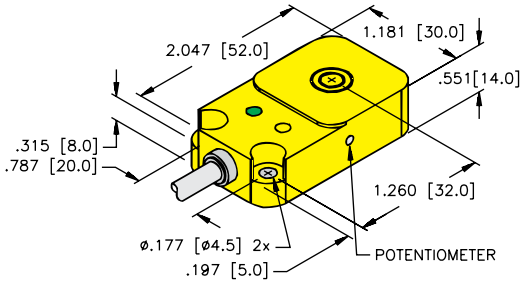
We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | Q14

## Top Sensing Qpak Housing with DC Outputs

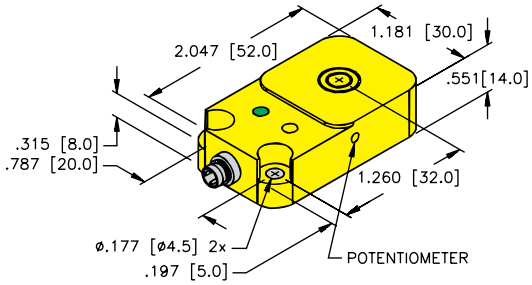
| Housing Style | Dimension Drawings |
|---|---|

A




14 mm - Potted-In Cable

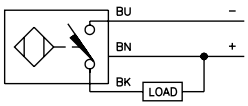
B



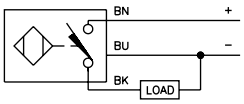

14 mm - Picofast Connector

### Wiring Diagrams/Mating Cordsets

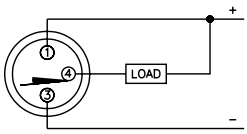
1




2

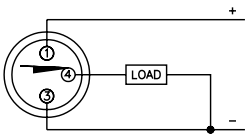



3



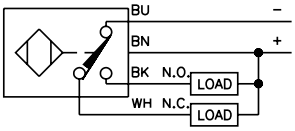

Mating Cordset: PKG 3M-*

4

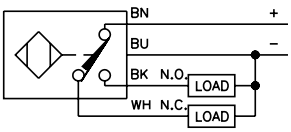



Mating Cordset: PKG 3M-*

5




6




### A11 — 3 and 4-wire DC Capacitive - (AP, RP, AN, RN, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Reverse Polarity Protection: | Incorporated |
| Differential Travel (Hysteresis): | 2-20% (5% typical) | Wire-Break Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Transient Protection: | Per EN 60947-5-2 |
| Trigger Current for Short Circuit Protection: | ≥220 mA | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| No-Load Current: | ≤15 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Power-On Effect: | Per IEC 947-5-2 | Temperature Drift: | <±20% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | Q14

## Top Sensing Qpak Housing with DC Outputs

| Part Number/ ID Number | Features | Embeddable Range (mm) | Nonembeddable Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing Material | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BC10-Q14-AN4X2** 2530010 | | 10 | 15 | 3-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | 2M/ PVC | A | 1 | A11 |
| **BC10-Q14-AP4X2** 2530001 | | 10 | 15 | 3-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | 2M/ PVC | A | 2 | A11 |
| **BC10-Q14-VN4X2** 2530030 | Comp. Outputs | 10 | 15 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | 2M/ PVC | A | 5 | A11 |
| **BC10-Q14-VP4X2** 2530020 | Comp. Outputs | 10 | 15 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | 2M/ PVC | A | 6 | A11 |
| **BC10-Q14-AN4X2-V1131** 2530011 | | 10 | 15 | 3-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | -- | B | 3 | A11 |
| **BC10-Q14-AN4X2-V1131/S400** 2530006 | Rear LED | 10 | 15 | 3-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | -- | B | 3 | A11 |
| **BC10-Q14-AP4X2-V1131** 2530002 | | 10 | 15 | 3-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | -- | B | 4 | A11 |
| **BC10-Q14-AP4X2-V1131/S400** 2530004 | Rear LED | 10 | 15 | 3-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | -- | B | 4 | A11 |

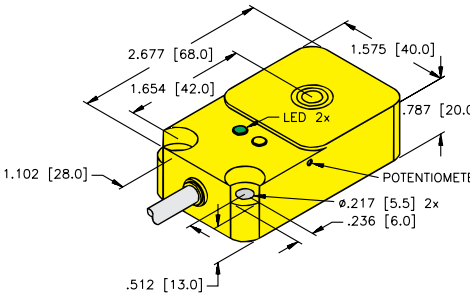
We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | Q20

## Top Sensing Qpak Housing with DC or AC Outputs

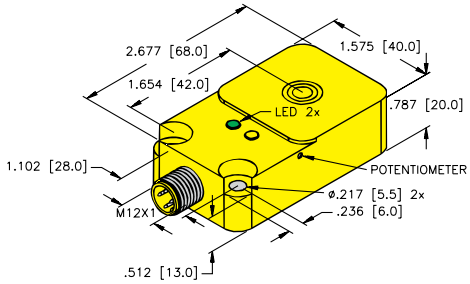
| Housing Style | Dimension Drawings |
|---|---|

A



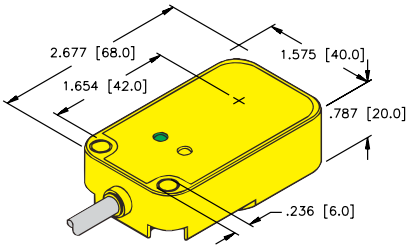

20 mm - Potted-In Cable

B




20 mm - Eurofast Connector

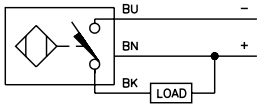
C




20 mm - Potted-In Cable

### Wiring Diagrams/Mating Cordsets

1

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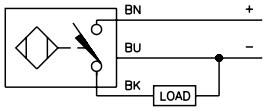


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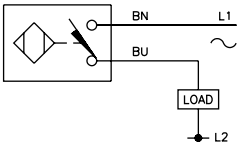
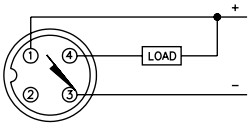
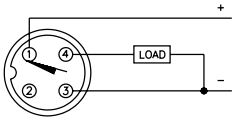



4



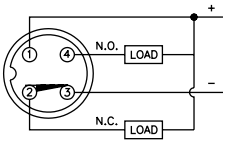

Mating Cordset: RK 4T-*

5



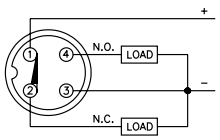

Mating Cordset: RK 4T-*

6




Mating Cordset: RK 4.4T-*

7




Mating Cordset: RK 4.4T-*

### A11 — 3 and 4-wire DC Capacitive - (AP, RP, AN, RN, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Reverse Polarity Protection: | Incorporated |
| Differential Travel (Hysteresis): | 2-20% (5% typical) | Wire-Break Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Transient Protection: | Per EN 60947-5-2 |
| Trigger Current for Short Circuit Protection: | ≥220 mA | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| No-Load Current: | ≤15 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Power-On Effect: | Per IEC 947-5-2 | Temperature Drift: | <±20% of Rated Operating Distance |

### A12 — 2-wire AC Capacitive - (AZ, RZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | 2-20% (5% typical) | Transient Protection: | Per EN 60947-5-2 |
| Continuous Load Current: | ≤500 mA | Shock: | 30 g, 11 ms |
| Voltage Drop Across Conducting Sensor: | ≤7.0 V | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Off-State (Leakage) Current: | ≤1.7 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Minimum Load Current: | ≥5.0 mA | Temperature Drift: | <±20% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | Q20

## Top Sensing Qpak Housing with DC or AC Outputs

| Part Number/ ID Number | Features | Embeddable Range (mm) | Nonembeddable Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing Material | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BC20-Q20-AN4X2** 2530110 | | 20 | 30 | 3-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | 2M/ PVC | A | 1 | A11 |
| **BC20-Q20-AN4X2/S400** 2530104 | Rear LED | 20 | 30 | 3-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | 2M/ PVC | C | 1 | A11 |
| **BC20-Q20-AP4X2** 2530100 | | 20 | 30 | 3-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | 2M/ PVC | A | 2 | A11 |
| **BC20-Q20-AZ3X2** 4352000 | | 20 | 30 | 2-wire AC | 20-250 VAC | 20 | ≤500 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | 2M/ PVC | A | 3 | A12 |
| **BC20-Q20-AZ3X2/S400** 2310005 | Rear LED | 20 | 30 | 2-wire AC | 20-250 VAC | 20 | ≤500 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | 2M/ PVC | C | 3 | A12 |
| **BC20-Q20-AN4X2-H1141** 2530111 | | 20 | 30 | 3-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | -- | B | 4 | A11 |
| **BC20-Q20-AP4X2-H1141** 2530101 | | 20 | 30 | 3-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | -- | B | 5 | A11 |
| **BC20-Q20-AP4X2-H1141/S400** 2530103 | Rear LED | 20 | 30 | 3-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | -- | B | 5 | A11 |
| **BC20-Q20-VN4X2-H1141** 2530131 | Comp. Outputs | 20 | 30 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | -- | B | 6 | A11 |
| **BC20-Q20-VN4X2-H1141/S400** 2530124 | Rear LED, Comp. Outputs | 20 | 30 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | -- | B | 6 | A11 |
| **BC20-Q20-VP4X2-H1141** 2530121 | Comp. Outputs | 20 | 30 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | -- | B | 7 | A11 |

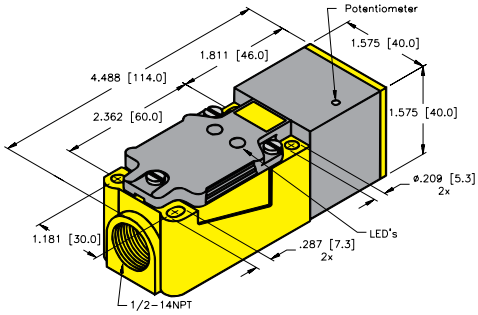
We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | CP40 & CP80

**Large Rectangular Housing with DC or AC Outputs**

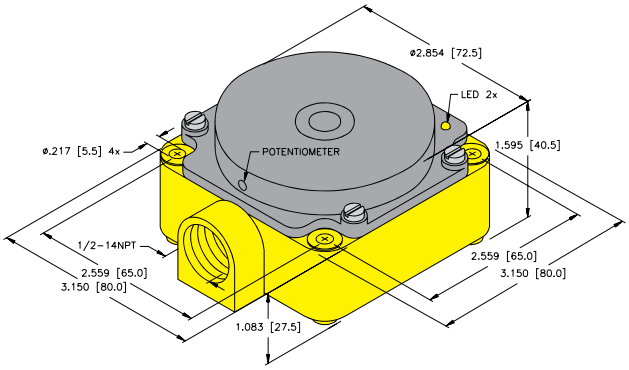
| Housing Style | Dimension Drawings |
|---|---|

A




40 mm - Terminal Chamber

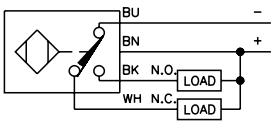
B




80 mm - Terminal Chamber

## Wiring Diagrams/Mating Cordsets

1

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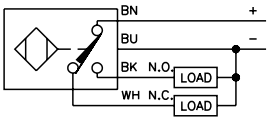


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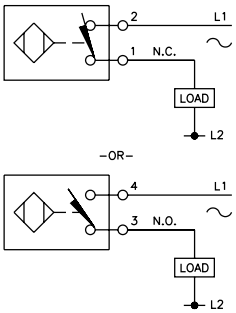



## A11 — 3 and 4-wire DC Capacitive - (AP, RP, AN, RN, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Reverse Polarity Protection: | Incorporated |
| Differential Travel (Hysteresis): | 2-20% (5% typical) | Wire-Break Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Transient Protection: | Per EN 60947-5-2 |
| Trigger Current for Short Circuit Protection: | ≥220 mA | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| No-Load Current: | ≤15 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Power-On Effect: | Per IEC 947-5-2 | Temperature Drift: | <±20% of Rated Operating Distance |

## A12 — 2-wire AC Capacitive - (AZ, FZ, RZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | 2-20% (5% typical) | Transient Protection: | Per EN 60947-5-2 |
| Continuous Load Current: | ≤500 mA | Shock: | 30 g, 11 ms |
| Voltage Drop Across Conducting Sensor: | ≤7.0 V | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Off-State (Leakage) Current: | ≤1.7 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Minimum Load Current: | ≥5.0 mA | Temperature Drift: | <±20% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | CP40 & CP80

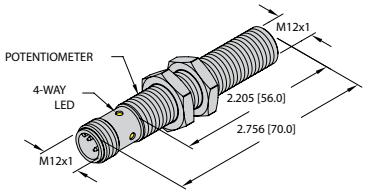
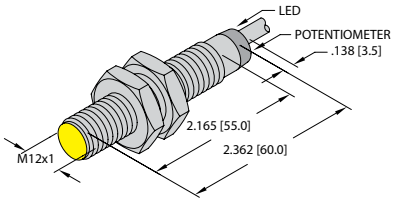
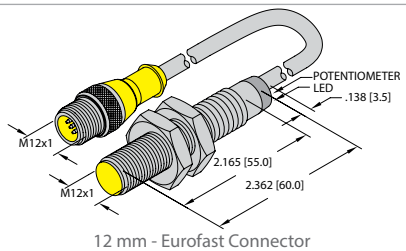
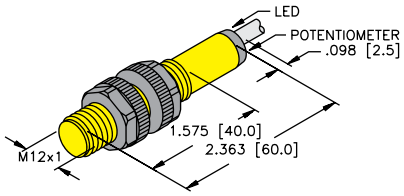
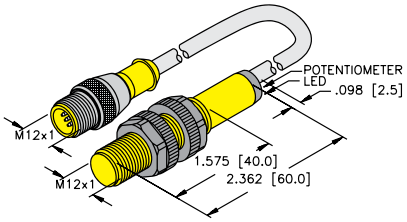
## Large Rectangular Housing with DC or AC Outputs

| Part Number/ ID Number | Features | Embeddable Range (mm) | Nonembeddable Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing Material | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BC20-CP40-VN4X2/S10** 25157 | Comp. Outputs | 20 | 30 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | A | 1 | A11 |
| **BC20-CP40-VP4X2/S10** 25156 | Comp. Outputs | 20 | 30 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | A | 2 | A11 |
| **BC20-CP40-FZ3X2/S10** 23115 | Prog. Outputs | 20 | 30 | 2-wire AC | 20-250 VAC | 20 | ≤500 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | A | 3 | A12 |
| **NC50-CP80-VN4X2/S10** 2580112 | Comp. Outputs | NA | 50 | 4-wire DC NPN | 10-65 VDC | 200 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | B | 1 | A11 |
| **NC50-CP80-VP4X2/S10** 2580212 | Comp. Outputs | NA | 50 | 4-wire DC PNP | 10-65 VDC | 200 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | B | 2 | A11 |
| **NC50-CP80-FZ3X2/S10** 2310610 | Prog. Outputs | NA | 50 | 2-wire AC | 20-250 VAC | 20 | ≤500 | -25 to +70 | IP67 | PBT-GF30-V0 | GN | YE | B | 3 | A12 |

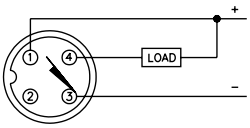
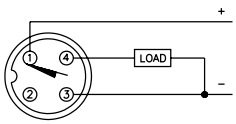
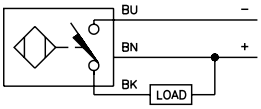
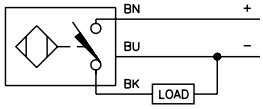
We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | 12 mm

**Threaded Barrel with DC Outputs**

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   12 mm - Eurofast Connector | B   12 mm - Potted-In Cable |
| C   12 mm - Eurofast Connector | D   12 mm - Potted-In Cable | E   12 mm - Eurofast Connector |

**Wiring Diagrams/Mating Cordsets**

| 1 | 2 | 3 | 4 |
|---|---|---|---|
|   Mating Cordset: RK 4T-* |   Mating Cordset: RK 4T-* |   |   |

**A11** — **3 and 4-wire DC Capacitive - (AP, RP, AN, RN, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Reverse Polarity Protection: | Incorporated |
| Differential Travel (Hysteresis): | 2-20% (5% typical) | Wire-Break Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Transient Protection: | Per EN 60947-5-2 |
| Trigger Current for Short Circuit Protection: | ≥220 mA | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| No-Load Current: | ≤15 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Power-On Effect: | Per IEC 947-5-2 | Temperature Drift: | <±20% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | 12 mm

## Threaded Barrel with DC Outputs

| Part Number/ ID Number | Features | Embeddable Range (mm) | Nonembeddable Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing Material | Front Cap/Face | End Cap Material | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BC3-M12-AP6X-H1141** 2601011 | | 3 | 3 | 3-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | CPB | ABS | -- | N/A | YE | -- | A | 2 | A11 |
| **BC3-M12-AN6X** 2601100 | | 3 | 3 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | CPB | ABS | PA | N/A | YE | 2M/ PVC | B | 3 | A11 |
| **BC3-M12-AP6X** 2601000 | | 3 | 3 | 3-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | CPB | ABS | PA | N/A | YE | 2M/ PVC | B | 4 | A11 |
| **BC3-M12-AN6X-0.2-RS4T** 2601190 | | 3 | 3 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | CPB | ABS | PA | N/A | YE | 0.2M/ PVC | C | 1 | A11 |
| **BC3-M12-AP6X-0.2-RS4T** 2601091 | | 3 | 3 | 3-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | CPB | ABS | PA | N/A | YE | 0.2M/ PVC | C | 2 | A11 |
| **BC3-S12-AN6X** 2601300 | | 3 | 4.5 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA 12-GF30 | PA 12-GF30 | PA | N/A | YE | 2M/ PVC | D | 3 | A11 |
| **BC3-S12-AP6X** 2601200 | | 3 | 4.5 | 3-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA 12-GF30 | PA 12-GF30 | PA | N/A | YE | 2M/ PVC | D | 4 | A11 |
| **BC3-S12-AP6X/S100** 2601201 | High Temp. 100 °C | 3 | 4.5 | 3-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +100 | IP67 | PA 12-GF30 | PA 12-GF30 | PA | N/A | YE | 2M/ PVC | D | 4 | A11 |
| **BC3-S12-AN6X-0.2-RS4T** 2601390 | | 3 | 4.5 | 3-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA 12-GF30 | PA 12-GF30 | PA | N/A | YE | 0.2M/ PVC | E | 1 | A11 |
| **BC3-S12-AP6X-0.2-RS4T** 2601291 | | 3 | 4.5 | 3-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA 12-GF30 | PA 12-GF30 | PA | N/A | YE | 0.2M/ PVC | E | 2 | A11 |

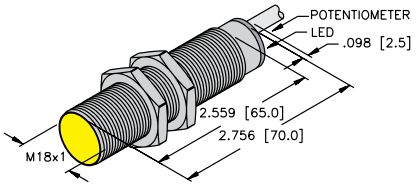
We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | 18 mm

**Metal Threaded Barrel with DC or AC Outputs**

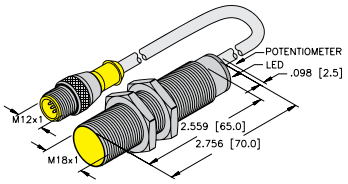
| Housing Style | Dimension Drawings |
|---|---|

A



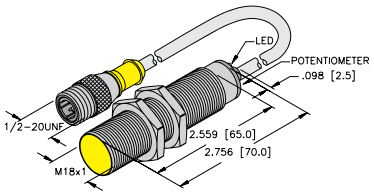

18 mm - Potted-In Cable

B




18 mm - Eurofast Connector

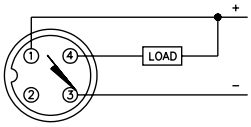
C




18 mm - Microfast Connector

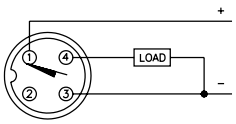
## Wiring Diagrams/Mating Cordsets

1



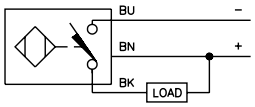

Mating Cordset: RK 4T-*

2




Mating Cordset: RK 4T-*

3

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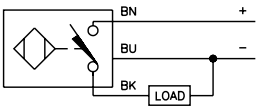


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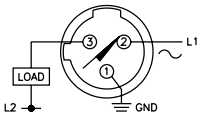
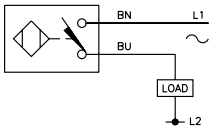



Mating Cordset: KB 3T-*

6




### A11 — 3 and 4-wire DC Capacitive - (AP, RP, AN, RN, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Reverse Polarity Protection: | Incorporated |
| Differential Travel (Hysteresis): | 2-20% (5% typical) | Wire-Break Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Transient Protection: | Per EN 60947-5-2 |
| Trigger Current for Short Circuit Protection: | ≥220 mA | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| No-Load Current: | ≤15 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Power-On Effect: | Per IEC 947-5-2 | Temperature Drift: | <±20% of Rated Operating Distance |

### A12 — 2-wire AC Capacitive - (AZ, FZ, RZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | 2-20% (5% typical) | Transient Protection: | Per EN 60947-5-2 |
| Continuous Load Current: | ≤500 mA | Shock: | 30 g, 11 ms |
| Voltage Drop Across Conducting Sensor: | ≤7.0 V | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Off-State (Leakage) Current: | ≤1.7 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Minimum Load Current: | ≥5.0 mA | Temperature Drift: | <±20% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | 18 mm

**Metal Threaded Barrel with DC or AC Outputs**

| Part Number/ ID Number | Embeddable Range (mm) | Nonembeddable Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing Material | Front Cap/Face | End Cap Material | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BC5-M18-AN4X** 2504002 | 5 | 5 | 3-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | CPB | PBT-G30-V0 | PUR | N/A | YE | 2M/PVC | A | 3 | A11 |
| **BC5-M18-AP4X** 2504001 | 5 | 5 | 3-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | CPB | PBT-G30-V0 | PUR | N/A | YE | 2M/PVC | A | 4 | A11 |
| **BC5-M18-AZ3X** 2305000 | 5 | 5 | 2-wire AC | 20-250 VAC | 20 | ≤500 | -25 to +70 | IP67 | CPB | PBT-G30-V0 | PUR | N/A | YE | 2M/PVC | A | 6 | A12 |
| **BC5-M18-AN4X-0.2-RS4T** 2504091 | 5 | 5 | 3-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | CPB | PBT-G30-V0 | PUR | N/A | YE | 0.2M/ PVC | B | 1 | A11 |
| **BC5-M18-AP4X-0.2-RS4T** 2504090 | 5 | 5 | 3-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | CPB | PBT-G30-V0 | PUR | N/A | YE | 0.2M/ PVC | B | 2 | A11 |
| **BC5-M18-AZ3X-0.2-SB3T** 2305090 | 5 | 5 | 2-wire AC | 20-250 AC | 20 | ≤500 | -25 to +70 | IP67 | CPB | PBT-G30-V0 | PUR | N/A | YE | 0.2M/ PVC | C | 5 | A12 |

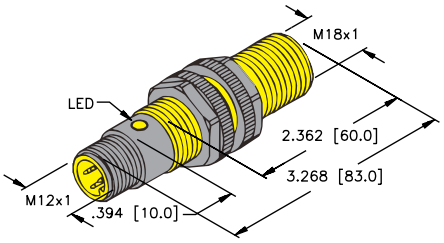
We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | 18 mm

## Metal Threaded Barrel with DC or AC Outputs

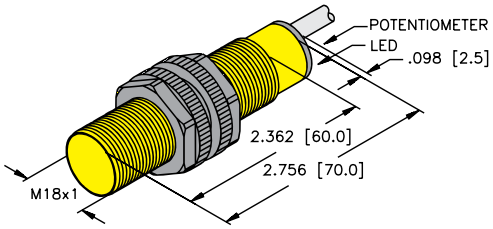
| Housing Style | Dimension Drawings |
|---|---|

A



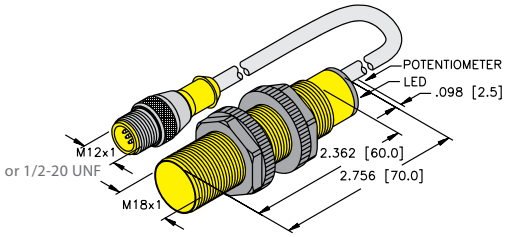

18 mm - Eurofast Connector

B




18 mm - Potted-In Cable

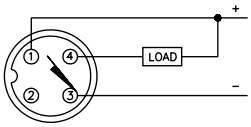
C




18 mm - Molded Connector

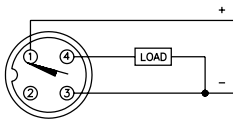
### Wiring Diagrams/Mating Cordsets

1



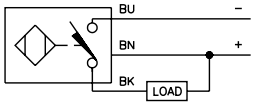

Mating Cordset: RK 4T-*

2

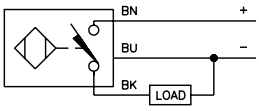



Mating Cordset: RK 4T-*

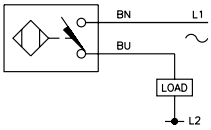
3



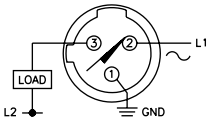

4




5




6




Mating Cordset: KB 3T-*

### A11 — 3 and 4-wire DC Capacitive - (AP, RP, AN, RN, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Reverse Polarity Protection: | Incorporated |
| Differential Travel (Hysteresis): | 2-20% (5% typical) | Wire-Break Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Transient Protection: | Per EN 60947-5-2 |
| Trigger Current for Short Circuit Protection: | ≥220 mA | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| No-Load Current: | ≤15 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Power-On Effect: | Per IEC 947-5-2 | Temperature Drift: | <±20% of Rated Operating Distance |

### A12 — 2-wire AC Capacitive - (AZ, FZ, RZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | 2-20% (5% typical) | Transient Protection: | Per EN 60947-5-2 |
| Continuous Load Current: | ≤500 mA | Shock: | 30 g, 11 ms |
| Voltage Drop Across Conducting Sensor: | ≤7.0 V | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Off-State (Leakage) Current: | ≤1.7 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Minimum Load Current: | ≥5.0 mA | Temperature Drift: | <±20% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | 18 mm

## Metal Threaded Barrel with DC or AC Outputs

| Part Number/ ID Number | Features | Embeddable Range (mm) | Nonembeddable Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing Material | End Cap Material | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BC5-S18-AN4X-H1141/S250** 2503108 | | 5 | 7.5 | 3-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA 12-GF30 | PUR | N/A | YE | -- | A | 1 | A11 |
| **BC5-S18-AP4X-H1141/S250** 2503602 | | 5 | 7.5 | 3-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA 12-GF30 | PUR | N/A | YE | -- | A | 2 | A11 |
| **BC5-S18-AN4X** 25031 | | 5 | 7.5 | 3-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA 12-GF30 | PUR | N/A | YE | 2M/PVC | B | 3 | A11 |
| **BCF5-S18-AN4X** 2503012 | Noise Immune | 5 | 7.5 | 3-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA 12-GF30 | PUR | N/A | YE | 2M/PVC | B | 3 | A11 |
| **BC5-S18-AP4X** 25030 | | 5 | 7.5 | 3-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA 12-GF30 | PUR | N/A | YE | 2M/PVC | B | 4 | A11 |
| **BCF5-S18-AP4X** 2503011 | Noise Immune | 5 | 7.5 | 3-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA 12-GF30 | PUR | N/A | YE | 2M/PVC | B | 4 | A11 |
| **BCF5-S18-AP4X/S90** 2503014 | Noise Immune | 5 | 7.5 | 3-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA 12-GF30 | PUR | N/A | YE | 2M/PUR | B | 4 | A11 |
| **BC5-S18-AN4X-0.2-RS4T** 2503192 | | 5 | 7.5 | 3-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA 12-GF30 | PUR | N/A | YE | 0.2M/PVC | C | 1 | A11 |
| **BCF5-S18-AN4X-0.2-RS4T** 2503089 | Noise Immune | 5 | 7.5 | 3-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA 12-GF30 | PUR | N/A | YE | 0.2M/PVC | C | 1 | A11 |
| **BC5-S18-AP4X-0.2-RS4T** 2503492 | | 5 | 7.5 | 3-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA 12-GF30 | PUR | N/A | YE | 0.2M/PVC | C | 2 | A11 |
| **BCF5-S18-AP4X-0.2-RS4T** 2503099 | Noise Immune | 5 | 7.5 | 3-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA 12-GF30 | PUR | N/A | YE | 0.2M/PVC | C | 2 | A11 |
| **BC5-S18-AZ3X** 2305500 | | 5 | 7.5 | 2-wire AC | 20-250 VAC | 20 | ≤200 | -25 to +70 | IP67 | PA 12-GF30 | PUR | N/A | YE | 2M/PVC | B | 5 | A12 |
| **BC5-S18-AZ3X-0.2-SB3T** 2305590 | | 5 | 7.5 | 2-wire AC | 20-250 VAC | 20 | ≤500 | -25 to +70 | IP67 | PA12-GF30 | PUR | N/A | YE | 0.2M/PVC | C | 6 | A12 |

**Notes:**

/S250: Without switch point adjustment potentiometer

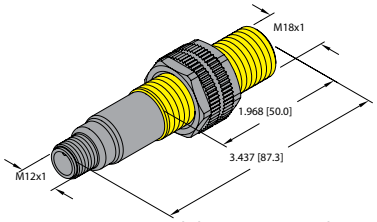
We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | 18 & 30 mm

**Plastic Threaded Barrels Configurable via IO-Link/Teach**

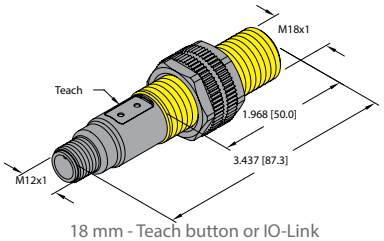
| Housing Style | Dimension Drawings |
|---|---|

A



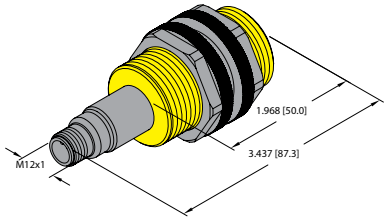

18 mm - Teach-by-wire or IO-Link

B



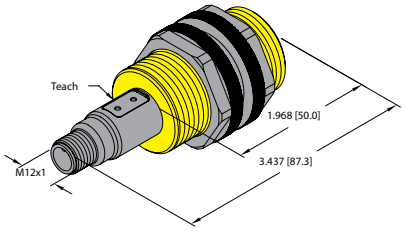

18 mm - Teach button or IO-Link

C




30 mm - Teach-by-wire or IO-Link

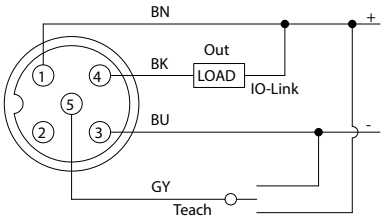
D




30 mm - Teach button or IO-Link

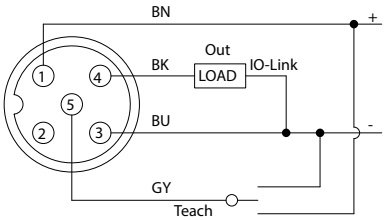
## Wiring Diagrams/Mating Cordsets

1




Mating Cordset: RK 4.5T-*

2




Mating Cordset: RK 4.5T-*

## A18 — 5-wire DC Teach Capacitive - (UP, UN)

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | 2-20% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤2.4 V |
| Off-State (Leakage) Current: | ≤0.1 mA |
| No-Load Current: | ≤15 mA |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |
| Temperature Drift: | <±20% of Rated Operating Distance |
| IO-Link: | V1.1 |

We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | 18 & 30 mm

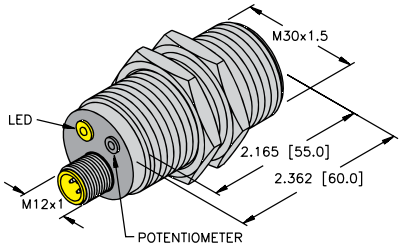
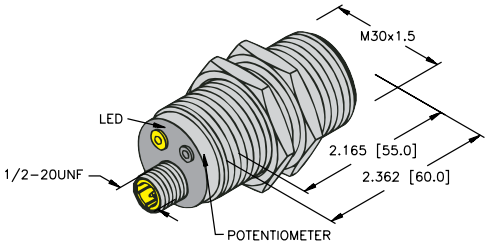
**Plastic Threaded Barrels Configurable via IO-Link/Teach**

| Part Number/ ID Number | Features | Embeddable Range (mm) | Nonembeddable Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing Material | End Cap Material | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BCT5-S18-UP6X2-H1151** 2101300 | Teach-by-wire or IO-Link | 5 | 7.5 | 4-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA12-GF30, PEI | PA | GN | YE | A | 1 | A18 |
| **BCT5-S18-UN6X2-H1151** 2101400 | Teach-by-wire or IO-Link | 5 | 7.5 | 4-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA12-GF30, PEI | PA | GN | YE | A | 2 | A18 |
| **BCT5-S18-UP6X2T-H1151** 2101100 | Teach buttons or IO-Link | 5 | 7.5 | 4-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA12-GF30, PEI | PA | GN | YE | B | 1 | A18 |
| **BCT5-S18-UN6X2T-H1151** 2101200 | Teach buttons or IO-Link | 5 | 7.5 | 4-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA12-GF30, PEI | PA | GN | YE | B | 2 | A18 |
| **BCT10-S30-UP6X2-H1151** 2101700 | Teach-by-wire or IO-Link | 10 | 15 | 4-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA12-GF30, PEI | PA | GN | YE | C | 1 | A18 |
| **BCT10-S30-UN6X2-H1151** 2101800 | Teach-by-wire or IO-Link | 10 | 15 | 4-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA12-GF30, PEI | PA | GN | YE | C | 2 | A18 |
| **BCT10-S30-UP6X2T-H1151** 2101500 | Teach buttons or IO-Link | 10 | 15 | 4-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA12-GF30, PEI | PA | GN | YE | D | 1 | A18 |
| **BCT10-S30-UN6X2T-H1151** 2101600 | Teach buttons or IO-Link | 10 | 15 | 4-wire DC NPN | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA12-GF30, PEI | PA | GN | YE | D | 2 | A18 |

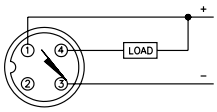
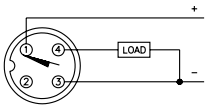
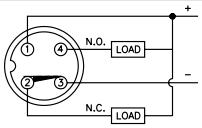
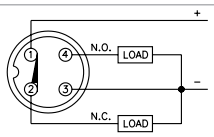
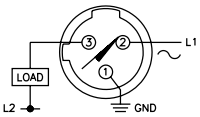
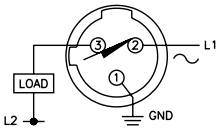
We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | 30 mm

## Metal Threaded Barrel with DC or AC Outputs

| Housing Style | Dimension Drawings |
|---|---|
| | A   30 mm - Eurofast Connector |
| B   30 mm - Microfast Connector | |

### Wiring Diagrams/Mating Cordsets

| | | |
|---|---|---|
| 1   Mating Cordset: RK 4T-* | 2   Mating Cordset: RK 4T-* | 3   Mating Cordset: RK 4.4T-* |
| 4   Mating Cordset: RK 4.4T-* | 5   Mating Cordset: KB 3T-* | 6   Mating Cordset: KB 3T-* |

### A11 — 3 and 4-wire DC Capacitive - (AP, RP, AN, RN, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Reverse Polarity Protection: | Incorporated |
| Differential Travel (Hysteresis): | 2-20% (5% typical) | Wire-Break Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Transient Protection: | Per EN 60947-5-2 |
| Trigger Current for Short Circuit Protection: | ≥220 mA | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| No-Load Current: | ≤15 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Power-On Effect: | Per IEC 947-5-2 | Temperature Drift: | <±20% of Rated Operating Distance |

### A12 — 2-wire AC Capacitive - (AZ, RZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | 2-20% (5% typical) | Transient Protection: | Per EN 60947-5-2 |
| Continuous Load Current: | ≤500 mA | Shock: | 30 g, 11 ms |
| Voltage Drop Across Conducting Sensor: | ≤7.0 V | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Off-State (Leakage) Current: | ≤1.7 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Minimum Load Current: | ≥5.0 mA | Temperature Drift: | <±20% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | 30 mm

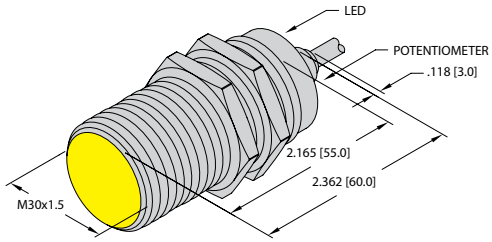
## Metal Threaded Barrel with DC or AC Outputs

| Part Number/ ID Number | Features | Embeddable Range (mm) | Nonembeddable Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing Material | Front Cap/Face | End Cap Material | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BC10-M30K-AN4X-H1141** 2503030 | | 10 | 10 | 3-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | CPB | PA 12-GF30 | PA 66-GF25-V0 | N/A | YE | A | 1 | A11 |
| **BC10-M30K-AP4X-H1141** 2503026 | | 10 | 10 | 3-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | CPB | PA 12-GF30 | PA 66-GF25-V0 | N/A | YE | A | 2 | A11 |
| **BC10-M30K-VN4X-H1141** 2503033 | Comp. Outputs | 10 | 10 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | CPB | PA 12-GF30 | PA 66-GF25-V0 | N/A | YE | A | 3 | A11 |
| **BC10-M30K-VP4X-H1141** 2503035 | Comp. Outputs | 10 | 10 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | CPB | PA 12-GF30 | PA 66-GF25-V0 | N/A | YE | A | 4 | A11 |
| **BC10-M30K-AZ3X-B3131** 2503034 | | 10 | 10 | 2-wire AC N.O. | 20-250 AC | 20 | ≤500 | -25 to +70 | IP67 | CPB | PA 12-GF30 | PA 66-GF25-V0 | N/A | YE | B | 5 | A12 |
| **BC10-M30K-RZ3X-B3131** 2503023 | | 10 | 10 | 2-wire AC N.C. | 20-250 AC | 20 | ≤500 | -25 to +70 | IP67 | CPB | PA 12-GF30 | PA 66-GF25-V0 | N/A | YE | B | 6 | A12 |

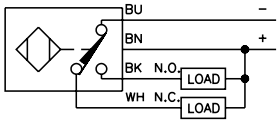
We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | 30 mm

## Metal Threaded Barrel with DC or AC Outputs

| Housing Style | Dimension Drawings |
|---|---|
| | A   30 mm - Potted-In Cable |

### Wiring Diagrams/Mating Cordsets

1
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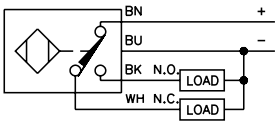


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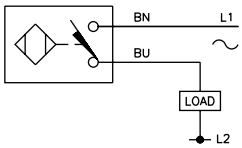


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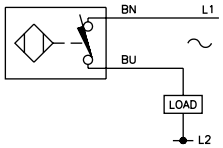



### A11 — 3 and 4-wire DC Capacitive - (AP, RP, AN, RN, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Reverse Polarity Protection: | Incorporated |
| Differential Travel (Hysteresis): | 2-20% (5% typical) | Wire-Break Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Transient Protection: | Per EN 60947-5-2 |
| Trigger Current for Short Circuit Protection: | ≥220 mA | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| No-Load Current: | ≤15 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Power-On Effect: | Per IEC 947-5-2 | Temperature Drift: | <±20% of Rated Operating Distance |

### A12 — 2-wire AC Capacitive - (AZ, RZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | 2-20% (5% typical) | Transient Protection: | Per EN 60947-5-2 |
| Continuous Load Current: | ≤500 mA | Shock: | 30 g, 11 ms |
| Voltage Drop Across Conducting Sensor: | ≤7.0 V | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Off-State (Leakage) Current: | ≤1.7 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Minimum Load Current: | ≥5.0 mA | Temperature Drift: | <±20% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | 30 mm

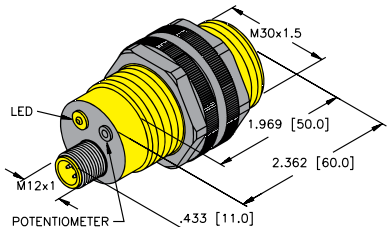
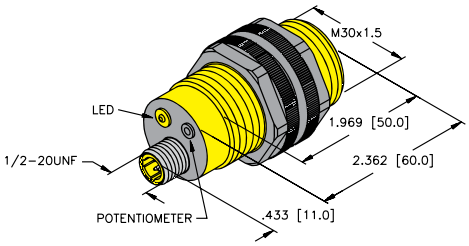
## Metal Threaded Barrel with DC or AC Outputs

| Part Number/ ID Number | Features | Embeddable Range (mm) | Nonembeddable Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing Material | Front Cap/Face | End Cap Material | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BC10-M30K-VN4X** 2503024 | Comp. Outputs | 10 | 10 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | CPB | PA 12-GF30 | PA 66-GF25-V0 | N/A | YE | 2M/PVC | A | 1 | A11 |
| **BC10-M30K-VP4X** 2503022 | Comp. Outputs | 10 | 10 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | CPB | PA 12-GF30 | PA 66-GF25-V0 | N/A | YE | 2M/PVC | A | 2 | A11 |
| **BC10-M30K-AZ3X** 2503031 | | 10 | 10 | 2-wire AC N.O. | 20-250 VAC | 20 | ≤500 | -25 to +70 | IP67 | CPB | PA 12-GF30 | PA 66-GF25-V0 | N/A | YE | 2M/PVC | A | 3 | A12 |
| **BC10-M30K-RZ3X** 2503025 | | 10 | 10 | 2-wire AC N.C. | 20-250 VAC | 20 | ≤500 | -25 to +70 | IP67 | CPB | PA 12-GF30 | PA 66-GF25-V0 | N/A | YE | 2M/PVC | A | 4 | A12 |

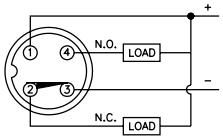
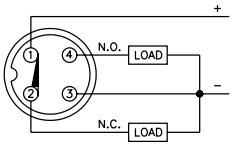
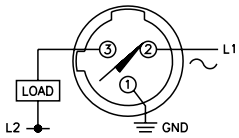
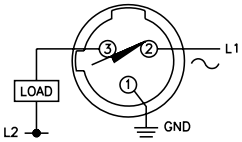
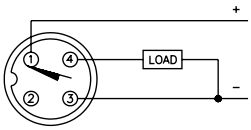
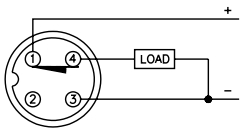
We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | 30 mm

## Plastic Threaded Barrels with Connectors and AC/DC Outputs

| Housing Style | Dimension Drawings |
|---|---|
| | A   30 mm - Eurofast Connector |
| B   30 mm - Microfast Connector | |

### Wiring Diagrams/Mating Cordsets

| | | |
|---|---|---|
| 1   Mating Cordset: RK 4.4T-* | 2   Mating Cordset: RK 4.4T-* | 3   Mating Cordset: KB 3T-* |
| 4   Mating Cordset: KB 3T-* | 5   Mating Cordset: RK 4T-* | 6   Mating Cordset: RK 4T-* |

### A11 — 3 and 4-wire DC Capacitive - (AP, RP, AN, RN, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Reverse Polarity Protection: | Incorporated |
| Differential Travel (Hysteresis): | 2-20% (5% typical) | Wire-Break Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Transient Protection: | Per EN 60947-5-2 |
| Trigger Current for Short Circuit Protection: | ≥220 mA | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| No-Load Current: | ≤15 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Power-On Effect: | Per IEC 947-5-2 | Temperature Drift: | <±20% of Rated Operating Distance |

### A12 — 2-wire AC Capacitive - (AZ, RZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | 2-20% (5% typical) | Transient Protection: | Per EN 60947-5-2 |
| Continuous Load Current: | ≤500 mA | Shock: | 30 g, 11 ms |
| Voltage Drop Across Conducting Sensor: | ≤7.0 V | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Off-State (Leakage) Current: | ≤1.7 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Minimum Load Current: | ≥5.0 mA | Temperature Drift: | <±20% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | 30 mm

## Plastic Threaded Barrels with Connectors and AC/DC Outputs

| Part Number/ ID Number | Features | Embeddable Range (mm) | Nonembeddable Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing Material | End Cap Material | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BCC10-S30-AP4X-H1141** 2503038 | Low Dielec-tric Targets | 10 | 10 | 3-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA12-GF30 | PA 66-GF25-V0 | N/A | YE | A | 5 | A11 |
| **BCC10-S30-RP4X-H1143** 1542562 | Low Dielec-tric Targets | 10 | 10 | 3-wire DC PNP N.C. | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA12-GF30 | PA 66-GF25-V0 | N/A | YE | A | 6 | A11 |
| **BC10-S30-VN4X-H1141** 2506010 | Comp. Outputs | 10 | 15 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA12-GF30 | PA 66-GF25-V0 | N/A | YE | A | 1 | A11 |
| **BCF10-S30-VN4X-H1141** 2506016 | Noise Immune | 10 | 15 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA12-GF30 | PA 66-GF25-V0 | N/A | YE | A | 1 | A11 |
| **BC10-S30-VP4X-H1141** 2506100 | Comp. Outputs | 10 | 15 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA12-GF30 | PA 66-GF25-V0 | N/A | YE | A | 2 | A11 |
| **BCC10-S30-VP4X-H1141** 2503043 | Low Dielec-tric Targets | 10 | 10 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA12-GF30 | PA 66-GF25-V0 | N/A | YE | A | 2 | A11 |
| **BCF10-S30-VP4X-H1141** 2506117 | Noise Immune | 10 | 15 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA12-GF30 | PA 66-GF25-V0 | N/A | YE | A | 2 | A11 |
| **BC10-S30-AZ3X-B3131** 2310710 | | 10 | 15 | 2-wire AC N.O. | 20-250 VAC | 20 | ≤500 | -25 to +70 | IP67 | PA12-GF30 | PA 66-GF25-V0 | N/A | YE | B | 3 | A12 |
| **BCF10-S30-AZ3X-B3131** 2506012 | Noise Immune | 10 | 15 | 2-wire AC N.O. | 20-250 VAC | 20 | ≤500 | -25 to +70 | IP67 | PA12-GF30 | PA 66-GF25-V0 | N/A | YE | B | 3 | A12 |
| **BC10-S30-RZ3X-B3131** 2310810 | | 10 | 15 | 2-wire AC N.C. | 20-250 VAC | 20 | ≤500 | -25 to +70 | IP67 | PA12-GF30 | PA 66-GF25-V0 | N/A | YE | B | 4 | A12 |
| **BCF10-S30-RZ3X-B3131** 2506014 | Noise Immune | 10 | 15 | 2-wire AC N.C. | 20-250 VAC | 20 | ≤500 | -25 to +70 | IP67 | PA12-GF30 | PA 66-GF25-V0 | N/A | YE | B | 4 | A12 |

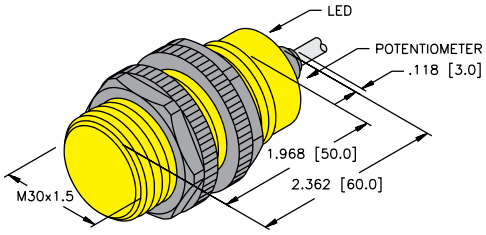
We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | 30 mm

**Plastic Threaded Barrel with DC or AC Outputs**

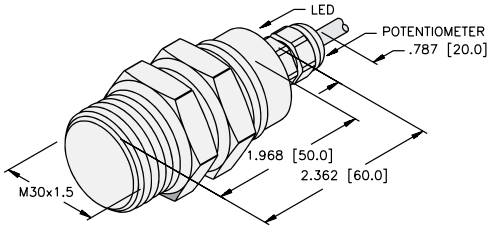
| Housing Style | Dimension Drawings |
|---|---|

A




30 mm - Potted-In Cable

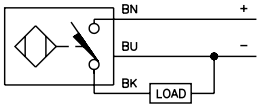
B




30 mm - Potted-In Cable

**Wiring Diagrams/Mating Cordsets**

1

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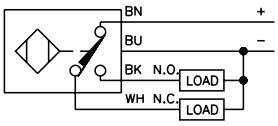


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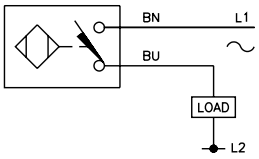
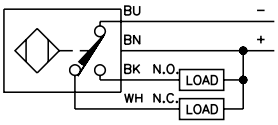



4




**A11** — **3 and 4-wire DC Capacitive - (AP, RP, AN, RN, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Reverse Polarity Protection: | Incorporated |
| Differential Travel (Hysteresis): | 2-20% (5% typical) | Wire-Break Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Transient Protection: | Per EN 60947-5-2 |
| Trigger Current for Short Circuit Protection: | ≥220 mA | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| No-Load Current: | ≤15 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Power-On Effect: | Per IEC 947-5-2 | Temperature Drift: | <±20% of Rated Operating Distance |

**A12** — **2-wire AC Capacitive - (AZ, RZ)**

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | 2-20% (5% typical) | Transient Protection: | Per EN 60947-5-2 |
| Continuous Load Current: | ≤500 mA | Shock: | 30 g, 11 ms |
| Voltage Drop Across Conducting Sensor: | ≤7.0 V | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Off-State (Leakage) Current: | ≤1.7 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Minimum Load Current: | ≥5.0 mA | Temperature Drift: | <±20% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | 30 mm

## Plastic Threaded Barrel with DC or AC Outputs

| Part Number/ ID Number | Features | Embeddable Range (mm) | Nonembeddable Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing Material | End Cap Material | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BCC10-S30-AP4X** 2503038 | Low Dielec-tric Targets | 10 | 10 | 3-wire DC PNP | 10-30 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA 12-GF30 | PA 66-GF25-V0 | N/A | YE | A | 1 | A11 |
| **BC10-S30-VN4X** 2506000 | Comp. Outputs | 10 | 15 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA 12-GF30 | PA 66-GF25-V0 | N/A | YE | A | 2 | A11 |
| **BCF10-S30-VN4X** 2506011 | Noise Immune | 10 | 15 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA 12-GF30 | PA 66-GF25-V0 | N/A | YE | A | 3 | A11 |
| **BC10-S30-VP4X** 2506110 | Comp. Outputs | 10 | 15 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA 12-GF30 | PA 66-GF25-V0 | N/A | YE | A | 2 | A11 |
| **BCF10-S30-VP4X** 2506111 | Noise Immune | 10 | 15 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PA 12-GF30 | PA 66-GF25-V0 | N/A | YE | A | 2 | A11 |
| **BC10-S30-AZ3X** 2310700 | | 10 | 15 | 2-wire AC | 20-250 VAC | 20 | ≤500 | -25 to +70 | IP67 | PA 12-GF30 | PA 66-GF25-V0 | N/A | YE | A | 4 | A12 |
| **BCF10-S30-AZ3X** 2506015 | Noise Immune | 10 | 15 | 2-wire AC | 20-250 VAC | 20 | ≤500 | -25 to +70 | IP67 | PA 12-GF30 | PA 66-GF25-V0 | N/A | YE | A | 4 | A12 |
| **BC10-PT30-VN4X2** 2507020 | Chemical Resistant | 10 | 15 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PVDF | PVDF | GN | YE | B | 2 | A11 |
| **BC10-PT30-VP4X2** 2507010 | Chemical Resistant | 10 | 15 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PVDF | PVDF | GN | YE | B | 3 | A11 |
| **BC10-PT30-AZ3X** 2350001 | Chemical Resistant | 10 | 15 | 2-wire AC | 20-250 VAC | 20 | ≤500 | -25 to +70 | IP67 | PVDF | PVDF | N/A | YE | B | 4 | A12 |

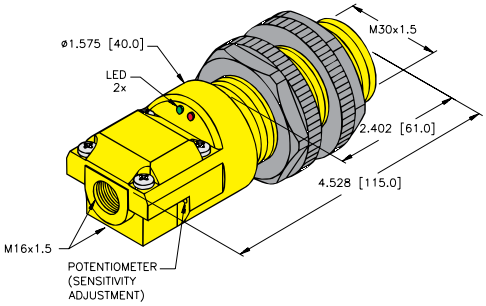
We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | 30, 34, & 40 mm

**Large Diameter Plastic Barrels with Terminal Chamber and 4-Wire DC Outputs**

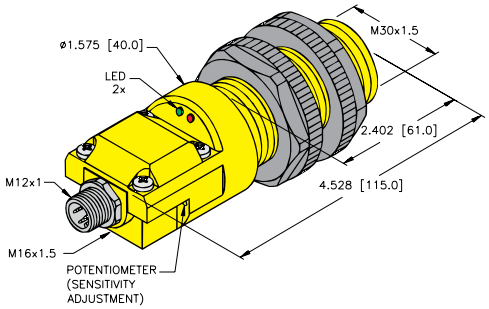
| Housing Style | Dimension Drawings |
|---|---|

A



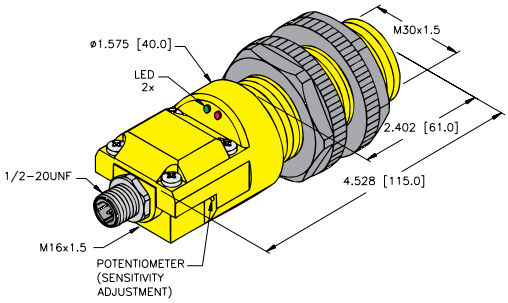

30 mm - Terminal Chamber

B



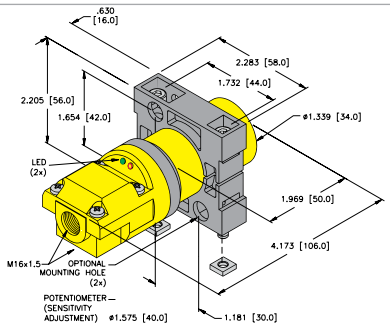

30 mm - Eurofast Connector

C



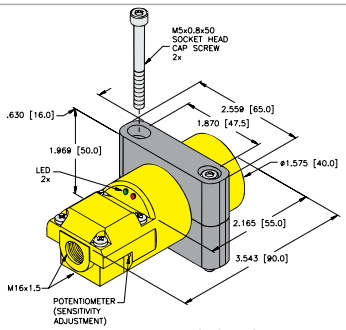

30 mm - Minifast Connector

D




34 mm - Terminal Chamber

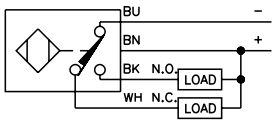
E



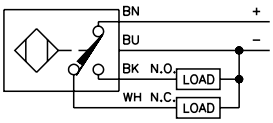

40 mm - Terminal Chamber

## Wiring Diagrams/Mating Cordsets

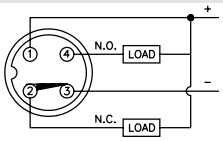
1




2

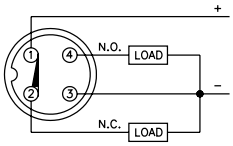



3



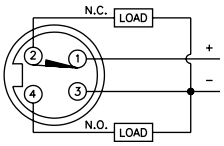

Mating Cordset: RK 4.4T-*

4




Mating Cordset: RK 4.4T-*

5




Mating Cordset: RKM 40-*M

## A11 — 3 and 4-wire DC Capacitive - (AP, RP, AN, RN, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Reverse Polarity Protection: | Incorporated |
| Differential Travel (Hysteresis): | 2-20% (5% typical) | Wire-Break Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Transient Protection: | Per EN 60947-5-2 |
| Trigger Current for Short Circuit Protection: | ≥220 mA | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| No-Load Current: | ≤15 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Power-On Effect: | Per IEC 947-5-2 | Temperature Drift: | <±20% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | 30, 34, & 40 mm

**Large Diameter Plastic Barrels with Terminal Chamber and 4-Wire DC Outputs**

| Part Number/ ID Number | Features | Embeddable Range (mm) | Nonembeddable Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing Material | End Cap Material | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BC10-P30SR-VN4X2** 25051 | Comp. Outputs | 10 | 15 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | ABS | ABS | GN | YE | A | 1 | A11 |
| **BC10-P30SR-VN4X2-H1141** 2505192 | Comp. Outputs | 10 | 15 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | ABS | ABS | GN | YE | B | 3 | A11 |
| **BC10-P30SR-VP4X2** 25050 | Comp. Outputs | 10 | 15 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | ABS | ABS | GN | YE | A | 2 | A11 |
| **BC10-P30SR-VP4X2-H1141** 2505094 | Comp. Outputs | 10 | 15 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | ABS | ABS | GN | YE | B | 4 | A11 |
| **BC10-P30SR-VP4X2-B1141** 2505092 | Comp. Outputs | 10 | 15 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | ABS | ABS | GN | YE | C | 5 | A11 |
| **BC15-K34SR-VN4X2** 2502128 | Comp. Outputs | 15 | 23 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | ABS | GN | YE | D | 1 | A11 |
| **BC20-K40SR-VN4X2** 25101 | Comp. Outputs | 20 | 30 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | ABS | ABS | GN | YE | E | 1 | A11 |
| **BC20-K40SR-VP4X2** 25100 | Comp. Outputs | 20 | 30 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | ABS | ABS | GN | YE | E | 2 | A11 |

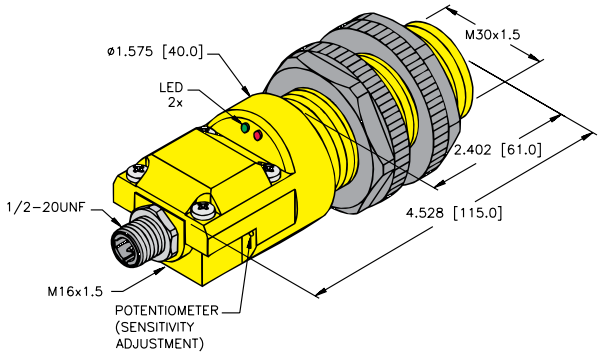
We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | 30 & 40 mm

**Large Diameter Plastic Barrels with Terminal Chamber and AC Outputs**

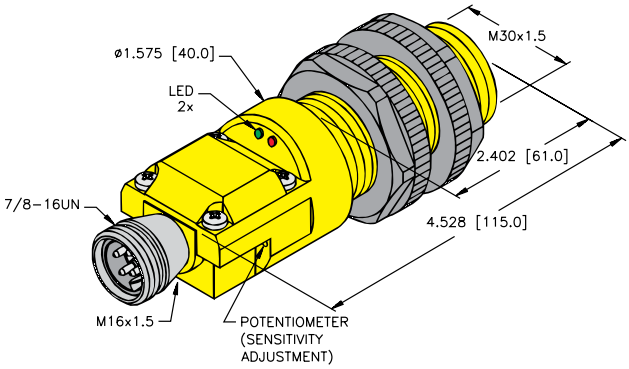
| Housing Style | Dimension Drawings |
|---|---|

A



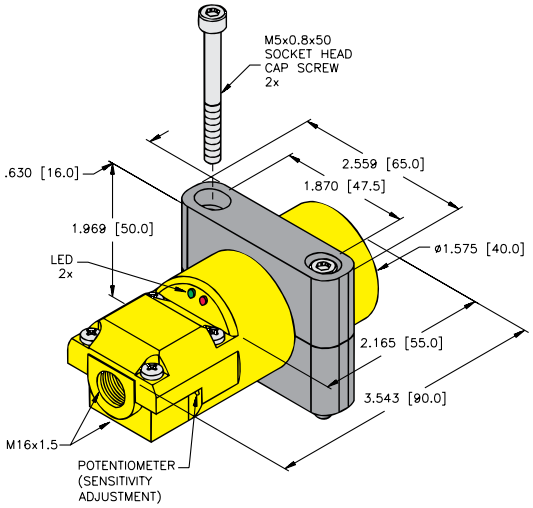

30 mm - Microfast Connector

B




30 mm - Minifast Connector

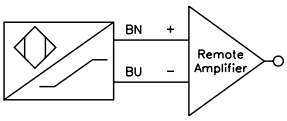
C




40 mm - Terminal Chamber

**Wiring Diagrams/Mating Cordsets**

1

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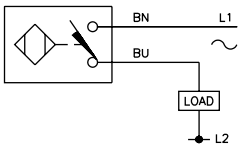
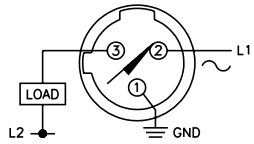



Mating Cordset: KB 3T-*

3




Mating Cordset: RK 30-*M; RKM 30-*M

**A12** — **2-wire AC Capacitive - (AZ, RZ)**

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | 2-20% (5% typical) | Transient Protection: | Per EN 60947-5-2 |
| Continuous Load Current: | ≤500 mA | Shock: | 30 g, 11 ms |
| Voltage Drop Across Conducting Sensor: | ≤7.0 V | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Off-State (Leakage) Current: | ≤1.7 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Minimum Load Current: | ≥5.0 mA | Temperature Drift: | <±20% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | 30 & 40 mm

**Large Diameter Plastic Barrels with Terminal Chamber and AC Outputs**

| Part Number/ ID Number | Features | Embeddable Range (mm) | Nonembeddable Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing Material | End Cap Material | Power LED | Output LED | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BC10-P30SR-FZ3X2-B3131** 2310491 | Comp. Outputs | 10 | 15 | 2-wire AC | 20-250 AC | 200 | ≤500 | -25 to +70 | IP67 | ABS | ABS | GN | YE | A | 2 | A12 |
| **BC10-P30SR-FZ3X2-B1131** 2310490 | Comp. Outputs | 10 | 15 | 2-wire AC | 20-250 AC | 20 | ≤500 | -25 to +70 | IP67 | ABS | ABS | GN | YE | B | 3 | A12 |
| **BC10-P30SR-FZ3X2-B2131** 2310493 | Comp. Outputs | 10 | 15 | 2-wire AC | 20-250 AC | 20 | ≤500 | -25 to +70 | IP67 | ABS | ABS | GN | YE | B | 3 | A12 |
| **BC20-K40SR-FZ3X2** 23103 | Prog. Outputs | 20 | 30 | 2-wire AC | 20-250 VAC | 20 | ≤500 | -25 to +70 | IP67 | ABS | ABS | GN | YE | C | 1 | A12 |

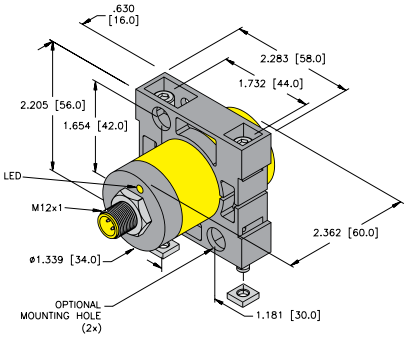
We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | K34

**Smooth Plastic Barrel with DC or AC Outputs**

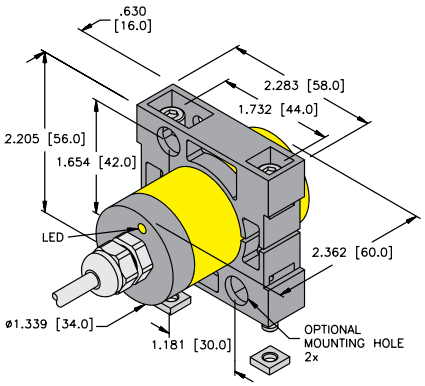
| Housing Style | Dimension Drawings |
|---|---|

A



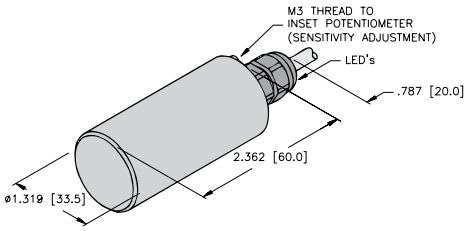

34 mm - Eurofast Connector

B




34 mm - Potted-In Cable

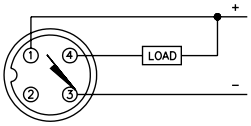
C




34 mm - Potted-In Cable

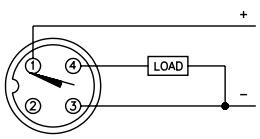
## Wiring Diagrams/Mating Cordsets

1



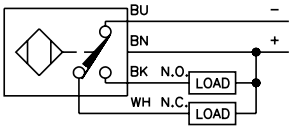

Mating Cordset: RK 4T-*

2




Mating Cordset: RK 4T-*

3

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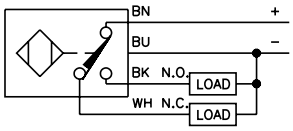
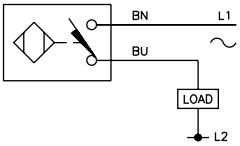



5




## A11 — 3 and 4-wire DC Capacitive - (AP, RP, AN, RN, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Reverse Polarity Protection: | Incorporated |
| Differential Travel (Hysteresis): | 2-20% (5% typical) | Wire-Break Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Transient Protection: | Per EN 60947-5-2 |
| Trigger Current for Short Circuit Protection: | ≥220 mA | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| No-Load Current: | ≤15 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Power-On Effect: | Per IEC 947-5-2 | Temperature Drift: | <±20% of Rated Operating Distance |

## A12 — 2-wire AC Capacitive - (AZ, RZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | 2-20% (5% typical) | Transient Protection: | Per EN 60947-5-2 |
| Continuous Load Current: | ≤500 mA | Shock: | 30 g, 11 ms |
| Voltage Drop Across Conducting Sensor: | ≤7.0 V | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Off-State (Leakage) Current: | ≤1.7 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Minimum Load Current: | ≥5.0 mA | Temperature Drift: | <±20% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | K34

## Smooth Plastic Barrel with DC or AC Outputs

| Part Number/ ID Number | Features | Embeddable Range (mm) | Nonembeddable Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing Material | End Cap Material | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BC15-K34-AN4X-H1141** 2502125 | | 15 | 23 | 3-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | ABS | N/A | YE | -- | A | 1 | A11 |
| **BC15-K34-AP4X-H1141** 2502126 | | 15 | 23 | 3-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | ABS | N/A | YE | -- | A | 2 | A11 |
| **BC15-K34-VN4X** 2502127 | Comp. Outputs | 15 | 23 | 4-wire DC NPN | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | ABS | N/A | YE | 2M/PVC | B | 3 | A11 |
| **BC15-K34-VP4X** 2502124 | Comp. Outputs | 15 | 23 | 4-wire DC PNP | 10-65 VDC | 100 | ≤200 | -25 to +70 | IP67 | PBT-GF30-V0 | ABS | N/A | YE | 2M/PVC | B | 4 | A11 |
| **BC15-K34-AZ3X** 2310008 | | 15 | 23 | 2-wire AC | 20-250 VAC | 20 | ≤500 | -25 to +70 | IP67 | PBT-GF30-V0 | ABS | N/A | YE | 2M/PVC | B | 5 | A12 |
| **BCF15-K34-AZ3X** 2502136 | Noise Immune | 15 | 23 | 2-wire AC | 20-250 VAC | 20 | ≤500 | -25 to +70 | IP67 | PBT-GF30-V0 | ABS | N/A | YE | 2M/PVC | B | 5 | A12 |
| **NC20-KT34-VP4X2** 2550300 | Chemical Resistant Comp. Output | N/A | 20 | 4-wire DC PNP | 10-65 VDC | 200 | ≤200 | -25 to +70 | IP67 | PVDF | PVDF | GN | YE | 2M/ PVDF | C | 4 | A11 |

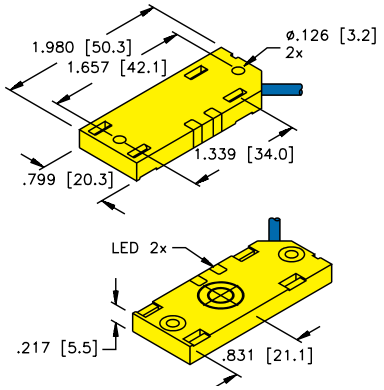
We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | Namur

**Intrinsically Safe**

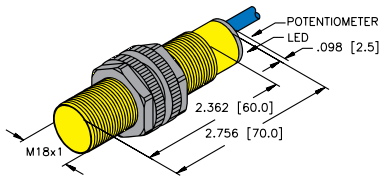
| Housing Style | Dimension Drawings |
|---|---|

A



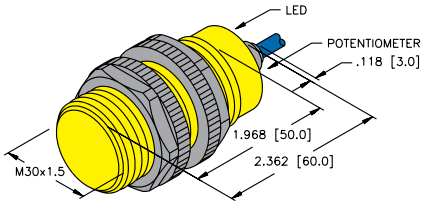

5.5 mm - Potted-In Cable

B



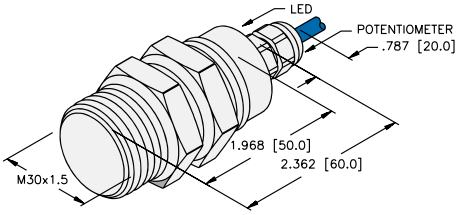

18 mm - Potted-In Cable

C




30 mm - Potted-In Cable

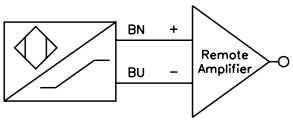
D




30 mm - Potted-In Cable

**Wiring Diagrams/Mating Cordsets**

1




**A19** — **2-wire DC NAMUR Capacitive- (Y0 and Y1)**

| | | | |
|---|---|---|---|
| Differential Travel (Hysteresis): | 1-20% | Power-On Effect: | Realized in Amplifier |
| Nominal Voltage: | 8.2 VDC (EN60947-5-6) | Reverse Polarity Protection: | Incorporated |
| Non-activated Current Consumption: | ≤1.2 mA | Wire-Break Protection: | Realized in Amplifier |
| Activated Current Consumption: | ≥2.1 mA | Transient Protection: | Realized in Amplifier |
| Recommended Switching Point for Remote Amplifier: | >1.2 to <2.1 mA, typ. 1.55 mA ON/1.75 mA OFF | Shock: | 30 g, 11 ms |
| | | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | | Repeatability: | ≤2% of Rated Operating Distance |

**Amplifier Note:**
Inductive sensors with Namur outputs are typically used in hazardous locations and the approval agencies require the use of an amplifier to regulate the signals in the hazardous area. Due to the wide variety of approvals, output options, and amplifier designs, it is not possible to incorporate all of the choices in this catalog. For the most up to date information, please either search for these products under our interface technology product category (www.turck.us) or contact us by phone.

We reserve the right to make technical alterations without prior notice.

# Capacitive Sensors | Namur

**Intrinsically Safe**

| Part Number/ ID Number | Features | Embeddable Range (mm) | Nonembeddable Range (mm) | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing Material | End Cap Material | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BC5-QF5.5-Y1X/S250** 2030000 | | 5 | 5 | 2-wire DC NAMUR | 5-30 VDC | 100 | Remote | -25 to +70 | IP67 | PP | -- | N/A | YE | 2M/TPU | A | 1 | A19 |
| **BC5-S18-Y1X** 20060 | | 5 | 7.5 | 2-wire DC NAMUR | 5-30 VDC | 100 | Remote | -25 to +70 | IP67 | PA 12-GF30 | PUR | N/A | YE | 2M/PVC | B | 1 | A19 |
| **BC10-S30-Y1X** 20100 | | 10 | 15 | 2-wire DC NAMUR | 5-30 VDC | 100 | Remote | -25 to +70 | IP67 | PA 12-GF30 | PA 66-GF25-V0 | N/A | YE | 2M/PVC | C | 1 | A19 |
| **BC10-PT30-Y0X** 2020000 | Chemical Resistant | 10 | 15 | 2-wire DC NAMUR | 5-30 VDC | 100 | Remote | -25 to +70 | IP67 | PVDF | PVDF | N/A | YE | 2M/ PVDF | D | 1 | A19 |

**Notes:**

/S250: Without switch point adjustment potentiometer

We reserve the right to make technical alterations without prior notice.

Notes

Notes

# Ultrasonics Sensor Selection Guide

| Threaded Metal Barrel | | | |
|---|---|---|---|
| | | | |
| **Housing** | **18 mm** | **18 mm** | **30 mm** |
| **Rated Operating Distance** | **40 -130 cm** | **40 - 130 cm** | **40 - 600 cm** |
| **Pages** | **F3 - 6** | **F7 - 10** | **F11** |

| | Hazardous ATEx and IECEx Approval | Rectangular | |
|---|---|---|---|
| | | | |
| **Housing** | **18 and 30 mm** | **40 mm** | **40 mm** |
| **Rated Operating Distance** | **40 - 600 cm** | **200 cm** | **200 cm** |
| **Pages** | **F13** | **F15** | **F15** |

We reserve the right to make technical alterations without prior notice.

# Ultrasonic Sensors

The M18 and M30 ultrasonic sensors feature smooth transducer faces, short blind zones, adjustable sensing fields, and robust chrome plated brass barrels, along with multiple options for outputs and configurations that enable users to select the best design for their application.

Output configurations range from a single output with an adjustable set point to versions with configurable outputs either as dual set point, analog, window, retroreflective, or IO-Link. Sensors can be taught via wire, integral buttons, or IO-Link.

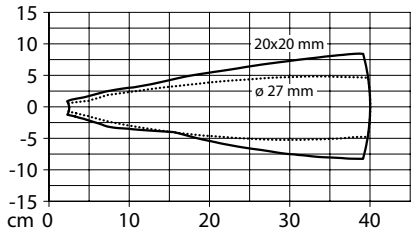
Certain M18 and M30 versions are available with ATEX and IECEx approvals for environments that have dust or gases which could be ignited and cause a fire or explosion.

The CK40 and CP40 rectangular ultrasonic sensor family uses separate transducers for the transmitter and receiver, giving these sensors a 60° sonic cone angle for detecting targets, which is much larger than what is possible with the M18 or M30 barrels.

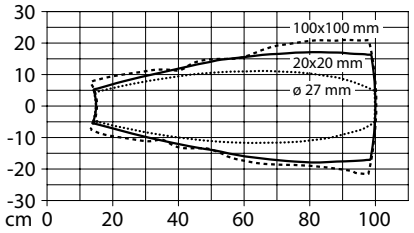
## Performance Curves

The diagrams show the detection ranges of the individual ultrasonic sensors, covering ranges of 40 to 600 cm. Different targets are used in sizes 20 x 20 mm, and 100 x 100 mm according to the EN standard 60947-5-2, as well as a round rod with a diameter of 27 mm in order to compare the detection ranges of different ultrasonic sensors. When using other targets than the standard ones, the detection ranges may vary due to different reflection properties and geometries.

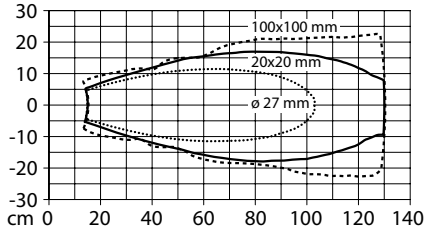
**RU40**



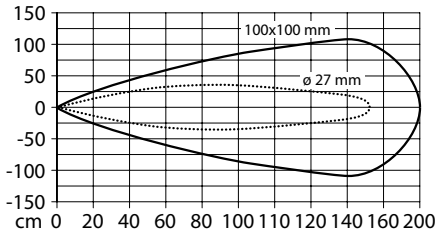

**RU100**



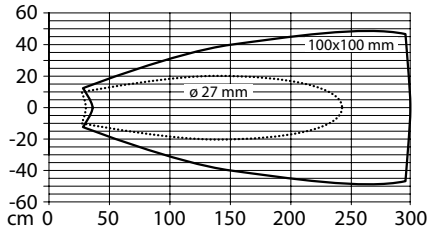

**RU130**




**RU200**




**RU300**

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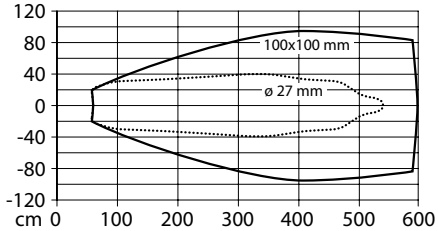



We reserve the right to make technical alterations without prior notice.

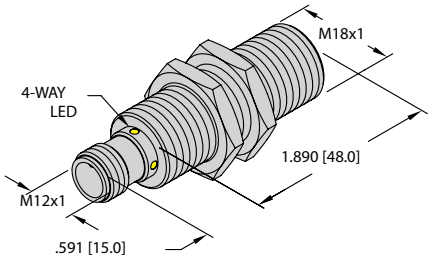
# Ultrasonics Sensors | 18 mm

## Front Sensing Transducer

### Housing Style

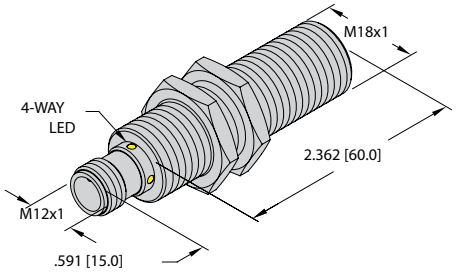
### Dimension Drawings

A



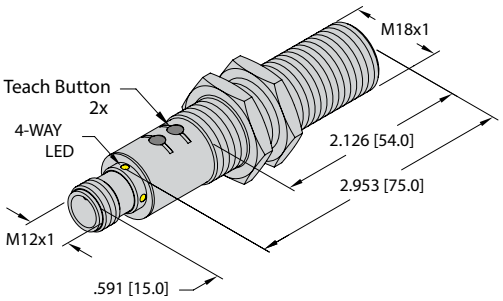

18 mm - Metal Barrel with M12 Eurofast Connection, **Teach-by-Wire**

B




18 mm - Metal Barrel with M12 Eurofast Connection, **Teach-by-Wire**

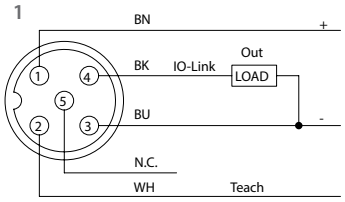
C




18 mm - Metal Barrel with M12 Eurofast Connection, **Teach-by-Wire or Button**

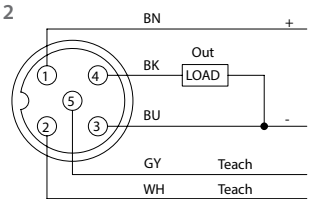
### Wiring Diagrams/Mating Cordsets

1



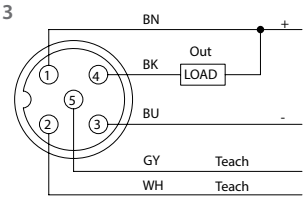

Mating Cordset: RK 4.4T-*

2



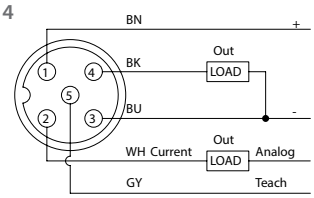

Mating Cordset: RK 4.5T-*

3



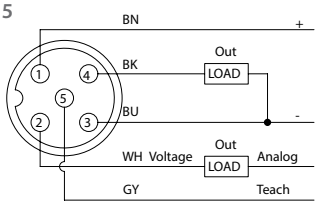

Mating Cordset: RK 4.5T-*

4



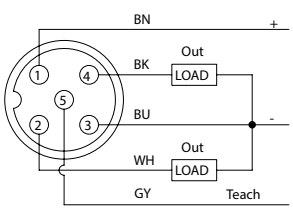

Mating Cordset: RK 4.5T-*

5



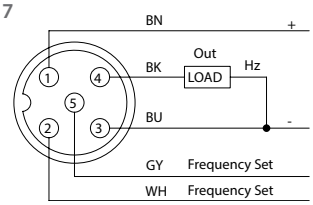

Mating Cordset: RK 4.5T-*

6



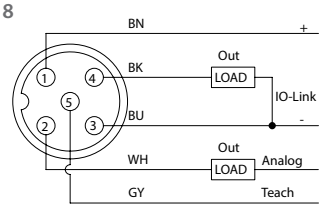

Mating Cordset: RK 4.5T-*

7




Mating Cordset: RK 4.5T-*

8




Mating Cordset: RK 4.5T-*

### A30 — Ultrasonic Barrels

| | | | |
|---|---|---|---|
| Operating Voltage: | 15-30 VDC | Frequency Output (where applicable): | 240-1600 Hz or 0-400 Hz Selectable |
| Voltage Drop Across Conducting Sensor: | ≤2.5 V | Short-Circuit Protection: | Yes |
| Continuous Switching Current: | ≤150 mA | Reverse Polarity Protection: | Yes |
| No-Load Current: | ≤50 mA | Operating Temp: | -25 to +70 °C |
| Residual Current: | ≤0.1 mA | Temperature Drift: | 1.5% of full scale |
| Load Resistance: | ≤1000 Ω | Internal Protection Rating: | IP67 |
| Readiness Delay: | ≤300 ms | Housing Material: | CPB |
| Repeatability: | 0.15% of full scale | Transducer Material: | PET/PU/Epoxy |
| Switching Output: | Programmable NO or NC | LED: | Yellow/Green |

We reserve the right to make technical alterations without prior notice.

# Ultrasonics Sensors | 18 mm

## Front Sensing Transducer

| Part Number/ ID Number | Rated Operating Distance (cm) | 1 X PNP Output | 1 X NPN Output | 2 X PNP Output | 2X PNP/NPN or Programmable 4-20 mA/0-10 v Analog & 1 X PNP/NPN output | Analog 0-10v | Analog 4-20mA | Frequency Output | Retroreflective Programmable | Retroreflective Only | Window Mode Programmable | IO-Link V1.1 | Blind Zone (cm) | Sonic Cone Angle | Resolution (mm) | Switching Hyst. (mm) | Max Approach Speed | Max Pass Speed | Switching Freq. (Hz) | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **RU40U-M18M-AP8X2-H1151** 1610094 | 40 | ● | | | | | | | | | | ● | 2.5 | 9° | 0.5 | 5 | ≤ 4 m/s | ≤ 1.5 m/s | 7 | A | 1 | A30 |
| **RU40U-M18M-UP8X2-H1151** 1610008 | 40 | ● | | | | | | | | | | | 2.5 | 9° | 0.5 | 5 | ≤ 4 m/s | ≤ 1.5 m/s | 7 | A | 2 | A30 |
| **RU40U-M18M-UN8X2-H1151** 1610080 | 40 | | ● | | | | | | | | | | 2.5 | 9° | 0.5 | 5 | ≤ 4 m/s | ≤ 1.5 m/s | 7 | A | 3 | A30 |
| **RU40U-M18E-LI8X2-H1151** 1610069 | 40 | ●[1] | | | | | ● | | | | | | 2.5 | 9° | 0.5 | 5 | ≤ 4 m/s | ≤ 1.5 m/s | 7 | B | 4 | A30 |
| **RU40U-M18E-LU8X2-H1151** 1610109 | 40 | ●[1] | | | | ● | | | | | | | 2.5 | 9° | 0.5 | 5 | ≤ 4 m/s | ≤ 1.5 m/s | 7 | B | 5 | A30 |
| **RU40U-M18E-2UP8X2-H1151** 1610012 | 40 | | | ● | | | | | ● | | ● | | 2.5 | 9° | 0.5 | 5 | ≤ 4 m/s | ≤ 1.5 m/s | 7 | B | 6 | A30 |
| **RU40U-M18E-2UP8X2T-H1151** 1610016 | 40 | | | ● | | | | | ● | | ● | | 2.5 | 9° | 0.5 | 5 | ≤ 4 m/s | ≤ 1.5 m/s | 7 | C | 6 | A30 |
| **RU40U-M18M-LFX-H1151** 1610021 | 40 | | | | | | | ● | | | | | 2.5 | 9° | 0.5 | 5 | ≤ 4 m/s | ≤ 1.5 m/s | 7 | A | 7 | A30 |
| **RU40L-M18M-UP8X2-H1151** 1610076 | 40 | ● | | | | | | | | ● | | | 2.5 | 9° | 0.5 | 5 | ≤ 4 m/s | ≤ 1.5 m/s | 7 | A | 2 | A30 |
| **RU40L-M18M-UN8X2-H1151** 1610084 | 40 | | ● | | | | | | | ● | | | 2.5 | 9° | 0.5 | 5 | ≤ 4 m/s | ≤ 1.5 m/s | 7 | A | 3 | A30 |
| **RU40U-M18E-LIU2PN8X2T-H1151** 1610024 | 40 | | | | ● | | | | ● | | ● | ●[2] | 2.5 | 9° | 0.5 | 5 | ≤ 4 m/s | ≤ 1.5 m/s | 7 | C | 8 | A30 |

[1] Switching output is not adjustable
[2] Multiplexing and synchronization modes supported

We reserve the right to make technical alterations without prior notice.

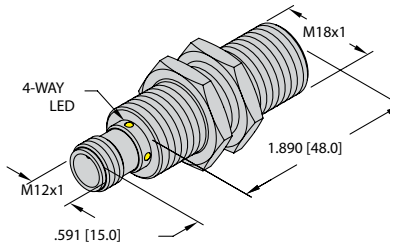
# Ultrasonics Sensors | 18 mm

## Front Sensing Transducer

### Housing Style

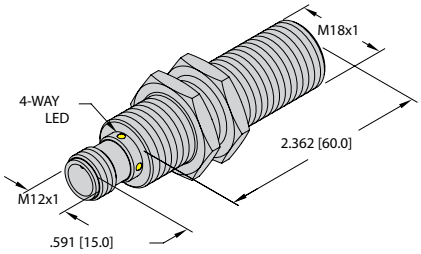
### Dimension Drawings

A



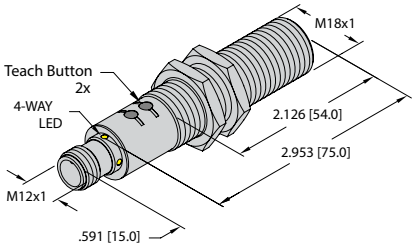

18 mm - Metal Barrel with M12 Eurofast Connection, **Teach-by-Wire**

B




18 mm - Metal Barrel with M12 Eurofast Connection, **Teach-by-Wire**

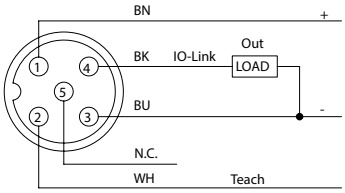
C




18 mm - Metal Barrel with M12 Eurofast Connection, **Teach-by-Wire or Button**

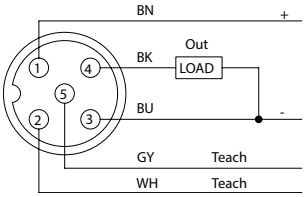
### Wiring Diagrams/Mating Cordsets

1



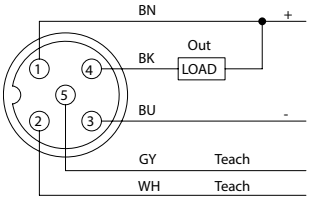

Mating Cordset: RK 4.4T-*

2



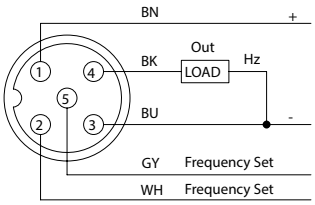

Mating Cordset: RK 4.5T-*

3



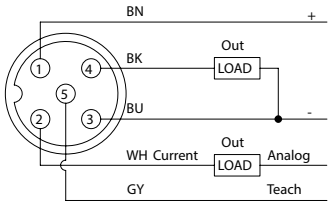

Mating Cordset: RK 4.5T-*

4



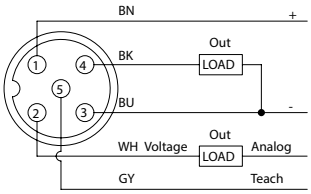

Mating Cordset: RK 4.5T-*

5



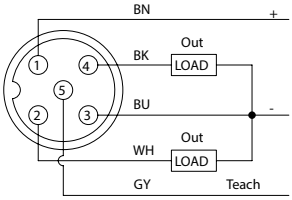

Mating Cordset: RK 4.5T-*

6



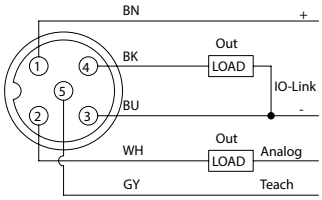

Mating Cordset: RK 4.5T-*

7




Mating Cordset: RK 4.5T-*

8




Mating Cordset: RK 4.5T-*

### A30 — Ultrasonic Barrels

| | |
|---|---|
| Operating Voltage: | 15-30 VDC |
| Voltage Drop Across Conducting Sensor: | ≤2.5 V |
| Continuous Switching Current: | ≤150 mA |
| No-Load Current: | ≤50 mA |
| Residual Current: | ≤0.1 mA |
| Load Resistance: | ≤1000 Ω |
| Readiness Delay: | ≤300 ms |
| Repeatability: | 0.15% of full scale |
| Switching Output: | Programmable NO or NC |
| Frequency Output (where applicable): | 240-1600 Hz or 0-400 Hz Selectable |
| Short-Circuit Protection: | Yes |
| Reverse Polarity Protection: | Yes |
| Operating Temp: | -25 to +70 °C |
| Temperature Drift: | 1.5% of full scale |
| Internal Protection Rating: | IP67 |
| Housing Material: | CPB |
| Transducer Material: | PET/PU/Epoxy |
| LED: | Yellow/Green |

We reserve the right to make technical alterations without prior notice.

# Ultrasonics Sensors | 18 mm

## Front Sensing Transducer

| Part Number/ ID Number | Rated Operating Distance (cm) | 1 X PNP Output | 1 X NPN Output | 2 X PNP Output | 2X PNP/NPN or Programmable 4-20 mA/0-10 v Analog & 1 X PNP/NPN output | Analog 0-10v | Analog 4-20mA | Frequency Output | Retroreflective Programmable | Retroreflective Only | Window Mode Programmable | IO-Link V1.1 | Blind Zone (cm) | Sonic Cone Angle | Resolution (mm) | Switching Hyst. (mm) | Max Approach Speed | Max Pass Speed | Switching Freq. (Hz) | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **RU100U-M18M-AP8X2-H1151** 1610095 | 100 | ● | | | | | | | | | | ● | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | A | 1 | A30 |
| **RU100U-M18M-UP8X2-H1151** 1610010 | 100 | ● | | | | | | | | | | | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | A | 2 | A30 |
| **RU100U-M18M-UN8X2-H1151** 1610081 | 100 | | ● | | | | | | | | | | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | A | 3 | A30 |
| **RU100U-M18M-LFX-H1151** 1610022 | 100 | | | | | | | ● | | | | | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | A | 4 | A30 |
| **RU100L-M18M-UP8X2-H1151** 1610077 | 100 | ● | | | | | | | | ● | | | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | A | 2 | A30 |
| **RU100L-M18M-UN8X2-H1151** 1610085 | 100 | | ● | | | | | | | ● | | | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | A | 3 | A30 |
| **RU130U-M18E-LI8X2-H1151** 1610089 | 130 | ●[1] | | | | | ● | | | | | | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | B | 5 | A30 |
| **RU130U-M18E-LU8X2-H1151** 1610110 | 130 | ●[1] | | | | ● | | | | | | | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | B | 6 | A30 |
| **RU130U-M18E-2UP8X2-H1151** 1610014 | 130 | | | ● | | | | | ● | | ● | | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | B | 7 | A30 |
| **RU130U-M18E-2UP8X2T-H1151** 1610018 | 130 | | | ● | | | | | ● | | ● | | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | C | 7 | A30 |
| **RU130U-M18E-LIU2PN8X2T-H1151** 1610026 | 130 | | | | ● | | | | ● | | ● | ●[2] | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | C | 8 | A30 |

[1] Switching output is not adjustable
[2] Multiplexing and synchronization modes supported

We reserve the right to make technical alterations without prior notice.

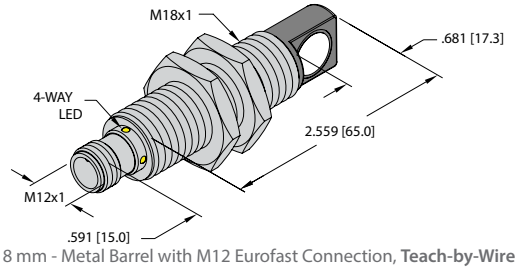
# Ultrasonics Sensors | 18 mm

## Side Sensing Transducer

### Housing Style

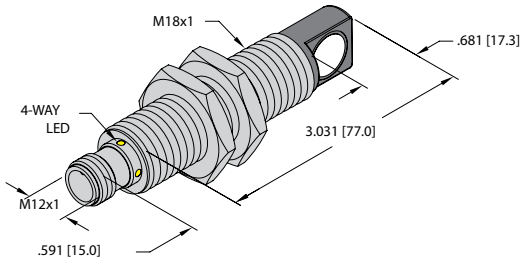
### Dimension Drawings

A



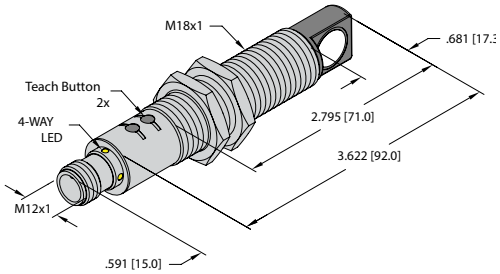

18 mm - Metal Barrel with M12 Eurofast Connection, **Teach-by-Wire**

B




18 mm - Metal Barrel with M12 Eurofast Connection, **Teach-by-Wire**

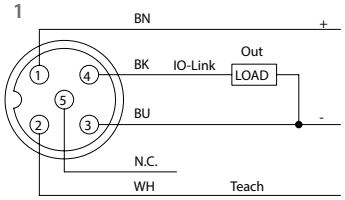
C




18 mm - Metal Barrel with M12 Eurofast Connection, **Teach-by-Wire or Button**

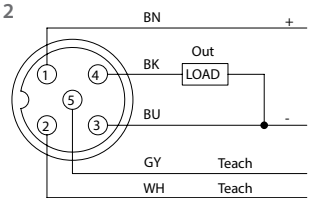
### Wiring Diagrams/Mating Cordsets

1



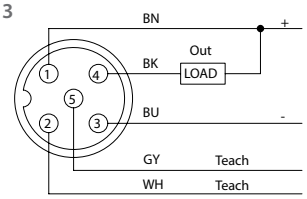

Mating Cordset: RK 4.4T-*

2



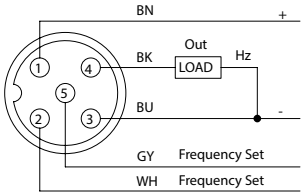

Mating Cordset: RK 4.5T-*

3



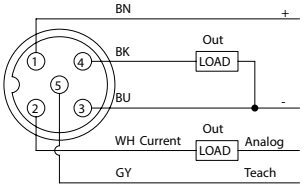

Mating Cordset: RK 4.5T-*

4



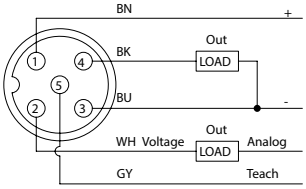

Mating Cordset: RK 4.5T-*

5



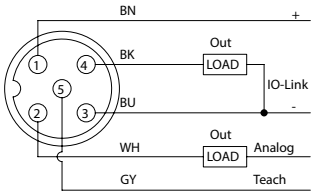

Mating Cordset: RK 4.5T-*

6




Mating Cordset: RK 4.5T-*

7




Mating Cordset: RK 4.5T-*

### A30 — Ultrasonic Barrels

| | |
|---|---|
| Operating Voltage: | 15-30 VDC |
| Voltage Drop Across Conducting Sensor: | ≤2.5 V |
| Continuous Switching Current: | ≤150 mA |
| No-Load Current: | ≤50 mA |
| Residual Current: | ≤0.1 mA |
| Load Resistance: | ≤1000 Ω |
| Readiness Delay: | ≤300 ms |
| Repeatability: | 0.15% of full scale |
| Switching Output: | Programmable NO or NC |
| Frequency Output (where applicable): | 240-1600 Hz or 0-400 Hz Selectable |
| Short-Circuit Protection: | Yes |
| Reverse Polarity Protection: | Yes |
| Operating Temp: | -25 to +70 °C |
| Temperature Drift: | 1.5% of full scale |
| Internal Protection Rating: | IP67 |
| Housing Material: | CPB |
| Transducer Material: | PET/PU/Epoxy |
| LED: | Yellow/Green |

We reserve the right to make technical alterations without prior notice.

# Ultrasonics Sensors | 18 mm

## Side Sensing Transducer

| Part Number/ ID Number | Rated Operating Distance (cm) | 1 X PNP Output | 1 X NPN Output | 2X PNP/NPN or Programmable 4-20 mA/0-10 v Analog & 1 X PNP/NPN output | Analog 0-10v | Analog 4-20mA | Frequency Output | Retroreflective Programmable | Retroreflective Only | Window Mode Programmable | IO-Link V1.1 | Blind Zone (cm) | Sonic Cone Angle | Resolution (mm) | Switching Hyst. (mm) | Max Approach Speed | Max Pass Speed | Switching Freq. (Hz) | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **RU40U-M18MS-AP8X2-H1151** 1610105 | 40 | ● | | | | | | | | | ● | 2.5 | 9° | 0.5 | 5 | ≤ 4 m/s | ≤ 1.5 m/s | 7 | A | 1 | A30 |
| **RU40U-M18MS-UP8X2-H1151** 1610009 | 40 | ● | | | | | | | | | | 2.5 | 9° | 0.5 | 5 | ≤ 4 m/s | ≤ 1.5 m/s | 7 | A | 2 | A30 |
| **RU40U-M18MS-UN8X2-H1151** 1610082 | 40 | | ● | | | | | | | | | 2.5 | 9° | 0.5 | 5 | ≤ 4 m/s | ≤ 1.5 m/s | 7 | A | 3 | A30 |
| **RU40U-M18MS-LFX-H1151** 1610019 | 40 | | | | | | ● | | | | | 2.5 | 9° | 0.5 | 5 | ≤ 4 m/s | ≤ 1.5 m/s | 7 | A | 4 | A30 |
| **RU40U-M18ES-LI8X2-H1151** 1610097 | 40 | ●[1] | | | | ● | | | | | | 2.5 | 9° | 0.5 | 5 | ≤ 4 m/s | ≤ 1.5 m/s | 7 | B | 5 | A30 |
| **RU40U-M18ES-LU8X2-H1151** 1610111 | 40 | ●[1] | | | ● | | | | | | | 2.5 | 9° | 0.5 | 5 | ≤ 4 m/s | ≤ 1.5 m/s | 7 | B | 6 | A30 |
| **RU40L-M18MS-UP8X2-H1151** 1610078 | 40 | ● | | | | | | | ● | | | 2.5 | 9° | 0.5 | 5 | ≤ 4 m/s | ≤ 1.5 m/s | 7 | A | 2 | A30 |
| **RU40L-M18MS-UN8X2-H1151** 1610086 | 40 | | ● | | | | | | ● | | | 2.5 | 9° | 0.5 | 5 | ≤ 4 m/s | ≤ 1.5 m/s | 7 | A | 3 | A30 |
| **RU40U-M18ES-LIU2PN8X2T-H1151** 1610025 | 40 | | | ● | | | | ● | | ● | ●[2] | 2.5 | 9° | 0.5 | 5 | ≤ 4 m/s | ≤ 1.5 m/s | 7 | C | 7 | A30 |

[1] Switching output is not adjustable
[2] Multiplexing and synchronization modes supported

We reserve the right to make technical alterations without prior notice.

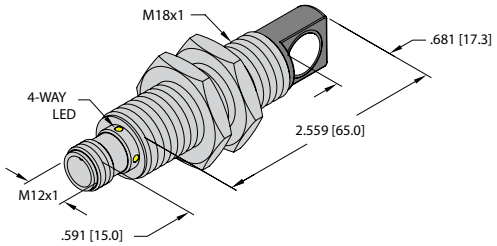
# Ultrasonics Sensors | 18 mm

## Side Sensing Transducer

### Housing Style

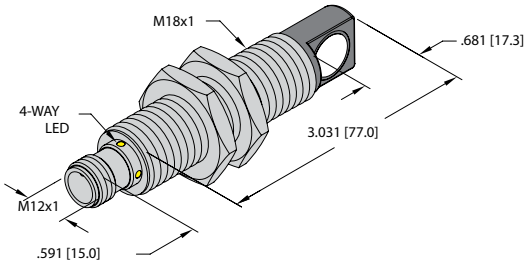
### Dimension Drawings

A



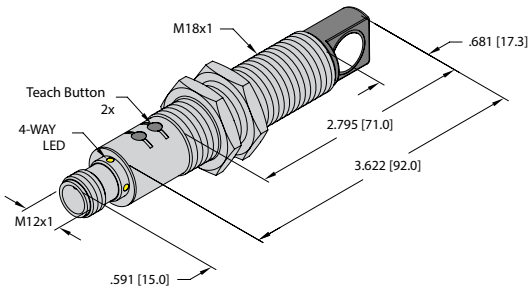

18 mm - Metal Barrel with M12 Eurofast Connection, **Teach-by-Wire**

B




18 mm - Metal Barrel with M12 Eurofast Connection, **Teach-by-Wire**

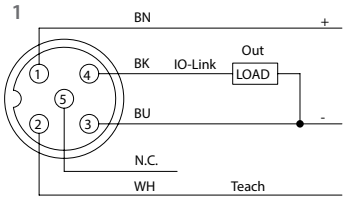
C




18 mm - Metal Barrel with M12 Eurofast Connection, **Teach-by-Wire or Button**

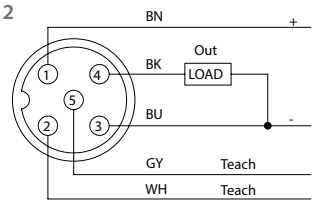
### Wiring Diagrams/Mating Cordsets

1



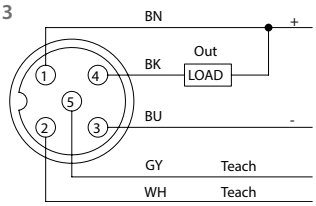

Mating Cordset: RK 4.4T-*

2



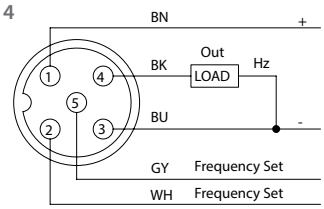

Mating Cordset: RK 4.5T-*

3



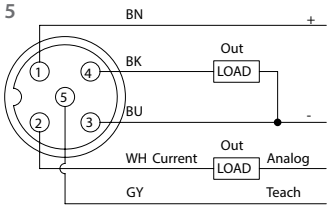

Mating Cordset: RK 4.5T-*

4



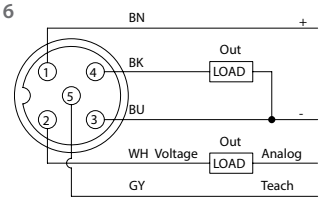

Mating Cordset: RK 4.5T-*

5



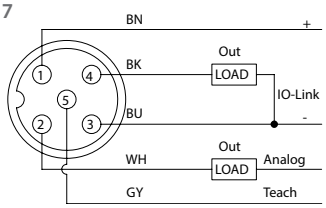

Mating Cordset: RK 4.5T-*

6




Mating Cordset: RK 4.5T-*

7




Mating Cordset: RK 4.5T-*

### A30 — Ultrasonic Barrels

| | |
|---|---|
| Operating Voltage: | 15-30 VDC |
| Voltage Drop Across Conducting Sensor: | ≤2.5 V |
| Continuous Switching Current: | ≤150 mA |
| No-Load Current: | ≤50 mA |
| Residual Current: | ≤0.1 mA |
| Load Resistance: | ≤1000 Ω |
| Readiness Delay: | ≤300 ms |
| Repeatability: | 0.15% of full scale |
| Switching Output: | Programmable NO or NC |
| Frequency Output (where applicable): | 240-1600 Hz or 0-400 Hz Selectable |
| Short-Circuit Protection: | Yes |
| Reverse Polarity Protection: | Yes |
| Operating Temp: | -25 to +70 °C |
| Temperature Drift: | 1.5% of full scale |
| Internal Protection Rating: | IP67 |
| Housing Material: | CPB |
| Transducer Material: | PET/PU/Epoxy |
| LED: | Yellow/Green |

We reserve the right to make technical alterations without prior notice.

# Ultrasonics Sensors | 18 mm

## Side Sensing Transducer

| Part Number/ ID Number | Rated Operating Distance (cm) | 1 X PNP Output | 1 X NPN Output | 2X PNP/NPN or Programmable 4-20 mA/0-10 v Analog & 1 X PNP/NPN output | Analog 0-10v | Analog 4-20mA | Frequency Output | Retroreflective Programmable | Retroreflective Only | Window Mode Programmable | IO-Link V1.1 | Blind Zone (cm) | Sonic Cone Angle | Resolution (mm) | Switching Hyst. (mm) | Max Approach Speed | Max Pass Speed | Switching Freq. (Hz) | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **RU100U-M18MS-AP8X2-H1151** 1610106 | 100 | ● | | | | | | | | | ● | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | A | 1 | A30 |
| **RU100U-M18MS-UP8X2-H1151** 1610011 | 100 | ● | | | | | | | | | | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | A | 2 | A30 |
| **RU100U-M18MS-UN8X2-H1151** 1610083 | 100 | | ● | | | | | | | | | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | A | 3 | A30 |
| **RU100U-M18MS-LFX-H1151** 1610020 | 100 | | | | | | ● | | | | | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | A | 4 | A30 |
| **RU100L-M18MS-UP8X2-H1151** 1610079 | 100 | ● | | | | | | | ● | | | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | A | 2 | A30 |
| **RU100L-M18MS-UN8X2-H1151** 1610087 | 100 | | ● | | | | | | ● | | | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | A | 3 | A30 |
| **RU130U-M18ES-LI8X2-H1151** 1610098 | 130 | ●[1] | | | | ● | | | | | | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | B | 5 | A30 |
| **RU130U-M18ES-LU8X2-H1151** 1610112 | 130 | ●[1] | | | ● | | | | | | | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | B | 6 | A30 |
| **RU130U-M18ES-LIU2PN8X2T-H1151** 1610027 | 130 | | | ● | | | | ● | | ● | ●[2] | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | C | 7 | A30 |

[1] Switching output is not adjustable
[2] Multiplexing and synchronization modes supported

We reserve the right to make technical alterations without prior notice.

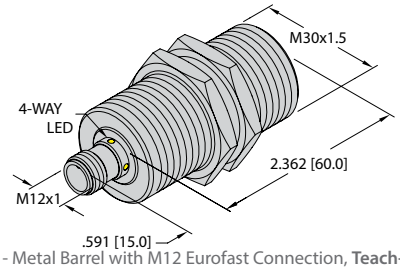
# Ultrasonics Sensors | 30 mm

## Front Sensing Transducer

### Housing Style

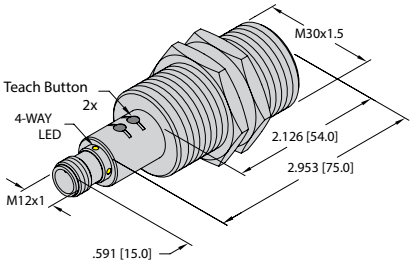
### Dimension Drawings

A



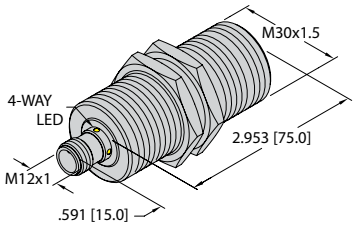

30 mm - Metal Barrel with M12 Eurofast Connection, **Teach-by-Wire**

B



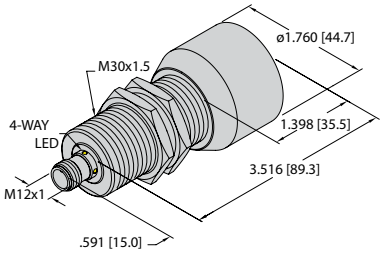

30 mm - Metal Barrel with M12 Eurofast Connection, **Teach-by-Wire or Button**

C



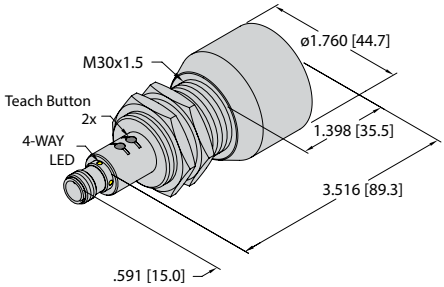

30 mm - Metal Barrel with M12 Eurofast Connection, **Teach-by-Wire**

D




30 mm - Metal Barrel with M12 Eurofast Connection, **Teach-by-Wire**

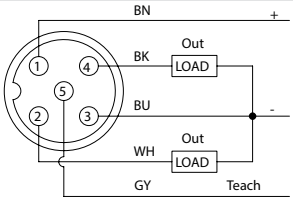
E




30 mm - Metal Barrel with M12 Eurofast Connection, **Teach-by-Wire or Button**

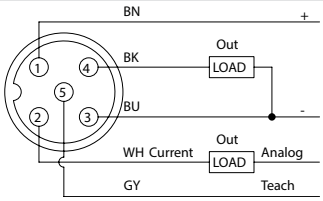
### Wiring Diagrams/Mating Cordsets

1



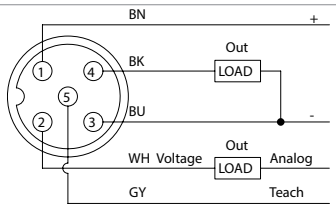

Mating Cordset: RK 4.5T-*

2



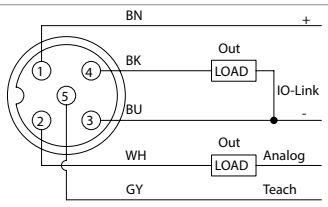

Mating Cordset: RK 4.5T-*

3




Mating Cordset: RK 4.5T-*

4




Mating Cordset: RK 4.5T-*

### A30 — Ultrasonic Barrels

| | |
|---|---|
| Operating Voltage: | 15-30 VDC |
| Voltage Drop Across Conducting Sensor: | ≤2.5 V |
| Continuous Switching Current: | ≤150 mA |
| No-Load Current: | ≤50 mA |
| Residual Current: | ≤0.1 mA |
| Load Resistance: | ≤1000 Ω |
| Readiness Delay: | ≤300 ms |
| Repeatability: | 0.15% of full scale |
| Switching Output: | Programmable NO or NC |
| Frequency Output (where applicable): | 240-1600 Hz or 0-400 Hz Selectable |
| Short-Circuit Protection: | Yes |
| Reverse Polarity Protection: | Yes |
| Operating Temp: | -25 to +70 °C |
| Temperature Drift: | 1.5% of full scale |
| Internal Protection Rating: | IP67 |
| Housing Material: | CPB |
| Transducer Material: | PET/PU/Epoxy |
| LED: | Yellow/Green |

We reserve the right to make technical alterations without prior notice.

# Ultrasonics Sensors | 30 mm

## Front Sensing Transducer

| Part Number/ ID Number | Rated Operating Distance (cm) | 1 X PNP Output | 2 X PNP Output | 2X PNP/NPN or Programmable 4-20 mA/0-10 v Analog & 1 X PNP/NPN output | Analog 0-10v | Analog 4-20mA | Retroreflective Programmable | Window Mode Programmable | IO-Link V1.1 | Blind Zone (cm) | Sonic Cone Angle | Resolution (mm) | Switching Hyst. (mm) | Max Approach Speed | Max Pass Speed | Switching Freq. (Hz) | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **RU40U-M30M-2UP8X2-H1151** 1610032 | 40 | | ● | | | | ● | ● | | 2.5 | 9° | 0.5 | 5 | ≤ 4 m/s | ≤ 1.5 m/s | 7 | A | 1 | A30 |
| **RU130U-M30M-2UP8X2-H1151** 1610034 | 130 | | ● | | | | ● | ● | | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | A | 1 | A30 |
| **RU130U-M30E-2UP8X2T-H1151** 1610038 | 130 | | ● | | | | ● | ● | | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | B | 1 | A30 |
| **RU130U-M30E-LIU2PN8X2T-H1151** 1610046 | 130 | | | ● | | | ● | ● | ●[2] | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | B | 4 | A30 |
| **RU300U-M30M-2UP8X2-H1151** 1610036 | 300 | | ● | | | | ● | ● | | 30 | 15° | 1 | 25 | ≤ 8 m/s | ≤ 1.5 m/s | 4 | C | 1 | A30 |
| **RU300U-M30E-LI8X2-H1151** 1610099 | 300 | ●[1] | | | | ● | | | | 30 | 15° | 1 | 25 | ≤ 8 m/s | ≤ 1.5 m/s | 4 | A | 2 | A30 |
| **RU300U-M30E-LU8X2-H1151** 1610113 | 300 | ●[1] | | | ● | | | | | 30 | 15° | 1 | 25 | ≤ 8 m/s | ≤ 1.5 m/s | 4 | A | 3 | A30 |
| **RU300U-M30E-2UP8X2T-H1151** 1610040 | 300 | | ● | | | | ● | ● | | 30 | 15° | 1 | 25 | ≤ 8 m/s | ≤ 1.5 m/s | 4 | B | 1 | A30 |
| **RU300U-M30E-LIU2PN8X2T-H1151** 1610048 | 300 | | | ● | | | ● | ● | ●[2] | 30 | 15° | 1 | 25 | ≤ 8 m/s | ≤ 1.5 m/s | 4 | B | 4 | A30 |
| **RU600U-M30M-2UP8X2-H1151** 1610037 | 600 | | ● | | | | ● | ● | | 60 | 15° | 1 | 50 | ≤ 9 m/s | ≤ 3 m/s | 1.6 | D | 1 | A30 |
| **RU600U-M30E-LI8X2-H1151** 1610100 | 600 | ●[1] | | | | ● | | | | 60 | 15° | 1 | 50 | ≤ 9 m/s | ≤ 3 m/s | 1.6 | D | 2 | A30 |
| **RU600U-M30E-LU8X2-H1151** 1610114 | 600 | ●[1] | | | ● | | | | | 60 | 15° | 1 | 50 | ≤ 9 m/s | ≤ 3 m/s | 1.6 | D | 3 | A30 |
| **RU600U-M30E-2UP8X2T-H1151** 1610041 | 600 | | ● | | | | ● | ● | | 60 | 15° | 1 | 50 | ≤ 9 m/s | ≤ 3 m/s | 1.6 | E | 1 | A30 |
| **RU600U-M30E-LIU2PN8X2T-H1151** 1610049 | 600 | | | ● | | | ● | ● | ●[2] | 60 | 15° | 1 | 50 | ≤ 9 m/s | ≤ 3 m/s | 1.6 | E | 4 | A30 |

[1] Switching output is not adjustable
[2] Multiplexing and synchronization modes supported

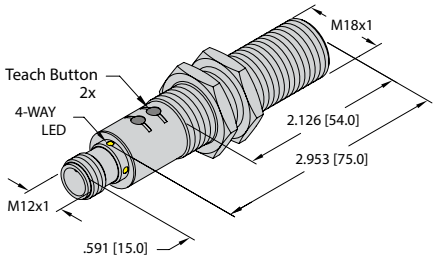
We reserve the right to make technical alterations without prior notice.

# Ultrasonics Sensors | Hazardous Area

## ATEX and IECEx Approval

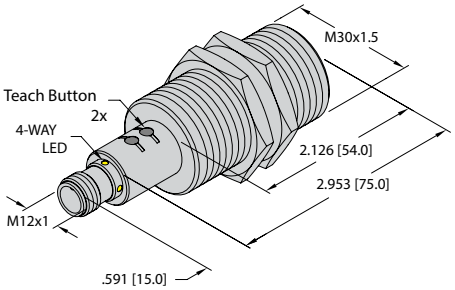
| Housing Style | Dimension Drawings |
|---|---|

A



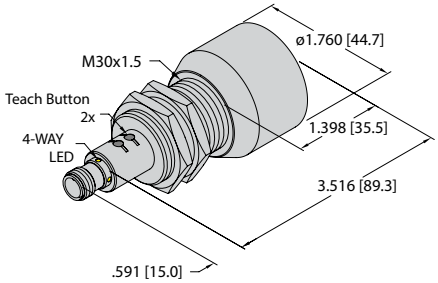

18 mm - Metal Barrel with M12 Eurofast Connection, **Teach-by-Wire or Button**

B




30 mm - Metal Barrel with M12 Eurofast Connection, **Teach-by-Wire or Button**

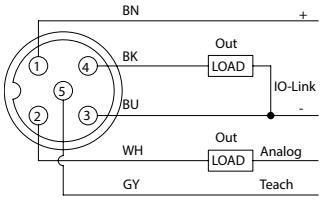
C




30 mm - Metal Barrel with M12 Eurofast Connection, **Teach-by-Wire or Button**

### Wiring Diagrams/Mating Cordsets

1




Mating Cordset: RK 4.5T-*

### A31 — Ultrasonic Barrel w/ ATEX Approval

| | |
|---|---|
| Operating Voltage: | 15-30 VDC |
| Voltage Drop Across Conducting Sensor: | ≤2.5 V |
| Continuous Switching Current: | ≤150 mA |
| No-Load Current: | ≤50 mA |
| Residual Current: | ≤0.1 mA |
| Load Resistance: | ≤1000 Ω |
| Readiness Delay: | ≤300 ms |
| Repeatability: | 0.15% of full scale |
| Switching Output: | Programmable NO or NC |
| Short-Circuit Protection: | Yes |
| Reverse Polarity Protection: | Yes |
| Operating Temp: | -25 to +70 °C |
| Temperature Drift: | 1.5% of full scale |
| Internal Protection Rating: | IP67 |
| Housing Material: | SS |
| Transducer Material: | PET/PU/Epoxy |
| LED: | Yellow/Green |
| Approval with Teach Button: | II 3G Ex nA nC IIC T6 Gc<br>II 3D Ex tc IIIC T70°C Dc |
| Approval without Teach Button: | II 3G Ex nA IIC T6 Gc<br>II 3D Ex tc IIIC T70°C Dc |

We reserve the right to make technical alterations without prior notice.

# Ultrasonics Sensors | Hazardous Area

## ATEX and IECEx Approval

| Part Number/ ID Number | Rated Operating Distance (cm) | 2X PNP/NPN or Programmable 4-20 mA/0-10 v Analog & 1 X PNP/NPN output | Retroreflective Programmable | Window Mode Programmable | IO-Link V1.1 IO-Link | Blind Zone (cm) | Sonic Cone Angle | Resolution (mm) | Switching Hyst. (mm) | Max Approach Speed | Max Pass Speed | Switching Freq. (Hz) | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **RU40U-EM18E-LIU2PN8X2T-H1151/3GD** 1610071 | 40 | ● | ● | ● | ●[1] | 2.5 | 9° | 0.5 | 5 | ≤ 4 m/s | ≤ 1.5 m/s | 7 | A | 1 | A31 |
| **RU130U-EM18E-LIU2PN8X2T-H1151/3GD** 1610072 | 130 | ● | ● | ● | ●[1] | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | A | 1 | A31 |
| **RU130U-EM30E-LIU2PN8X2T-H1151/3GD** 1610073 | 130 | ● | ● | ● | ●[1] | 15 | 16° | 1 | 10 | ≤ 8 m/s | ≤ 1.5 m/s | 8 | B | 1 | A31 |
| **RU300U-EM30E-LIU2PN8X2T-H1151/3GD** 1610074 | 300 | ● | ● | ● | ●[1] | 30 | 15° | 1 | 25 | ≤ 8 m/s | ≤ 1.5 m/s | 4 | B | 1 | A31 |
| **RU600U-EM30E-LIU2PN8X2T-H1151/3GD** 1610075 | 600 | ● | ● | ● | ●[1] | 60 | 15° | 1 | 50 | ≤ 9 m/s | ≤ 3 m/s | 1.6 | C | 1 | A31 |

[1] Multiplexing and synchronization modes supported.

We reserve the right to make technical alterations without prior notice.

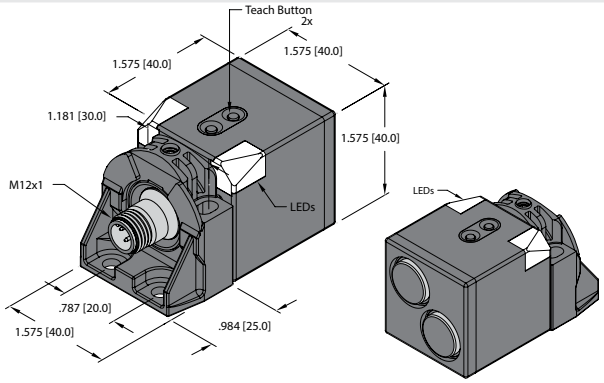
# Ultrasonics Sensors | CK40 & CP40

## 5 Way Rotatable Sensing Head

### Housing Style

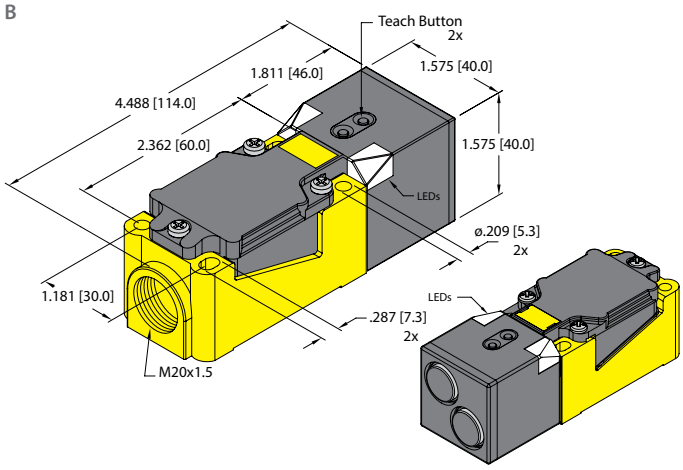
### Dimension Drawings

A



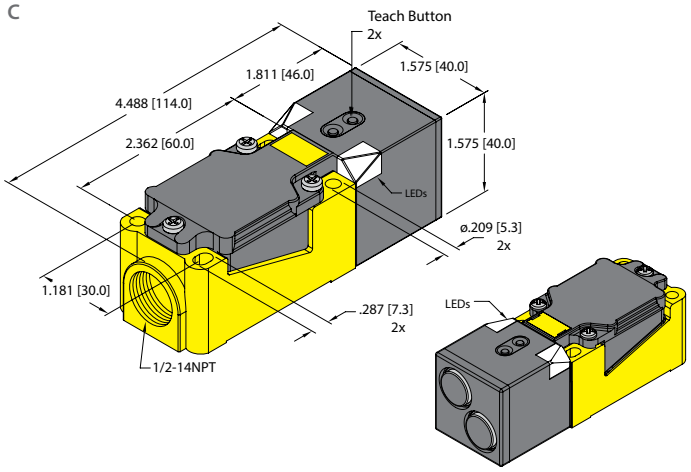

CK40 - M12 Eurofast Connection, **Teach-by-Wire or Button**

B




CP40 - Terminal Chamber with M20x1.5 Conduit Connection, **Teach-by-Button**

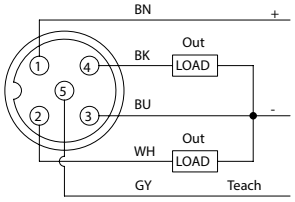
C




CP40 - Terminal Chamber with 1/2 NPT Conduit Connection, **Teach-by-Button**

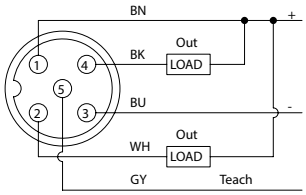
### Wiring Diagrams/Mating Cordsets

1



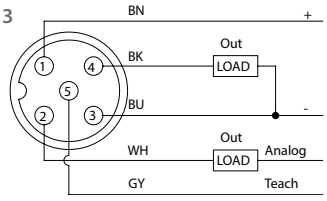

Mating Cordset: RK 4.4T-*

2



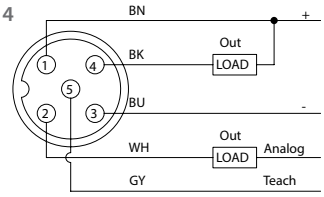

Mating Cordset: RK 4.5T-*

3



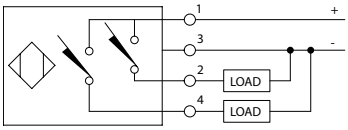

Mating Cordset: RK 4.5T-*

4

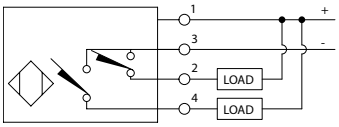



Mating Cordset: RK 4.5T-*

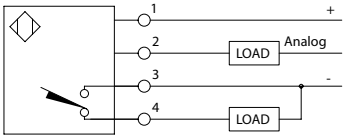
5



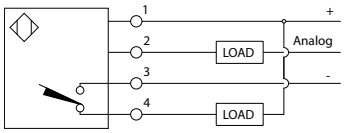

6




7




8




### A32 — Ultrasonic Rectangular

| | |
|---|---|
| Operating Voltage: | 15-30 VDC |
| Voltage Drop Across Conducting Sensor: | ≤2.5 V |
| Continuous Switching Current: | ≤150 mA |
| No-Load Current: | ≤50 mA |
| Residual Current: | ≤0.1 mA |
| Load Resistance: | ≤1000 Ω |
| Readiness Delay: | ≤300 ms |
| Repeatability: | 0.25% of full scale |
| Switching Output: | Programmable NO or NC |

| | |
|---|---|
| Analog Output: | 4-20 mA or 0-10 V Programmable |
| Short Circuit Protection: | Yes |
| Reverse Polarity Protection: | Yes |
| Operating Temp: | 0 to +70 °C |
| Temperature Drift: | 1.5% of full scale |
| Internal Protection Rating: | IP40 |
| Housing Material: | PBT-GF30 |
| Transducer Material: | AL/Ceramic |
| LED: | Yellow/Green |

We reserve the right to make technical alterations without prior notice.

# Ultrasonics Sensors | CK40 & CP40

## 5 Way Rotatable Sensing Head

| Part Number/ ID Number | Rated Operating Distance (cm) | 2 X PNP Output | 2 X NPN Output | Programmable 4-20 mA/0-10 v Analog & 1 X PNP output | Programmable 4-20 mA/0-10 v Analog & 1 X NPN output | Retroreflective Programmable | Window Mode Programmable | Blind Zone (cm) | Sonic Cone Angle | Resolution (mm) | Switching Hyst. (mm) | Max Approach Speed | Max Pass Speed | Switching Freq. (Hz) | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **RU200-CK40-2UP8X2T-H1151** 1610051 | 200 | ● | | | | ● | ● | 5 | 60° | 1 | 20 | ≤ 1 m/s | ≤ 2 m/s | 3 | A | 1 | A32 |
| **RU200-CK40-2UN8X2T-H1151** 1610057 | 200 | | ● | | | ● | ● | 5 | 60° | 1 | 20 | ≤ 1 m/s | ≤ 2 m/s | 3 | A | 2 | A32 |
| **RU200-CK40-LIU2P8X2T-H1151** 1610053 | 200 | | | ● | | ● | ● | 5 | 60° | 1 | 20 | ≤ 1 m/s | ≤ 2 m/s | 3 | A | 3 | A32 |
| **RU200-CK40-LIU2N8X2T-H1151** 1610058 | 200 | | | | ● | ● | ● | 5 | 60° | 1 | 20 | ≤ 1 m/s | ≤ 2 m/s | 3 | A | 4 | A32 |
| **RU200-CP40-2UP8X2T** 1610052 | 200 | ● | | | | ● | ● | 5 | 60° | 1 | 20 | ≤ 1 m/s | ≤ 2 m/s | 3 | B | 5 | A32 |
| **RU200-CP40-2UN8X2T** 1610055 | 200 | | ● | | | ● | ● | 5 | 60° | 1 | 20 | ≤ 1 m/s | ≤ 2 m/s | 3 | B | 6 | A32 |
| **RU200-CP40-2UP8X2T/S10** 1610092 | 200 | ● | | | | ● | ● | 5 | 60° | 1 | 20 | ≤ 1 m/s | ≤ 2 m/s | 3 | C | 5 | A32 |
| **RU200-CP40-2UN8X2T/S10** 1610090 | 200 | | ● | | | ● | ● | 5 | 60° | 1 | 20 | ≤ 1 m/s | ≤ 2 m/s | 3 | C | 6 | A32 |
| **RU200-CP40-LIU2P8X2T** 1610054 | 200 | | | ● | | ● | ● | 5 | 60° | 1 | 20 | ≤ 1 m/s | ≤ 2 m/s | 3 | B | 7 | A32 |
| **RU200-CP40-LIU2N8X2T** 1610056 | 200 | | | | ● | ● | ● | 5 | 60° | 1 | 20 | ≤ 1 m/s | ≤ 2 m/s | 3 | B | 8 | A32 |
| **RU200-CP40-LIU2P8X2T/S10** 1610093 | 200 | | | ● | | ● | ● | 5 | 60° | 1 | 20 | ≤ 1 m/s | ≤ 2 m/s | 3 | C | 7 | A32 |
| **RU200-CP40-LIU2NP8X2T/S10** 1610091 | 200 | | | | ● | ● | ● | 5 | 60° | 1 | 20 | ≤ 1 m/s | ≤ 2 m/s | 3 | C | 8 | A32 |

We reserve the right to make technical alterations without prior notice.

Notes

Notes

# Cylinder Position Sensor Selection Guide

| Cylinder Position Sensors | | | | |
|---|---|---|---|---|
| | | | | |
| **Housing** | **UNT** | **UNTK** | **INT** | **UNR** |
| **Pages** | **G13** | **G15** | **G17** | **G19** |
| **Style of Cylinder** | | | | |

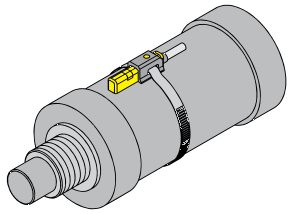
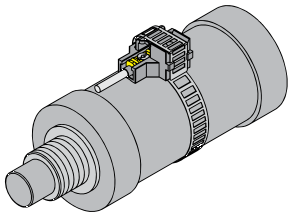
| Cylinder Position Sensors | | | | |
|---|---|---|---|---|
| | | | | |
| **Housing** | **PST** | **KST** | **AKT** | **IKE/IKT** |
| **Pages** | **G21** | **G23** | **G25** | **G27** |
| **Style of Cylinder** | | | | |

| Cylinder Position Sensors | | | Inductive | World Clamp Sensors |
|---|---|---|---|---|
| | | | | |
| **Housing** | **IKM** | **NST** | **CRS** | **Variable** |
| **Pages** | **G29** | **G31** | **G33 - 36** | **G37 - 42** |
| **Style of Cylinder** | | | | |

| | Magnetic Analog | | |
|---|---|---|---|
| | | | |
| **Housing** | **UNTL** | **25 mm** | **Variable** |
| **Pages** | **G43** | **G45** | **G47** |
| **Style of Cylinder** | | | |

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors

| Drawing | Manufacturer | Cylinder Series | Turck Sensor | Turck Bracket | |
|---|---|---|---|---|---|
|  | Parker | P, SRM, SRDM, XLT, XLR, XKB, (S, SRD)[3] | UNT Style | KLRC-UNT*[4] | KLRC with ASB Clamp[2] |
| | | | UNR Style | KLRC-2 with ASB Clamp[2] | |
| | Festo | CRDG, CRDSNU, CRDSW, DSNU, SDNUL, DSEU, ESEU, ESNU, ESW, (DSN)[3] | UNT Style | KLRC-UNT*[4] | KLRC with ASB Clamp[2] |
| | | | UNR Style | KLRC-2 with ASB Clamp[2] | |
| | Bimba | Original Line II (0L2), Original Line (M, MH, MNR, MC, MRS), Doublle Wall (DW, DWD, DWN, DWM), PC, Z Series (M04, M09, M17, M31), Linear Thrusters (T, TE) | UNT Style | KLRC-UNT*[4] | KLRC with ASB Clamp[2] |
| | | | UNR Style | KLRC-2 with ASB Clamp[2] | |
| | SMC | NCM, NCJ2, NCG, NCA1, CJ2, CM2, CG1, MGG | UNT Style | KLRC-UNT*[4] | KLRC with ASB Clamp[2] |
| | | | UNR Style | KLRC-2 with ASB Clamp[2] | |
|  | Norgren | Round Line (RL) | UNT Style | KLRC-UNT*[4] | KLRC with ASB Clamp[2] |
| | | | UNR Style | KLRC-2 with ASB Clamp[2] | |
| | Fabco-Air | Pancake (X, XK, O, OP, XDR, XDRK, ODR), Linear Slide (L, S, E,) | UNT Style | KLRC-UNT*[4] | KLRC with ASB Clamp[2] |
| | | | UNR Style | KLRC-2 with ASB Clamp[2] | |

1. This Mounting is to be used only when "Switch Rail" is present on the cylinder.
2. ASB size is determined by the cylinder diameter. See Table 1. KLDT is required when the UNT sensor has integral quick disconnect.
3. These styles are not usually available with magnets.
4. Bracket size determined by the cylinder diameter. See Table 2.

| UNT Housing with KLDT-UNT and ASB Style Strap | | |
|---|---|---|
| Cylinder Diameter | | Clamp |
| Inches | Millimeters | (Stainless Steel) |
| .276 - .433 | 7 - 11 | ASB-1 |
| .433 - .748 | 11 - 19 | ASB-2 |
| .709 - 1.142 | 18 - 29 | ASB-3 |
| 1.102 - 1.535 | 28 - 39 | ASB-4 |
| 1.496 - 1.929 | 38 - 49 | ASB-5 |
| 1.890 - 2.323 | 48 - 59 | ASB-6 |
| 2.283 - 2.717 | 58 - 69 | ASB-7 |
| 2.677 - 3.110 | 68 - 79 | ASB-8 |

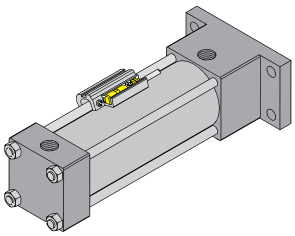
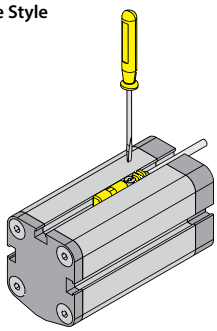
**Table 1**

| UNT Housing with KLRC-UNT* | | |
|---|---|---|
| Part Number | Cylinder Diameter | |
| | Inches | Millimeters |
| KLRC-UNT1 | .315 - .984 | 8 - 25 |
| KLRC-UNT2 | .984 - 2.480 | 25 - 63 |
| KLRC-UNT3 | 2.480 - 5.118 | 63 - 130 |
| KLRC-UNT4 | 5.118 - 9.843 | 130 - 250 |

**Table 2**

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors

| Drawing | Manufacturer | Cylinder Series | Turck Sensor | Turck Bracket |
|---|---|---|---|---|
| **Tie Rod Style**  **KLZ* (Table 3)** | Numatics | A, E, S, L, B Square, VDMA-Z | UNT Style | KLZ Series Clamp[1] |
| | Parker | P5E, HBT, LPM, (S, C, LP)[2] | UNT Style | KLZ Series Clamp[1] |
| | PHD | A2, A3, AS, AV, AV2, A3V, AVS, HV, HV2, H3V, HVS, DAV, DHV, EA, EL, EH, ES, NPG, NHG, NEAG, NEHG, TD, (A)[2] | UNT Style | KLZ Series Clamp[1] |
| | Festo | DNGU, DNGUL, DNGUT, DNU, DNUL, CRDNG, CRDNGS, DNG, DNGL, DNGZK, DNGZL, DNGZS, DKE | UNT Style | KLZ Series Clamp[1] |
| | Bimba | Flat-I (FO, FOD, FOP, FOR, FOS, FS, FSD, FSR, FSS, F02, F03, F04), Flat-II (FT, FST) | UNT Style | KLZ Series Clamp[1] |
| | SMC | ECQ2, MB, C95 | UNT Style | KLZ Series Clamp[1] |
| | Norgren | A, EA, SS, N, J, EJ, 8000/M | UNT Style | KLZ Series Clamp[1] |
| | Turn-Act | NFPA Series | UNT Style | KLZ Series Clamp[1] |
| | Fabco-Air | Long Stroke (321, 521, 721, 1221, S321, S521, S721, S1221), Hi-Power (HP, THP, UHP), Multi-Power (MP, BA, BP), Linear Slide [3] (SE, EZ, TS) | UNT Style | KLZ Series Clamp[1] |
| **T-Groove Style**  | Parker | P1M, P5T, SST | UNT Style | No Additional Bracket Required |
| | Festo | DNC, DNCT, DFM, DPZ, DPZJ, DZF, EZH, ADVU, ADVULQ, ADVUL | UNT Style | No Additional Bracket Required |
| | SMC | CUJ, CXS, MGQ, MY1B, MHC, MHL2 | UNT Style | No Additional Bracket Required |

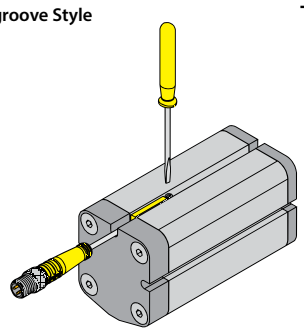
1. When using KLZ Series Clamps, user must determine clamp size best suited for application.
2. These styles are usually not available with magnets.
3. Some of these may be equipped to handle 5, 8, or 12 mm inductive proximity sensors.

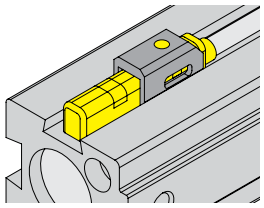
| UNT Sensor with KLZ* Mounting | | |
|---|---|---|
| **Part Number** | **Tie Rod Diameter Maximum** | |
| | **Inches** | **Millimeters** |
| KLZ1A-INT CLAMP | .236 | 6.0 |
| KLZ1M-UNT CLAMP | .290 | 7.37 |
| KLZ2M-UNT CLAMP | .351 | 8.93 |
| KLZ3M-UNT CLAMP | .482 | 12.25 |

**Table 3**

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors

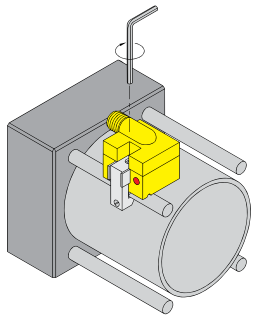
| Drawing | Manufacturer | Cylinder Series | Turck Sensor | Turck Bracket |
|---|---|---|---|---|
| **C-groove Style**  | Numatics | K | UNR Style | No Additional Bracket Required |
| | Festo | ADVC | UNR Style | No Additional Bracket Required |
| | Bimba | Twin Bore (TB, TBA, TBD), EF1 Series (EF, EFD, EFS, EFR), EF2 Series (EFT), PneuMoment Series (PM) | UNR Style | No Additional Bracket Required |
| | SMC | (CQ2, CQs, NCDQ2, NCQ2)[1], (CDQ2)[1], CU, CUK, CUW, MU, MHF2, Air Slides (MXQ) | UNR Style | No Additional Bracket Required |
| | Compact Air | B, C | UNR Style | No Additional Bracket Required |
| | PHD | CRH<br>O-groove | UNR Style | No Additional Bracket Required |

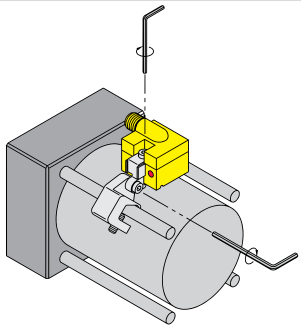
| Drawing | Manufacturer | Cylinder Series | Turck Sensor | Turck Bracket |
|---|---|---|---|---|
| **Dovetail Style**  | Numatics | B,F, Compact C, Short Stroke, Rotary Actuator, Pee Wee (O, P, Q), VDMA-V, Ring Series | UNT Style | KLDT-UNT3 |
| | Norgren | 90000, 91000, 92000, 93000, Lite (A44000) | UNT Style | KLDT-UNT3 |
| | Fabco-Air | Square 1 (SQ, SQF, SQL)<br>Pancake (X,XK, O, OP, XDR, XDRK, ODR)<br>Linear Slide1 (GB, L, S, E, SE, EZ, TS)[2] | UNR Style | KLFA-2UNR |
| | Compact Air | Inch Series (AB, AS, AR, AT)<br>Inch Series (B, R, S, T)[3]<br>Ball Slide (BSC)<br>GC, CD, ACLA, ACLAD, (CLA, CLAD)[3]<br>Metric Series (AWS, AWB, AWT)<br>Metric Series (WS, WB, WT)[3]<br>B/Base Mount, S/End Mount<br>R/ End Mount, (CSC, PSC, TCL)[4] | UNT Style | KLDT-UNT4 |
| | SMC | CP95 | UNT Style | KLDT-UNT6 |

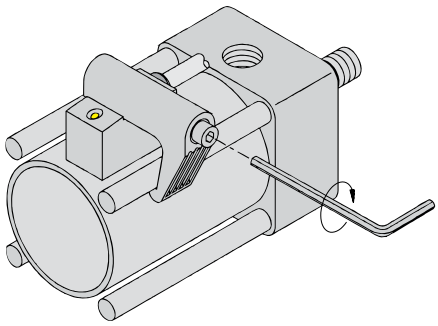
1. CQ2, NC(D) Q2, CQS, NCQ2 cylinders may have multiple grooves and may not be suited for the UNR style sensor.
2. This mounting is to be used only when dovetail style mounting rail is present on the cylinder.
3. These styles are usually not available with magnets.
4. This mounting is to be used only when sensor mounting rail is present on collet.

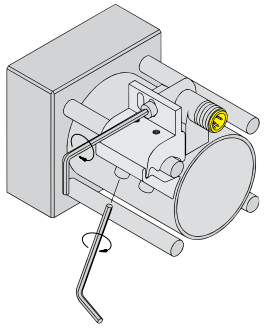
We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors

| Drawing | AKT Housing with KLA-1 Clamp | |
|---|---|---|
|  | **Cylinder Diameter** | 1.26 - 1.97 inches<br>32 - 50 mm |
| | **Rod Diameter** | 0.16 - 0.31 inches<br>4 - 8 mm |
| | **Clamp** | KLA-1<br>(Aluminum) |

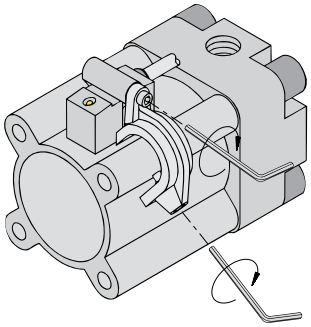
| Drawing | AKT Housing with KLA-2 Clamp | |
|---|---|---|
|  | **Cylinder Diameter** | 1.57 - 4.92 inches<br>40 - 125 mm |
| | **Rod Diameter** | 0.28 - 0.51 inches<br>7 - 13 mm |
| | **Clamp** | KLA-2<br>(Die-cast Zinc) |

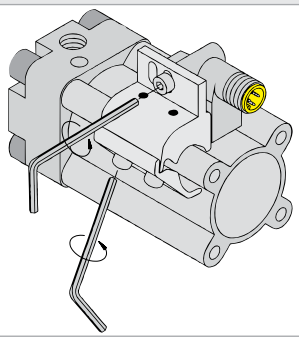
| Drawing | IKE, IKT, and IKM Housing with KLI-1 or KLI-3 Clamp | | |
|---|---|---|---|
|  | **Cylinder Diameter** | 1.26 - 3.94 inches<br>32 - 100 mm | 2.48 - 6.30 inches<br>63 - 160 mm |
| | **Rod Diameter** | 0.16 - 0.51 inches<br>4 - 13 mm | 0.24 - 0.63 inches<br>6 - 16 mm |
| | **Clamp** | KLI-1<br>(Die-cast Zinc) | KLI-3<br>(Die-cast Zinc) |

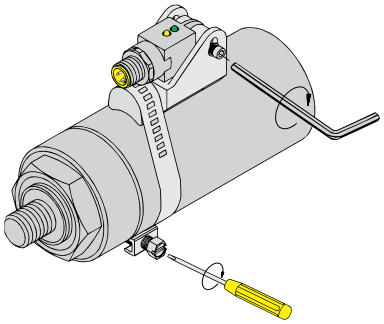
| Drawing | IKE, IKT, and IKM Housing with KLI-5Z or KLI-6Z Clamp | | |
|---|---|---|---|
|  | **Cylinder Diameter** | 1.26 - 2.48 inches<br>32 - 63 mm | 1.97 - 4.92 inches<br>50 - 125 mm |
| | **Rod Diameter** | 0.16 - 0.31 inches<br>4 - 8 mm | 0.24 - 0.51 inches<br>6 - 13 mm |
| | **Clamp** | KLI-5Z<br>(Aluminum) | KLI-6Z<br>(Aluminum) |

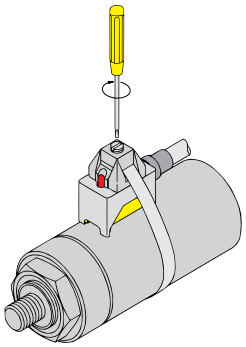
We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors

| Drawing | IKE, IKT, and IKM Housing with KLI-2 Clamp | |
|---|---|---|
|  | **Cylinder Diameter** | 1.26 - 3.94 inches<br>32 - 100 mm |
| | **Rod Diameter** | 0.35 - 0.79 inches<br>9 - 20 mm |
| | **Clamp** | KLI-2<br>(Die-cast Zinc) |

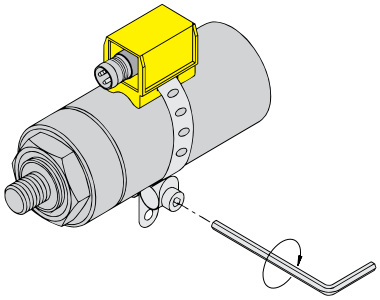
| Drawing | IKE, IKT, and IKM Housing with KLI-5 or KLI-6 Clamp | | |
|---|---|---|---|
|  | **Cylinder Diameter** | 1.26 - 1.97 inches<br>32 - 50 mm | 1.97 - 3.94 inches<br>50 - 100 mm |
| | **Rod Diameter** | 0.31 - 0.55 inches<br>8 - 14 mm | 0.43 - 0.75 inches<br>11 - 19 mm |
| | **Clamp** | KLI-5<br>(Aluminum) | KLI-6<br>(Aluminum) |

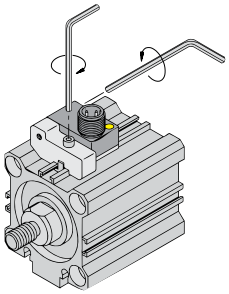
| Drawing | IKE, IKT, and IKM Housing with KLI-CB64 or KLI-CB124 Clamp | | |
|---|---|---|---|
|  | **Cylinder Diameter** | 0.79 - 2.52 inches<br>20 - 64 mm | 0.79 - 4.88 inches<br>20 - 124 mm |
| | **Rod Diameter** | 0.31 - 0.55 inches<br>8 - 14 mm | 0.43 - 0.75 inches<br>11 - 19 mm |
| | **Clamp** | KLI-CB64<br>(Stainless Steel/Steel) | KLI-CB124<br>(Stainless Steel/Steel) |

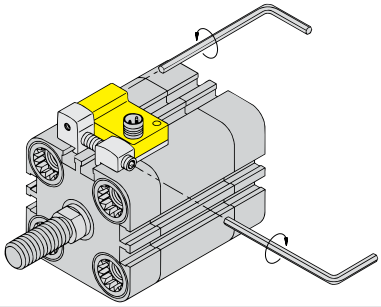
| Drawing | KST Housing with KST-SB170 and KST-SB335 Clamps | |
|---|---|---|
|  | **Cylinder Diameter** | 0.31 - 0.99 inches<br>8 - 25 mm | 0.31 - 3.15 inches<br>8 - 80 mm |
| | **Strap** | KST-SB170<br>(Stainless Steel) | KST-SB335<br>(Stainless Steel) |
| | **Mount** | KST-MG<br>(Die-cast Zinc) | |
| | **Screw Plate** | KST-SE<br>(Die-cast Zinc) | |

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors

| Drawing | PST Housing with KLP80-VA and KLP200-VA Clamps | | |
|---|---|---|---|
|  | **Cylinder Diameter** | 0.31 - 3.15 inches<br>8 - 80 mm | 3.15 - 7.87 inches<br>0 - 200 mm |
| | **Clamp** | KLP80-VA<br>(Stainless steel band, brass nuts) | KLP200-VA<br>(Stainless steel band, brass nuts) |

| Drawing | NST Housing with KLQ-1 or KLQ-2 Clamps | |
|---|---|---|
|  | **Cylinder Diameter** | 0.47 - 3.94 inches<br>12 - 100 mm |
| | **Cylinder Manufacturer** | SMC |
| | **Cylinder Family** | NCDQ2 |
| | **Clamp** | SMC-325<br>(Anodized Aluminum) |

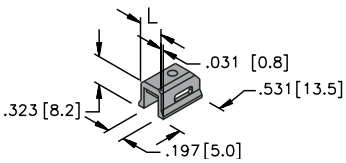
| Drawing | NST Housing with KLN-3 Clamp | |
|---|---|---|
|  | **Cylinder Diameter** | 0.47 - 3.94 inches<br>12 - 100 mm |
| | **Groove Diameter** | 0.20 - 0.53 (0.83) inches<br>5.2 - 13.5 (21)* mm |
| | **Clamp** | KLN-3<br>(Anodized Aluminum) |
| | ***Accessory** | Longer M5 x 35<br>set screw (A0050) |

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors

## UNT Mounting Clamps

**KLDT-UNT2**

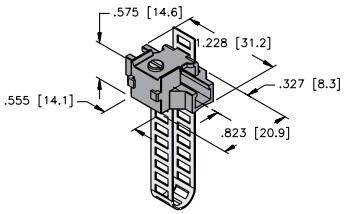



| Part Number | "L" inches | "L" mm |
|---|---|---|
| KLDT-UNT2 | .276 | 7 |
| KLDT-UNT3 | .370 | 9.4 |
| KLDT-UNT4 | .453 | 11.5 |
| KLDT-UNT5 | .496 | 12.6 |
| KLDT-UNT6 | .413 | 10.5 |
| KLDT-UNT7 | .260 | 6.6 |

**Note:** For outside dimension of beveled ears add 1.6 mm to bracket width listed.

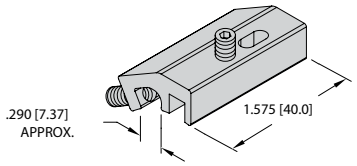
| UNT Housing with KLDT-UNT and ASB Style Strap | | |
|---|---|---|
| Cylinder Diameter | | Clamp (Stainless Steel) |
| Inches | Millimeters | |
| .276 - .433 | 7 - 11 | ASB-1 |
| .433 - .748 | 11 - 19 | ASB-2 |
| .709 - 1.142 | 18 - 29 | ASB-3 |
| 1.102 - 1.535 | 28 - 39 | ASB-4 |
| 1.496 - 1.929 | 38 - 49 | ASB-5 |
| 1.890 - 2.323 | 48 - 59 | ASB-6 |

**KLRC-UNT2**

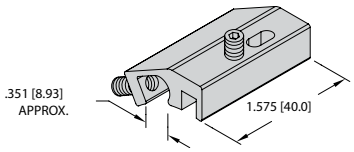



| Part Number | Inches | Millimeters |
|---|---|---|
| KLRC-UNT1 | .315 - .984 | 8 - 25 |
| KLRC-UNT2 | .984 - 2.480 | 25 - 63 |
| KLRC-UNT3 | 2.480 - 5.118 | 63 - 130 |
| KLRC-UNT4 | 5.118 - 9.843 | 130 - 250 |

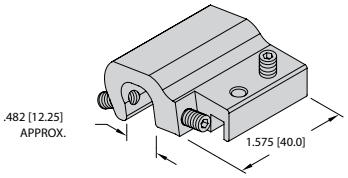
**KLZ1M-UNT CLAMP**



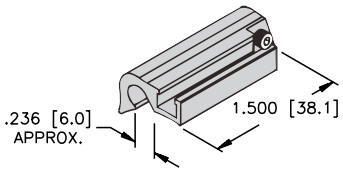

**KLZ2M-UNT CLAMP**




**KLZ3M-UNT CLAMP**

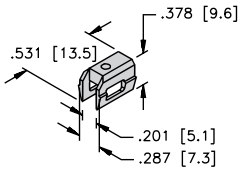
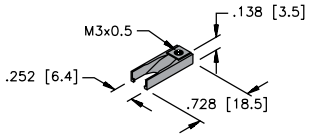
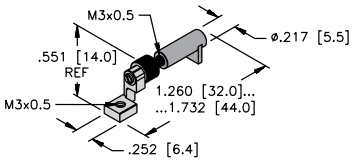
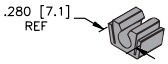
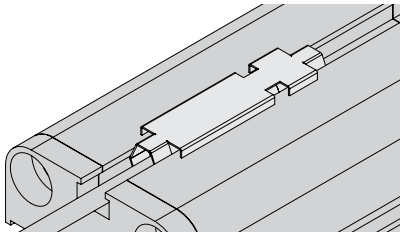
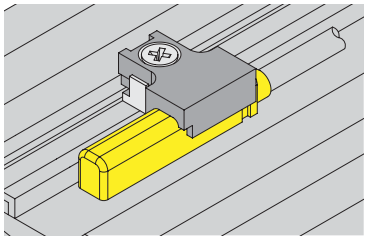



**KLZ1A-INT CLAMP**



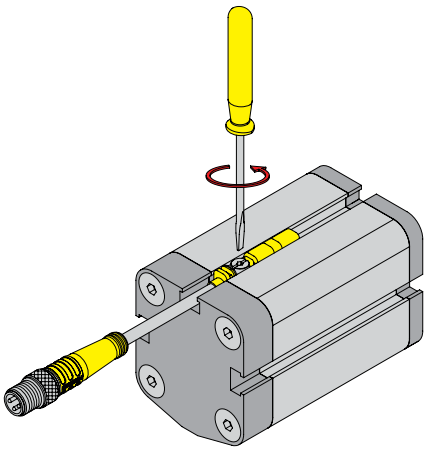

We reserve the right to make technical alterations without prior notice.

## UNT Mounting Accessories

| KLDT-UNT6 (6913355) | UNT-Stopper (4685751) | UNT-Adjusting Bracket (4685750) |
|---|---|---|
|   |   |   |
| **UNT Mounting Screw, 2.5 mm (6901056)** | **M2-BIM-UNT MTG SCRW. 1.5 mm (6901050)** | **UNT-Cable Clip (6900456)** |
| | |   |
| **SG-UNT (A9800)** | **KLT-UNT1 (6913377)** | |
|  |  For use with SMC 325 Rail | |

## UNT Sensor Mounting

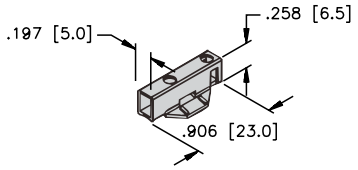
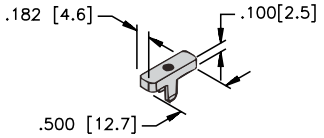
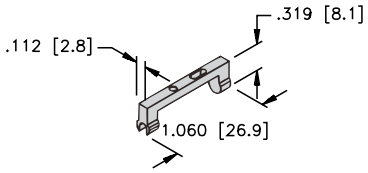
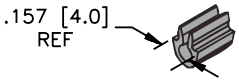
**Note:** Turn screw counter-clockwise to tighten.



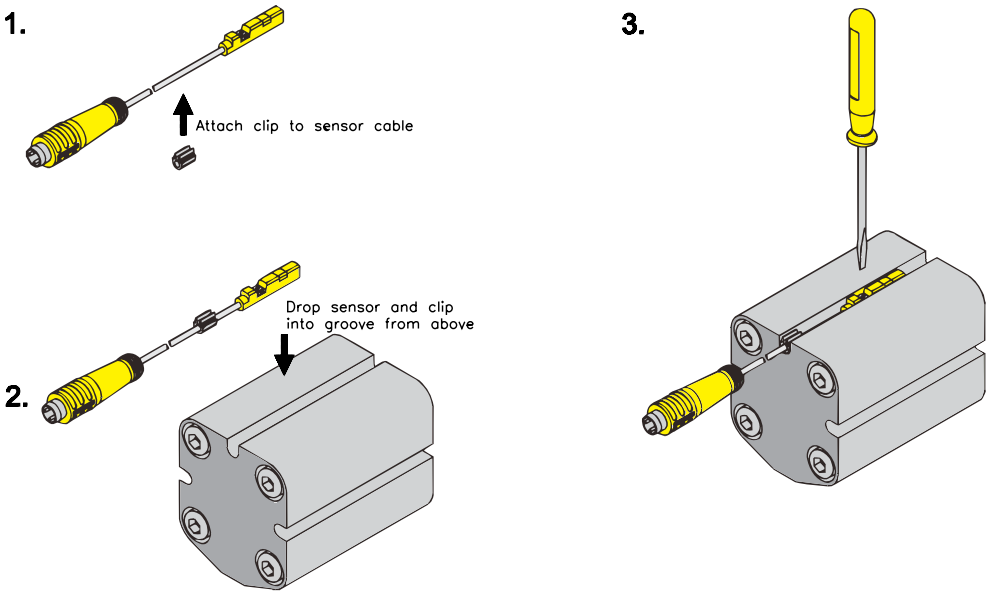
We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors

## UNR Mounting Accessories

| KLR-2 UNR | KLFA-UNR | KLTR-2 UNR |
|---|---|---|
|   |   |   |
| **UNR Cable Clip (6900428)** | **M1.6 BIM-UNR-MTG SCR. 1.3 mm (6901055)** | |
|   | | |

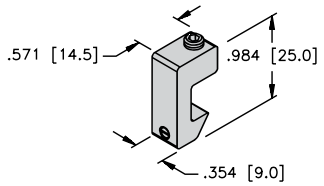
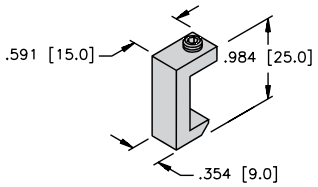
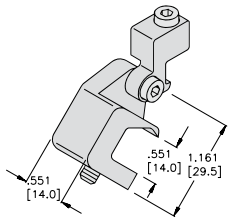
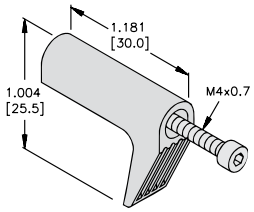
## UNR Sensor Mounting

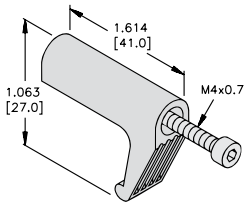
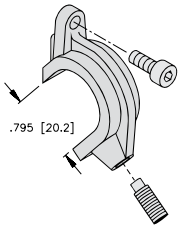
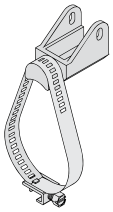



**Note:** Turn screw counter-clockwise to tighten. Use of mounting clip is optional.

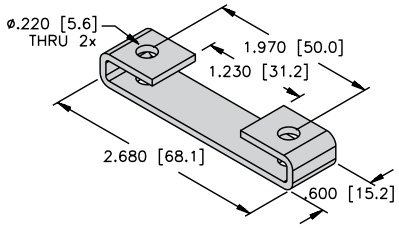
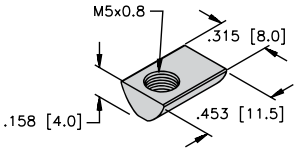
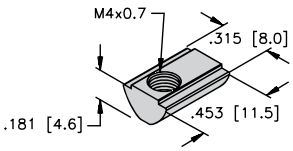
We reserve the right to make technical alterations without prior notice.

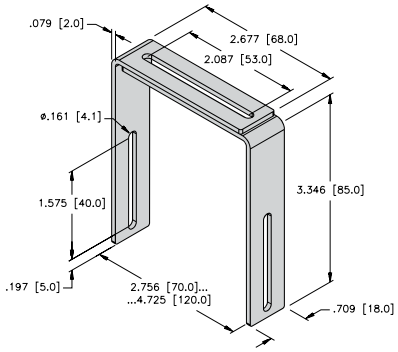
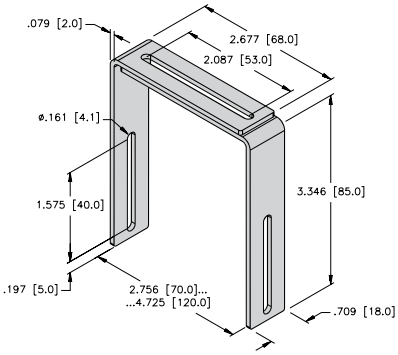
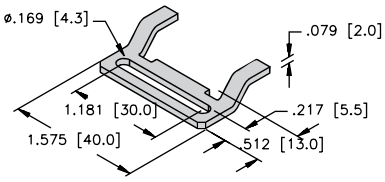
## Mounting Clamps

| KLA-1 | KLA-3M | KLA-2 | KLI-1 |
|---|---|---|---|
|   |   |   |   |

| KLI-3 | KLI-2 | KLI-CB64 and KLI-CB124 |
|---|---|---|
|   |   |  |

## Mounting Brackets for Q25L Sensor

| MB-Q21 | MN-M5-Q25 | MN-M4-Q25 |
|---|---|---|
|   Mounting Bracket |   Sliding block with M5 thread for the backside profile |   Sliding block with M4 thread for the backside profile |

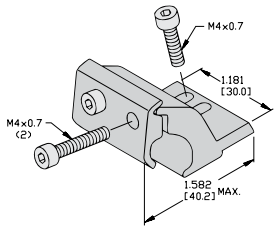
| MB2.1-Q25 | MB2.2-Q25 | MB1-Q25 |
|---|---|---|
|   Mounting bracket for cylinders 40-60 mm |   Mounting bracket for cylinders 70-120 mm |   Mounting Clip |

We reserve the right to make technical alterations without prior notice.

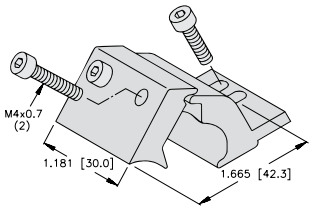
# Cylinder Position Sensors

## Mounting Clamps

### KLI-5




### KLI-5Z

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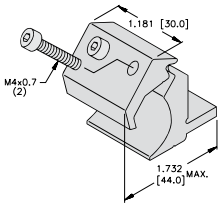


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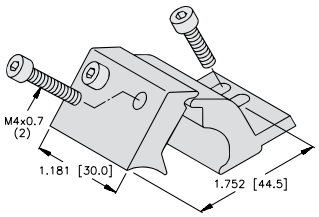
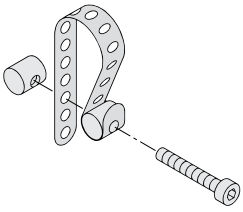
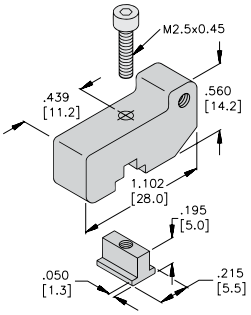


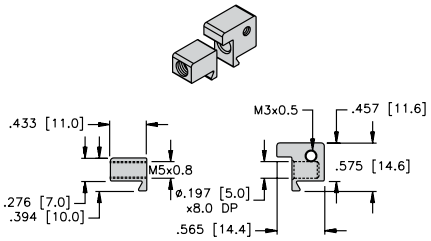

### KLP 80-VA and KLP 200-VA



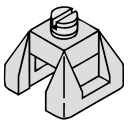
### SMC-325



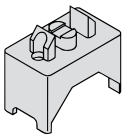

### KLN-3



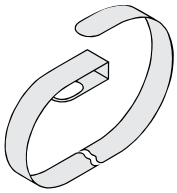

### KST-SE (46736)



### KST-MG (46735)



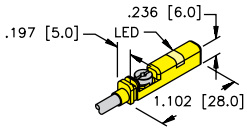
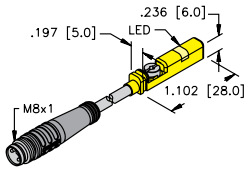
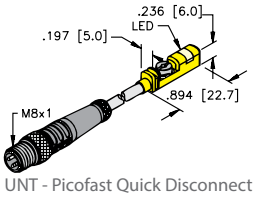
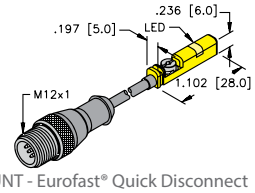
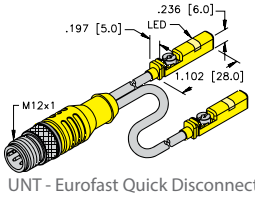
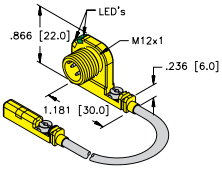
### KST-SB170 and KST-SB335



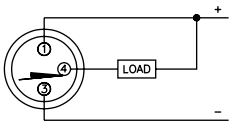
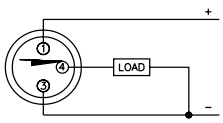
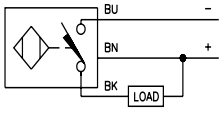
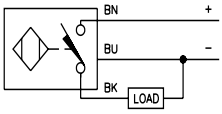
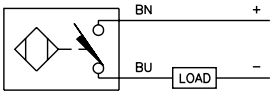
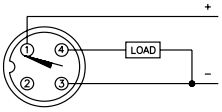
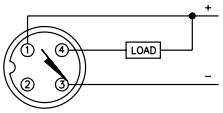
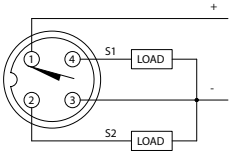
We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | BIM-UNT

**T-groove, C-groove, Tie-rod, and Round Cylinder Style**

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   UNT - Potted-In Cable | B   UNT - Picofast® Quick Disconnect |
| C   UNT - Picofast Quick Disconnect | D   UNT - Eurofast® Quick Disconnect | E   UNT - Eurofast Quick Disconnect |
| F   UNT - Eurofast Quick Disconnect | | |

**Wiring Diagrams/Mating Cordsets**

| | | | |
|---|---|---|---|
| 1   Mating Cordset: PKG 3Z-* | 2   Mating Cordset: PKG 3Z-*; PKG 3M-* | 3   | 4   |
| 5   | 6   Mating Cordset: RK 4T-* | 7   Mating Cordset: RK 4T-* | 8   Mating Cordset: RK 4.4T-*; RKC 4.4T-* |

**A13** — **3-wire DC - Magnetic (AN, RN, AP, RP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | ≤1 mm | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥170 mA on 150 mA Load Current | Temperature Drift: | ≤0.1 mm, ≤0.3 mm (UNR) |
| | ≥120 mA on 100 mA Load Current | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| No-Load Current: | ≤15 mA; | Repeatability: | ≥± 0.1 mm, ≥± 0.3 mm (UNR) |
| Pass Speed: | ≤10 ms; ≤3 ms (UNR) | | |

**A14** — **2-wire DC - Magnetic (AD, AG)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | ≤1 mm | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-Polarized (AD) ≤4 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤3.5 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Pass Speed: | ≤3 ms, ≤10 ms (UNT) | Repeatability: | ≥± 0.1 mm |

**Additional Specifications**

**Magnetic Actuation Strength (Gauss):** 20-350

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | BIM-UNT

**T-groove, C-groove, Tie-rod, and Round Cylinder Style**

| Part Number/ ID Number | Features | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BIM-UNT-AN6X** 4685702 | | 3-wire DC, NPN | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | PA 12 | 2M/TPU | A | 3 | A13 |
| **BIM-UNT-AP6X** 4685741 | | 3-wire DC, PNP | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | PA 12 | 2M/TPU | A | 4 | A13 |
| **BIM-UNT-AG41X/S1139/S1160** 4685766 | Irradiated TPU Cable, Wider Range | 2-wire DC | 10-55 VDC | 300 | ≤ 100 | -25 to +70 | IP67 | PA 12 | 2M/TPU | A | 5 | A14 |
| **BIM-UNT-AN6X-0.3-PSG3S** 4685705 | Fixed Coupling Nut | 3-wire DC, NPN | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | PA 12 | 0.3M/TPU | B | 1 | A13 |
| **BIM-UNT-AP6X-0.3-PSG3S** 4685722 | Fixed Coupling Nut | 3-wire DC, PNP | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | PA 12 | 0.3M/TPU | B | 2 | A13 |
| **BIM-UNT-AP6X-0.3-PSG3M** 4685723 | Rotating Coupling Nut | 3-wire DC, PNP | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | PA 12 | 0.3M/TPU | C | 2 | A13 |
| **BIM-UNT-AP6X-0.3-RS4T** 46857260 | | 3-wire DC, PNP | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | PA 12 | 0.3M/TPU | D | 6 | A13 |
| **BIM-UNT-AN6X-0.3-RS4T** 4685792 | | 3-wire DC, NPN | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | PA 12 | 0.3M/TPU | D | 7 | A13 |
| **BIM-UNT-0.3-UNT-2AP6X3-H1141** 4685730 | Dual Switch | 4-wire DC, PNP | 10-30 VDC | 1000 | ≤ 150 | -25 to +70 | IP67 | PP | 0.3M/TPU | F | 8 | A13 |
| **BIM-UNT-AP6X/S991** 4685728 | Radial Magnetic Fields | 3-wire DC, PNP | 10-30 VDC | 1000 | ≤ 150 | -25 to +70 | IP67 | PP | 2M/TPU | B | 4 | A13 |
| **BIM-UNT-2AP6X-0.2-RSC4.4T** 4685891 | Dual Switch | 4-wire DC, PNP | 10-30 VDC | 1000 | ≤ 150 | -25 to +70 | IP67 | PP | 0.2M/TPU | E | 8 | A13 |

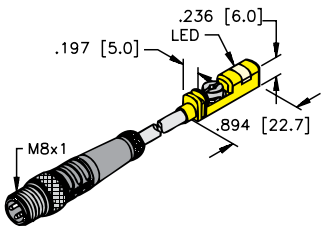
We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | BIM-UNTK

**T-groove Short Cylinder Style**

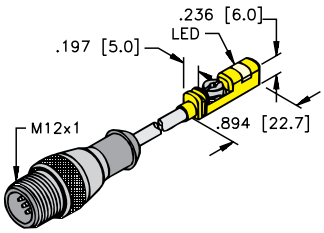
| Housing Style | Dimension Drawings |
|---|---|

A



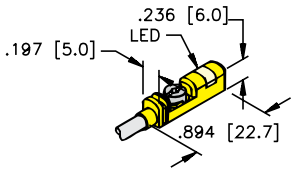

UNTK - Picofast Quick Disconnect

B




UNTK - Eurofast Quick Disconnect

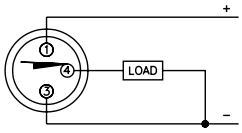
C




UNTK - Potted-In Cable

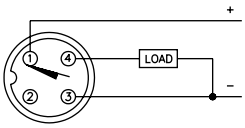
## Wiring Diagrams/Mating Cordsets

1



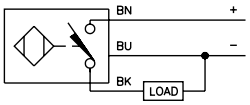

Mating Cordset: PKG 3Z-*

2

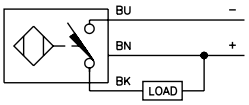



Mating Cordset: RK 4T-*

3




4




## A13 — 3-wire DC - Magnetic (AN, RN, AP, RP)

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | ≤1 mm |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current<br>≥170 mA on 150 mA Load Current<br>≥120 mA on 100 mA Load Current |
| Off-State (Leakage) Current: | ≤0.1 mA |
| No-Load Current: | ≤15 mA; |
| Pass Speed: | ≤10 ms; ≤3 ms (UNR) |
| Power-On Effect: | Per IEC 947-5-2 |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Transient Protection: | Per EN 60947-5-2 |
| Temperature Drift: | ≤0.1 mm, ≤0.3 mm (UNR) |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≥± 0.1 mm, ≥± 0.3 mm (UNR) |

## A17 — 3-wire DC - Magnetic w/o Short Circuit Protection (AP7)

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | ≤1 mm |
| Voltage Drop Across Conducting Sensor: | ≤1.4 V |
| Short Circuit Protection: | No |
| Off-State (Leakage) Current: | ≤0.1 mA |
| No-Load Current: | ≤10 mA; |
| Pass Speed: | ≤3 ms |
| Power-On Effect: | Per IEC 947-5-2 |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Transient Protection: | Per EN 60947-5-2 |
| Temperature Drift: | ≤0.3 mm |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≥± 0.3 mm |

## Additional Specifications

**Magnetic Actuation Strength (Gauss):** 20-350

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | BIM-UNTK

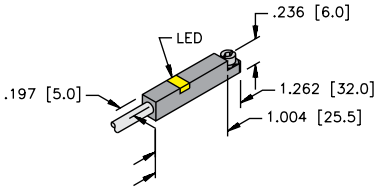
**T-groove Short Cylinder Style**

| Part Number/ ID Number | Features | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BIM-UNTK-AP7X-0.3-PSG3M** 4686011 | Short Body | 3-wire DC, PNP | 10-30 VDC | 300 | ≤ 100 | -25 to +70 | IP67 | PP | 0.3M/TPU | A | 1 | A17 |
| **BIM-UNTK-AP7X-0.3-RS4T** 4686021 | Short Body | 3-wire DC, PNP | 10-30 VDC | 300 | ≤ 100 | -25 to +70 | IP67 | PP | 0.3M/TPU | B | 2 | A17 |
| **BIM-UNTK-AP7X** 4686001 | Short Body | 3-wire DC, PNP | 10-30 VDC | 300 | ≤ 100 | -25 to +70 | IP67 | PP | 2M TPU | C | 3 | A17 |
| **BIM-UNTK-AP6X** 4686005 | short Body | 3-wire DC, PNP | 10-30 VDC | 300 | ≤ 100 | -25 to +70 | IP68 | PP | 2M TPU | C | 3 | A13 |
| **BIM-UNTK-AN6X** 4686006 | Short Body | 3-wire DC, PNP | 10-30 VDC | 300 | ≤ 100 | -25 to +70 | IP69 | PP | 2M TPU | C | 4 | A13 |

We reserve the right to make technical alterations without prior notice.

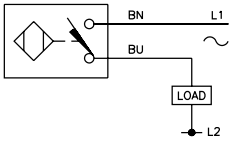
# Cylinder Position Sensors | BR-INT

**T-groove Cylinder Style or Universal Mount with Brackets**

| Housing Style | Dimension Drawings |
|---|---|
| | A   INT - Picofast Potted-In Cable |

**Wiring Diagrams/Mating Cordsets**

1




**A3** — **2-wire Reed AC and DC (ADZ71)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Reverse Polarity Protection: | Yes |
| Differential Travel (Hysteresis): | ≤1 mm (Depends on magnet) | Shock: | 30 g, 11 ms |
| Maximum Switching Capacity: | ≤10 W | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Off-State (Leakage) Current: | 0 mA | Repeatability: | ≥±0.1 mm |
| Pass Speed: | ≤10 m/s | | (constant temperature & voltage) |
| Power-On Effect: | Per IEC 947-5-2 | Temperature Drift: | ≤0.1 mm |
| Transient Protection: | Per EN 60947-5-2 | Voltage Drop: | ≤0.5 V |

**Additional Specifications**

**Magnetic Actuation Strength (Gauss):** 20-350

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | BR-INT

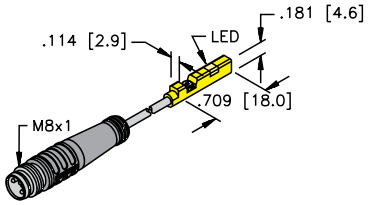
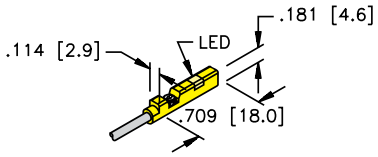
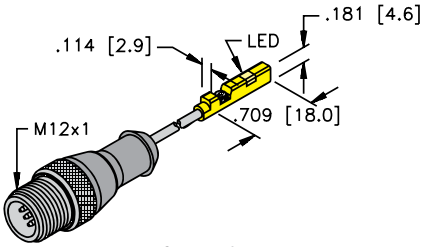
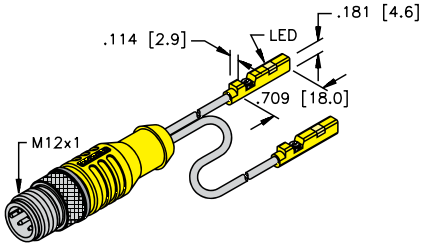
**T-groove Cylinder Style or Universal Mount with Brackets**

| Part Number/ ID Number | Features | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BR-INT-ADZ71X** 4700510 | Reed Contact | 2-wire AC/DC, Reed Contact | 3-140 VAC/4-200 VDC | 500 | ≤ 500 | -25 to +70 | IP67 | PA 12 | 2M/PVC | A | 1 | A3 |

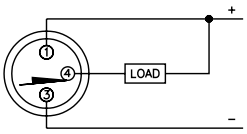
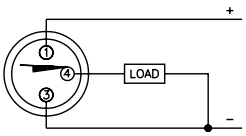
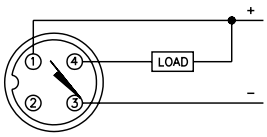
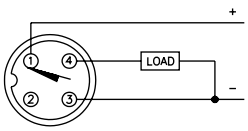
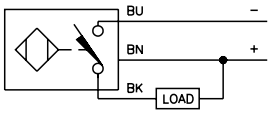
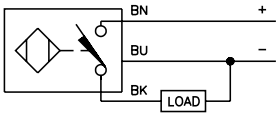
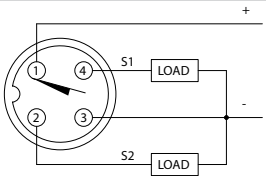
We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | BIM-UNR

**C-groove Cylinder Style**

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   UNR - Picofast Quick Disconnect | B   UNR - Potted-In Cable |
| C   UNR - Eurofast Quick Disconnect | D   UNR - Eurofast Quick Disconnect | |

**Wiring Diagrams/Mating Cordsets**

| 1 | 2 | 3 | 4 |
|---|---|---|---|
|   Mating Cordset: PKG 3Z-* |   Mating Cordset: PKG 3Z-* |   Mating Cordset: RK 4T-* |   Mating Cordset: RK 4T-* |
| 5 | 6 | 7 | |
|   |   |   Mating Cordset: RKC 4.4T-* | |

**A13** — **3-wire DC - Magnetic (AN, RN, AP, RP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | ≤1 mm | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥170 mA on 150 mA Load Current | Temperature Drift: | ≤0.1 mm, ≤0.3 mm (UNR) |
| | ≥120 mA on 100 mA Load Current | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| No-Load Current: | ≤15 mA; | Repeatability: | ≥± 0.1 mm, ≥± 0.3 mm (UNR) |
| Pass Speed: | ≤10 ms; ≤3 ms (UNR) | | |

**Additional Specifications**

**Magnetic Actuation Strength (Gauss):** 20-350

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | BIM-UNR

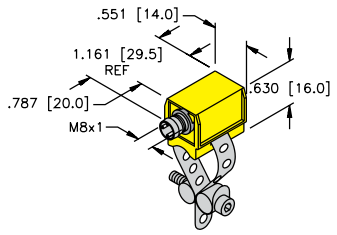
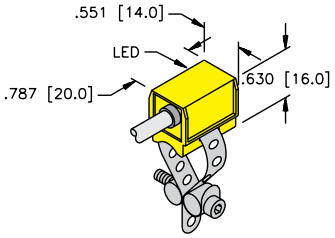
## C-groove Cylinder Style

| Part Number/ ID Number | Features | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BIM-UNR-AN6X-0.3-PSG3S W/M** 4685848 | Fixed Coupling Nut | 3-wire DC, NPN | 10-30 VDC | 300 | ≤ 100 | -25 to +70 | IP67 | PP | 0.3M/TPU | A | 1 | A13 |
| **BIM-UNR-AP6X-0.3-PSG3S W/M** 4685843 | Fixed Coupling Nut | 3-wire DC, PNP | 10-30 VDC | 300 | ≤ 100 | -25 to +70 | IP67 | PP | 0.3M/TPU | A | 2 | A13 |
| **BIM-UNR-AN6X-0.3-RS4 W/M** 4685850 | | 3-wire DC, NPN | 10-30 VDC | 300 | ≤ 100 | -25 to +70 | IP67 | PP | 0.3M/TPU | C | 3 | A13 |
| **BIM-UNR-AP6X-0.3-RS4 W/M** 4685845 | | 3-wire DC, PNP | 10-30 VDC | 300 | ≤ 100 | -25 to +70 | IP67 | PP | 0.3M/TPU | C | 4 | A13 |
| **BIM-UNR-AN6X W/M** 4685847 | | 3-wire DC, NPN | 10-30 VDC | 300 | ≤ 100 | -25 to +70 | IP67 | PP | 2M/TPU | B | 5 | A13 |
| **BIM-UNR-AP6X W/M** 4685842 | | 3-wire DC, PNP | 10-30 VDC | 300 | ≤ 100 | -25 to +70 | IP67 | PP | 2M/TPU | B | 6 | A13 |
| **BIM-UNR-2AP6X-0.2-RSC4.4T** 4685899 | Dual Switch | 4-wire DC, PNP | 10-30 VDC | 300 | ≤ 100 | -25 to +70 | IP67 | PP | 0.2M/TPU | D | 7 | A13 |

We reserve the right to make technical alterations without prior notice.

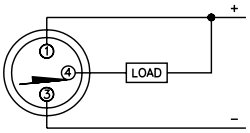
# Cylinder Position Sensors | BIM-PST

**Round Cylinder Style**

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   PST - Picofast Quick Disconnect | B   PST - Potted-In Cable |

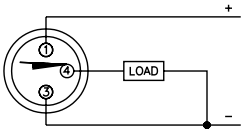
**Wiring Diagrams/Mating Cordsets**

1



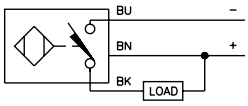

Mating Cordset: PKG 3Z-*

2

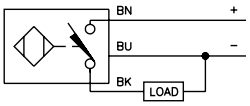



Mating Cordset: PKG 3Z-*

3




4




**A13** — **3-wire DC - Magnetic (AN, RN, AP, RP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | ≤1 mm | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥170 mA on 150 mA Load Current | Temperature Drift: | ≤0.1 mm, ≤0.3 mm (UNR) |
| | ≥120 mA on 100 mA Load Current | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| No-Load Current: | ≤15 mA; | Repeatability: | ≥± 0.1 mm, ≥± 0.3 mm (UNR) |
| Pass Speed: | ≤10 ms; ≤3 ms (UNR) | | |

**Additional Specifications**

**Magnetic Actuation Strength (Gauss):** 20-350

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | BIM-PST

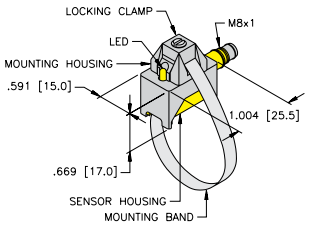
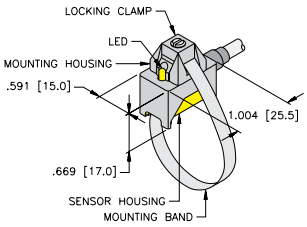
## Round Cylinder Style

| Part Number/ ID Number | Features | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BIM-PST-AN6X-V1131 W/KLP-80** 4625190 | KLP-80 Included | 3-wire DC, NPN | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | PA 12 | -- | A | 1 | A13 |
| **BIM-PST-AP6X-V1131 W/KLP-80** 4625090 | KLP-80 Included | 3-wire DC, PNP | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | PA 12 | -- | A | 2 | A13 |
| **BIM-PST-AN6X W/KLP-80** 4624191 | KLP-80 Included | 3-wire DC, NPN | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | PA 12 | 2M/PVC | B | 3 | A13 |
| **BIM-PST-AP6X W/KLP-80** 4624090 | KLP-80 Included | 3-wire DC, PNP | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | PA 12 | 2M/PVC | B | 4 | A13 |

We reserve the right to make technical alterations without prior notice.

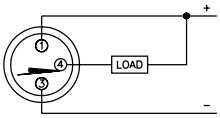
# Cylinder Position Sensors | BIM-KST

**Round Cylinder Style**

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   KST - Picofast Quick Disconnect | B   KST - Potted-In Cable |

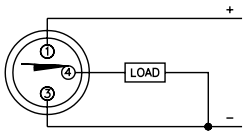
**Wiring Diagrams/Mating Cordsets**

1



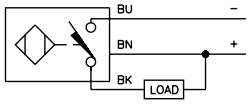

Mating Cordset: PKG 3Z-*

2

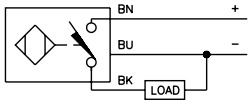



Mating Cordset: PKG 3Z-*

3




4




**A13** — **3-wire DC - Magnetic (AN, RN, AP, RP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | ≤1 mm | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥170 mA on 150 mA Load Current | Temperature Drift: | ≤0.1 mm, ≤0.3 mm (UNR) |
| | ≥120 mA on 100 mA Load Current | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| No-Load Current: | ≤15 mA; | Repeatability: | ≥± 0.1 mm, ≥± 0.3 mm (UNR) |
| Pass Speed: | ≤10 ms; ≤3 ms (UNR) | | |

**Additional Specifications**

**Magnetic Actuation Strength (Gauss):** 20-350

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | BIM-KST

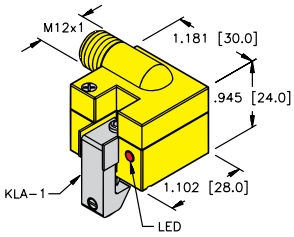
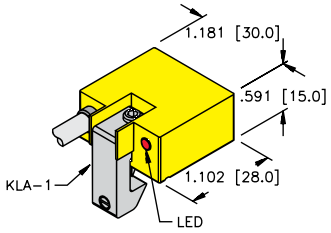
**Round Cylinder Style**

| Part Number/ ID Number | Features | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BIM-KST-AN6X-V1131** 46743 | KST SB170 and KST SB335 Straps Included | 3-wire DC, NPN | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | Zinc | -- | A | 1 | A13 |
| **BIM-KST-AP6X-V1131** 46742 | KST SB170 and KST SB335 Straps Included | 3-wire DC, PNP | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | Zinc | -- | A | 2 | A13 |
| **BIM-KST-AN6X** 46741 | KST SB170 and KST SB335 Straps Included | 3-wire DC, NPN | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | Zinc | 2M/ PVC | B | 3 | A13 |
| **BIM-KST-AP6X** 46740 | KST SB170 and KST SB335 Straps Included | 3-wire DC, PNP | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | Zinc | 2M/ PVC | B | 4 | A13 |

We reserve the right to make technical alterations without prior notice.

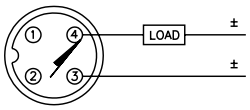
# Cylinder Position Sensors | BIM-AKT

**Tie-rod Cylinder Style**

| Housing Style | Dimension Drawings | |
|---|---|---|
| | A   AKT - Eurofast Connector | B   AKT - Potted-In Cable |

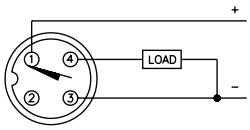
**Wiring Diagrams/Mating Cordsets**

1



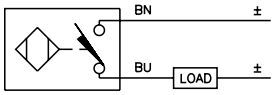

Mating Cordset: RK 4.2T-*

2

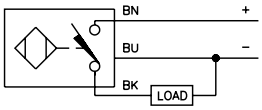



Mating Cordset: RK 4T-*

3




4




**A13** — **3-wire DC - Magnetic (AN, RN, AP, RP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | ≤1 mm | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥170 mA on 150 mA Load Current | Temperature Drift: | ≤0.1 mm, ≤0.3 mm (UNR) |
| | ≥120 mA on 100 mA Load Current | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| No-Load Current: | ≤15 mA; | Repeatability: | ≥± 0.1 mm, ≥± 0.3 mm (UNR) |
| Pass Speed: | ≤10 ms; ≤3 ms (UNR) | | |

**A14** — **2-wire DC - Magnetic (AD, AG)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | ≤1 mm | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-Polarized (AD) ≤4 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤3.5 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Pass Speed: | ≤3 ms, ≤10 ms (UNT) | Repeatability: | ≥± 0.1 mm |

**Additional Specifications**

**Magnetic Actuation Strength (Gauss):** 20-350

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | BIM-AKT

**Tie-rod Cylinder Style**

| Part Number/ ID Number | Features | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BIM-AKT-AD4X-H1141 W/KLA-1** 4480290 | KLA-1 Included | 2-wire DC | 10-65 VDC | 300 | ≤ 100 | -25 to +70 | IP67 | PA 12 | -- | A | 1 | A14 |
| **BIM-AKT-AP6X-H1141 W/KLA-1** 4675290 | KLA-1 Included | 3-wire DC, PNP | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | PA 12 | -- | A | 2 | A13 |
| **BIM-AKT-AD4X W/KLA-1** 4480090 | KLA-1 Included | 2-wire DC | 10-65 VDC | 300 | ≤ 100 | -25 to +70 | IP67 | PA 12 | 2M/PVC | B | 3 | A14 |
| **BIM-AKT-AP6X W/KLA-1** 4675090 | KLA-1 Included | 3-wire DC, PNP | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | PA 12 | 2M/PVC | B | 4 | A13 |

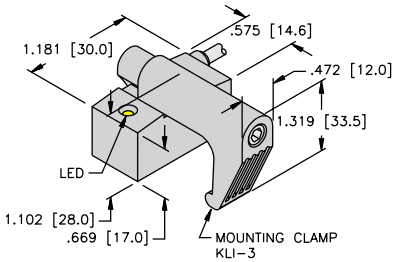
We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | BIM-IKE/IKT

**Tie-rod Cylinder Style**

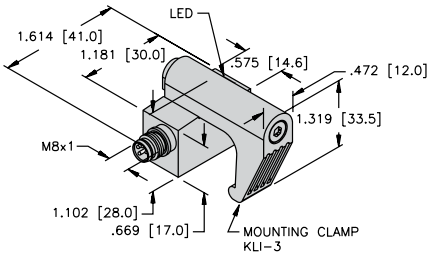
| Housing Style | Dimension Drawings |
|---|---|

A



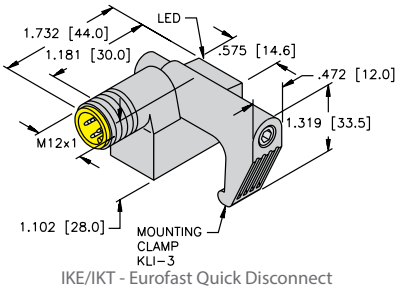

IKE/IKT - Potted-In Cable

B




IKE/IKT - Picofast Quick Disconnect

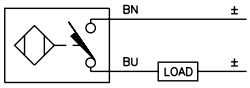
C



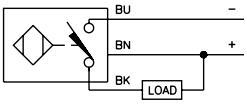

IKE/IKT - Eurofast Quick Disconnect

## Wiring Diagrams/Mating Cordsets

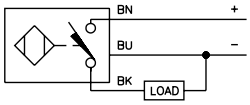
1



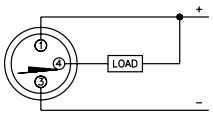

2




3

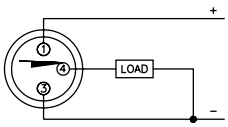



4



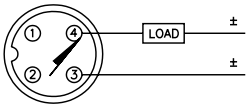

Mating Cordset: PKG 3Z-*

5



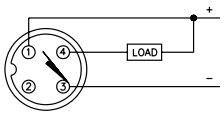

Mating Cordset: PKG 3Z-*

6



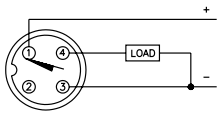

Mating Cordset: RK 4.2T-*

7




Mating Cordset: RK 4T-*

8




Mating Cordset: RK 4T-*

## A13 — 3-wire DC - Magnetic (AN, RN, AP, RP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | ≤1 mm | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥170 mA on 150 mA Load Current | Temperature Drift: | ≤0.1 mm, ≤0.3 mm (UNR) |
| | ≥120 mA on 100 mA Load Current | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| No-Load Current: | ≤15 mA; | Repeatability: | ≥± 0.1 mm, ≥± 0.3 mm (UNR) |
| Pass Speed: | ≤10 ms; ≤3 ms (UNR) | | |

## A14 — 2-wire DC - Magnetic (AD, AG)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Off-State (Leakage) Current: | ≤0.8 mA |
| Differential Travel (Hysteresis): | ≤1 mm | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | Non-Polarized (AD) ≤4 V | Transient Protection: | Per EN 60947-5-2 |
| | Polarized (AG) ≤3.5 V | Shock: | 30 g, 11 ms |
| Trigger Current for Short Circuit Protection: | ≥120 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Pass Speed: | ≤3 ms, ≤10 ms (UNT) | Repeatability: | ≥± 0.1 mm |

## Additional Specifications

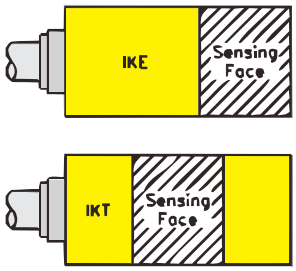
**Magnetic Actuation Strength (Gauss):** 20-350

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | BIM-IKE/IKT

**Tie-rod Cylinder Style**

| Part Number/ ID Number | Features | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BIM-IKE-AD4X W/KLI-3** 4421490 | KLI-3 Included | 2-wire DC | 10-65 VDC | 300 | ≤ 100 | -25 to +70 | IP67 | Zinc | 2M/PVC | A | 1 | A14 |
| **BIM-IKT-AD4X W/KLI-3** 4482090 | KLI-3 Included | 2-wire DC | 10-65 VDC | 300 | ≤ 100 | -25 to +70 | IP67 | Zinc | 2M/PVC | A | 1 | A14 |
| **BIM-IKE-AN6X W/KLI-3** 4621590 | KLI-3 Included | 3-wire DC, NPN | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | Zinc | 2M/PVC | A | 2 | A13 |
| **BIM-IKT-AN6X W/KLI-3** 4620190 | KLI-3 Included | 3-wire DC, NPN | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | Zinc | 2M/PVC | A | 2 | A13 |
| **BIM-IKE-AP6X W/KLI-3** 4621490 | KLI-3 Included | 3-wire DC, PNP | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | Zinc | 2M/PVC | A | 3 | A13 |
| **BIM-IKT-AP6X W/KLI-3** 4620090 | KLI-3 Included | 3-wire DC, PNP | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | Zinc | 2M/PVC | A | 3 | A13 |
| **BIM-IKE-AN6X-V1131 W/KLI-3** 4621795 | KLI-3 Included | 3-wire DC, NPN | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | Zinc | -- | B | 4 | A13 |
| **BIM-IKT-AN6X-V1131 W/KLI-3** 4622195 | KLI-3 Included | 3-wire DC, NPN | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | Zinc | -- | B | 4 | A13 |
| **BIM-IKE-AP6X-V1131 W/KLI-3** 4621695 | KLI-3 Included | 3-wire DC, PNP | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | Zinc | -- | B | 5 | A13 |
| **BIM-IKT-AP6X-V1131 W/KLI-3** 4622095 | KLI-3 Included | 3-wire DC, PNP | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | Zinc | -- | B | 5 | A13 |
| **BIM-IKE-AD4X-H1141 W/KLI-3** 4421690 | KLI-3 Included | 2-wire DC | 10-65 VDC | 300 | ≤ 100 | -25 to +70 | IP67 | Zinc | -- | C | 6 | A14 |
| **BIM-IKT-AD4X-H1141 W/KLI-3** 4482290 | KLI-3 Included | 2-wire DC | 10-65 VDC | 300 | ≤ 100 | -25 to +70 | IP67 | Zinc | -- | C | 6 | A14 |
| **BIM-IKE-AN6X-H1141 W/KLI-3** 4621790 | KLI-3 Included | 3-wire DC, NPN | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | Zinc | -- | C | 7 | A13 |
| **BIM-IKT-AN6X-H1141 W/KLI-3** 4621190 | KLI-3 Included | 3-wire DC, NPN | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | Zinc | -- | C | 7 | A13 |
| **BIM-IKE-AP6X-H1141 W/KLI-3** 4621690 | KLI-3 Included | 3-wire DC, PNP | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | Zinc | -- | C | 8 | A13 |
| **BIM-IKT-AP6X-H1141 W/KLI-3** 4621090 | KLI-3 Included | 3-wire DC, PNP | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | Zinc | -- | C | 8 | A13 |



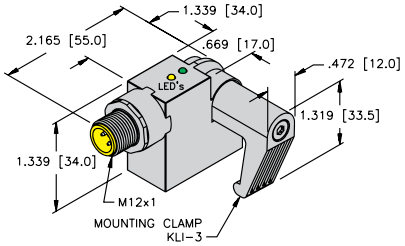

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | BIM-IKM

**Tie-rod Cylinder Style**

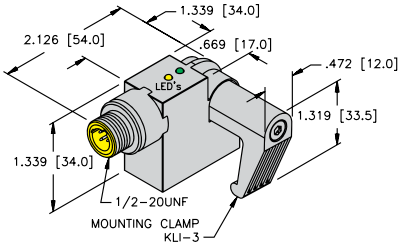
| Housing Style | Dimension Drawings |
|---|---|

A



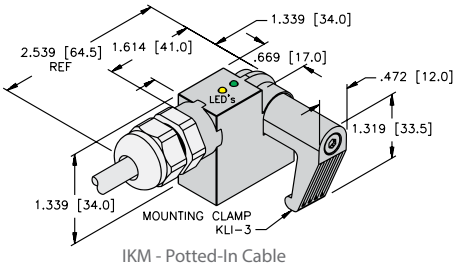

IKM - Eurofast Connector

B




IKM - Microfast® Connector

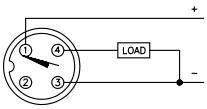
C




IKM - Potted-In Cable

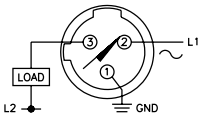
## Wiring Diagrams/Mating Cordsets

1



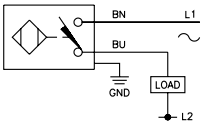

Mating Cordset: RK 4T-*

2




Mating Cordset: KB 3T-*

3




## A13 — 3-wire DC - Magnetic (AN, RN, AP, RP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | ≤1 mm | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥170 mA on 150 mA Load Current | Temperature Drift: | ≤0.1 mm, ≤0.3 mm (UNR) |
| | ≥120 mA on 100 mA Load Current | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| No-Load Current: | ≤15 mA; | Repeatability: | ≥± 0.1 mm, ≥± 0.3 mm (UNR) |
| Pass Speed: | ≤10 ms; ≤3 ms (UNR) | | |

## A15 — 2-wire AC w/o Short-Circuit Protection - Magnetic (AZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Pass Speed: | ≤1 ms |
| Differential Travel (Hysteresis): | ≤1 mm | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | Transient Protection: | Per EN 60947-5-2 |
| Continuous Load Current: | AC: ≤500 mA | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤1.7 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Minimum Load Current: | ≥5.0 mA | Repeatability: | ≥± 0.1 mm |

## Additional Specifications

**Magnetic Actuation Strength (Gauss):** 20-350

We reserve the right to make technical alterations without prior notice.

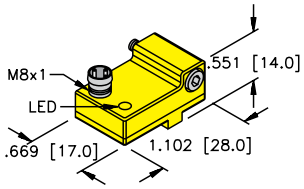
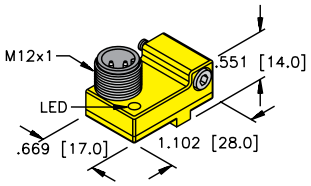
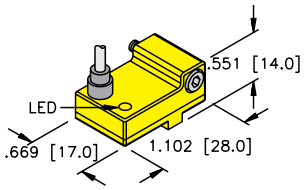
# Cylinder Position Sensors | BIM-IKM

**Tie-rod Cylinder Style**

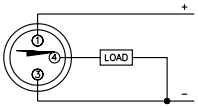
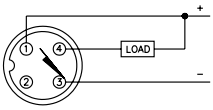
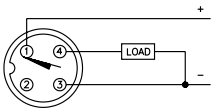
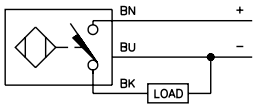
| Part Number/ ID Number | Features | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BIM-IKM-AP6X2-H1141/S34W/KLI-3** 4627290 | KLI-3 Included, WFI | 3-wire DC, PNP | 10-30 VDC | 20 | ≤ 200 | -25 to +70 | IP67 | Zinc | -- | A | 1 | A13 |
| **BIM-IKM-AZ3X2-B3131 W/KLI-3** 1347190 | KLI-3 Included | 2-wire AC | 20-250 VAC | 20 | ≤ 500 | -25 to +70 | IP67 | Zinc | -- | B | 2 | A15 |
| **BIM-IKM-AZ3X2 W/KLI-3** 1347290 | KLI-3 Included | 2-wire AC | 20-250 VAC | 20 | ≤ 500 | -25 to +70 | IP67 | Zinc | 2M/PVC | C | 3 | A15 |

We reserve the right to make technical alterations without prior notice.

**T-groove or Slot Style**

| Housing Style | Dimension Drawings |
|---|---|
| | A   NST - Picofast Connector |
| B   NST - Picofast Connector | C   NST - Potted-In Cable |

**Wiring Diagrams/Mating Cordsets**

| 1 | 2 | 3 | 4 |
|---|---|---|---|
|   |   |   |   |
| Mating Cordset: PKG 3Z-* | Mating Cordset: RK 4T-* | Mating Cordset: RK 4T-* | |

**A13** — **3-wire DC - Magnetic (AN, RN, AP, RP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Power-On Effect: | Per IEC 947-5-2 |
| Differential Travel (Hysteresis): | ≤1 mm | Reverse Polarity Protection: | Incorporated |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Wire-Break Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥170 mA on 150 mA Load Current | Temperature Drift: | ≤0.1 mm, ≤0.3 mm (UNR) |
| | ≥120 mA on 100 mA Load Current | Shock: | 30 g, 11 ms |
| Off-State (Leakage) Current: | ≤0.1 mA | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| No-Load Current: | ≤15 mA; | Repeatability: | ≥± 0.1 mm, ≥± 0.3 mm (UNR) |
| Pass Speed: | ≤10 ms; ≤3 ms (UNR) | | |

**Additional Specifications**

**Magnetic Actuation Strength (Gauss):** 20-350

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | BIM-NST

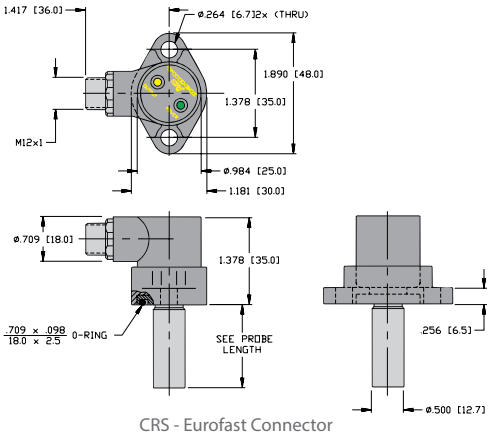
**T-groove or Slot Style**

| Part Number/ ID Number | Features | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BIM-NST-AP6X-V1131** 4685800 | w/o Bracket | 3-wire DC, PNP | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | PA 12 | -- | A | 1 | A13 |
| **BIM-NST-AN6X-H1141** 4685500 | w/o Bracket | 3-wire DC, NPN | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | PA 12 | -- | B | 2 | A13 |
| **BIM-NST-AP6X-H1141/S34** 4685401 | w/o Bracket, WFI | 3-wire DC, PNP | 10-30 VDC | 20 | ≤ 200 | -25 to +70 | IP67 | PA 12 | -- | B | 3 | A13 |
| **BIM-NST-AP6X-H1141** 4685400 | w/o Bracket | 3-wire DC, PNP | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | PA 12 | -- | B | 3 | A13 |
| **BIM-NST-AP6X** 4685600 | w/o Bracket | 3-wire DC, PNP | 10-30 VDC | 1000 | ≤ 200 | -25 to +70 | IP67 | PA 12 | 2M/PVC | C | 4 | A13 |

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | CRS

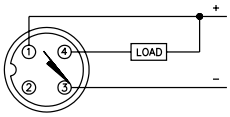
## In-Cylinder Position Sensors

| Housing Style | Dimension Drawings |
|---|---|
| | A  CRS - Eurofast Connector |



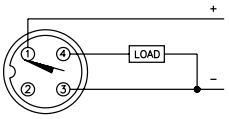
### Wiring Diagrams/Mating Cordsets

1




Mating Cordset: RK 4T-*

2




Mating Cordset: RK 4T-*

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | |
|---|---|
| Ripple: | ≤10% |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current |
| | ≥170 mA on 150 mA Load Current |
| | ≥120 mA on 100 mA Load Current |
| Off-State (Leakage) Current: | ≤0.1 mA |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) |
| | ≤20 mA (Uprox+, Uprox 3) |
| Time Delay Before Availability: | ≤8 ms |
| Power-On Effect: | Per IEC 947-5-2 |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Incorporated |
| Transient Protection: | Per EN 60947-5-2 |
| Temperature Drift: | ≤±10% |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | CRS

## In-Cylinder Position Sensors

| Part Number/ ID Number | Features | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi2-CRS260-AN4X2-H1141/S34** 4580004 | WFI; 1,500 PSI Operating | 3-wire DC, NPN | 10-65 VDC | 30 | ≤ 200 | -25 to +70 | IP67 | Zinc | A | 1 | A4 |
| **Bi2-CRS317-AN4X2-H1141/S34** 4580093 | WFI; 1,500 PSI Operating | 3-wire DC, NPN | 10-65 VDC | 30 | ≤ 200 | -25 to +70 | IP67 | Zinc | A | 1 | A4 |
| **Bi2-CRS343-AN4X2-H1141/S34** 4571890 | WFI; 1,500 PSI Operating | 3-wire DC, NPN | 10-65 VDC | 30 | ≤ 200 | -25 to +70 | IP67 | Zinc | A | 1 | A4 |
| **Bi2-CRS524-AN4X2-H1141/S34** 4568096 | WFI; 1,500 PSI Operating | 3-wire DC, NPN | 10-65 VDC | 30 | ≤ 200 | -25 to +70 | IP67 | Zinc | A | 1 | A4 |
| **Bi2-CRS232-AP4X2-H1141/S34** 4570492 | WFI; 1,500 PSI Operating | 3-wire DC, PNP | 10-65 VDC | 30 | ≤ 200 | -25 to +70 | IP67 | Zinc | A | 2 | A4 |
| **Bi2-CRS260-AP4X2-H1141/S34** 4570890 | WFI; 1,500 PSI Operating | 3-wire DC, PNP | 10-65 VDC | 30 | ≤ 200 | -25 to +70 | IP67 | Zinc | A | 2 | A4 |
| **Bi2-CRS287-AP4X2-H1141/S34** 4571290 | WFI; 1,500 PSI Operating | 3-wire DC, PNP | 10-65 VDC | 30 | ≤ 200 | -25 to +70 | IP67 | Zinc | A | 2 | A4 |
| **Bi2-CRS317-AP4X2-H1141/S34** 4571690 | WFI; 1,500 PSI Operating | 3-wire DC, PNP | 10-65 VDC | 30 | ≤ 200 | -25 to +70 | IP67 | Zinc | A | 2 | A4 |
| **Bi2-CRS343-AP4X2-H1141/S34** 4571800 | WFI; 1,500 PSI Operating | 3-wire DC, PNP | 10-65 VDC | 30 | ≤ 200 | -25 to +70 | IP67 | Zinc | A | 2 | A4 |
| **Bi2-CRS476-AP4X2-H1141/S34** 4580091 | WFI; 1,500 PSI Operating | 3-wire DC, PNP | 10-65 VDC | 30 | ≤ 200 | -25 to +70 | IP67 | Zinc | A | 2 | A4 |
| **Bi2-CRS524-AP4X2-H1141/S34** 4580090 | WFI; 1,500 PSI Operating | 3-wire DC, PNP | 10-65 VDC | 30 | ≤ 200 | -25 to +70 | IP67 | Zinc | A | 2 | A4 |
| **Bi2-CRS603-AP4X2-H1141/S34** 4580096 | WFI; 1,500 PSI Operating | 3-wire DC, PNP | 10-65 VDC | 30 | ≤ 200 | -25 to +70 | IP67 | Zinc | A | 2 | A4 |
| **Bi2-CRS705-AP4X2-H1141/S34** 4580089 | WFI; 1,500 PSI Operating | 3-wire DC, PNP | 10-65 VDC | 30 | ≤ 200 | -25 to +70 | IP67 | Zinc | A | 2 | A4 |
| **Bi2-CRS730-AP4X2-H1141/S34** 4580003 | WFI; 1,500 PSI Operating | 3-wire DC, PNP | 10-65 VDC | 30 | ≤ 200 | -25 to +70 | IP67 | Zinc | A | 2 | A4 |
| **Bi2-CRS959-AP4X2-H1141/S34** 4571891 | WFI; 1,500 PSI Operating | 3-wire DC, PNP | 10-65 VDC | 30 | ≤ 200 | -25 to +70 | IP67 | Zinc | A | 2 | A4 |
| **Bi2-CRS1159-AP4X2-H1141/S34** 4570899 | WFI; 1,500 PSI Operating | 3-wire DC, PNP | 10-65 VDC | 30 | ≤ 200 | -25 to +70 | IP67 | Zinc | A | 2 | A4 |
| **Bi1.5-CRS524C-AP6X2-H1141** 4279091 | High Pressure; 3,000 PSI Operating | 3-wire DC, PNP | 10-30 VDC | 30 | ≤ 200 | -25 to +70 | IP67 | Zinc | A | 2 | A4 |
| **Bi1.5-CRS260C-AP6X2-H1141** 4279092 | High Pressure; 3,000 PSI Operating | 3-wire DC, PNP | 10-30 VDC | 30 | ≤ 200 | -25 to +70 | IP67 | Zinc | A | 2 | A4 |

Bi *-CRS-XXXX-.. = Length of probe in mm. Example: CRS260 = 26.0 mm

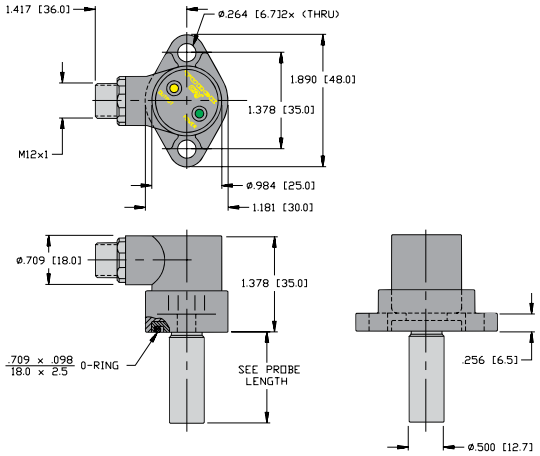
We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | CRS

## In-Cylinder Position Sensors

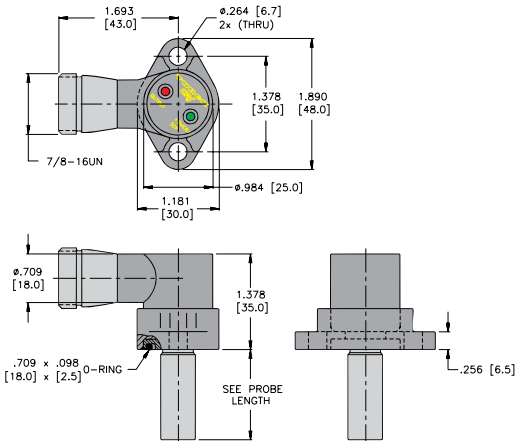
| Housing Style | Dimension Drawings |
|---|---|

A




CRS - Microfast Connector

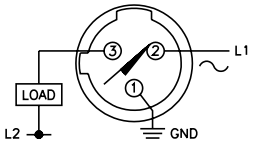
B




CRS - Minifast® Connector

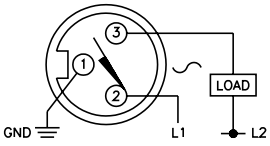
### Wiring Diagrams/Mating Cordsets

1




Mating Cordset: KB 3T-*

2




Mating Cordset: RKM 311-*M

### A5 — 2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)

| | |
|---|---|
| Line Frequency: | ≥50... ≤60 Hz |
| Differential Travel (Hysteresis): | 3-15% (5% typical) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA |
| | AC: ≥120 mA; DC: ≥120 mA |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA |
| | AC: ≤100 mA; DC: ≤100 mA |
| Off-State (Leakage) Current: | ≤1.7 mA (AC) |
| | ≤1.5 mA (DC) |
| Minimum Load Current: | ≥3.0 mA |
| Inrush Current: | ≤3 A (≤20 ms, max 5 Hz) |
| Power-On Effect: | Per IEC 947-5-2 |
| Transient Protection: | Per EN 60947-5-2 |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | CRS

## In-Cylinder Position Sensors

| Part Number/ ID Number | Features | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bi2-CRS232-ADZ30X2-B3131/S34** 4275093 | WFI; 1,500 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | A | 1 | A5 |
| **Bi2-CRS260-ADZ30X2-B3131/S34** 4275493 | WFI; 1,500 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | A | 1 | A5 |
| **Bi2-CRS317-ADZ30X2-B3131/S34** 4276293 | WFI; 1,500 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | A | 1 | A5 |
| **Bi2-CRS476-ADZ30X2-B3131/S34** 4276693 | WFI; 1,500 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | A | 1 | A5 |
| **Bi2-CRS524-ADZ30X2-B3131/S34** 4277093 | WFI; 1,500 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | A | 1 | A5 |
| **Bi2-CRS730-ADZ30X2-B3131/S34** 4278293 | WFI; 1,500 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | A | 1 | A5 |
| **Bi2-CRS959-ADZ30X2-B3131/S34** 4279093 | WFI; 1,500 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | A | 1 | A5 |
| **Bi2-CRS1159-ADZ30X2-B3131/S34** 4279493 | WFI; 1,500 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | A | 1 | A5 |
| **Bi2-CRS232-ADZ30X2-B1131/S34** 4270093 | WFI; 1,500 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | B | 2 | A5 |
| **Bi2-CRS260-ADZ30X2-B1131/S34** 4270493 | WFI; 1,500 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | B | 2 | A5 |
| **Bi2-CRS317-ADZ30X2-B1131/S34** 4271293 | WFI; 1,500 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | B | 2 | A5 |
| **Bi2-CRS343-ADZ30X2-B1131/S34** 4271493 | WFI; 1,500 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | B | 2 | A5 |
| **Bi2-CRS476-ADZ30X2-B1131/S34** 4271693 | WFI; 1,500 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | B | 2 | A5 |
| **Bi2-CRS524-ADZ30X2-B1131/S34** 4272093 | WFI; 1,500 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | B | 2 | A5 |
| **Bi2-CRS603-ADZ30X2-B1131/S34** 4272493 | WFI; 1,500 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | B | 2 | A5 |
| **Bi2-CRS705-ADZ30X2-B1131/S34** 4272893 | WFI; 1,500 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | B | 2 | A5 |
| **Bi2-CRS730-ADZ30X2-B1131/S34** 4273293 | WFI; 1,500 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | B | 2 | A5 |
| **Bi2-CRS959-ADZ30X2-B1131/S34** 4274093 | WFI; 1,500 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | B | 2 | A5 |
| **Bi2-CRS1159-ADZ30X2-B1131/S34** 4274493 | WFI; 1,500 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | B | 2 | A5 |
| **Bi1.5-CRS959C-ADZ30X2-B1131** 4279094 | High Pressure; 3,000 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | B | 2 | A5 |
| **Bi1.5-CRS730C-ADZ30X2-B1131** 4279095 | High Pressure; 3,000 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | B | 2 | A5 |
| **Bi1.5-CRS260C-ADZ30X2-B1131** 4279096 | High Pressure; 3,000 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | B | 2 | A5 |
| **Bi1.5-CRS232C-ADZ30X2-B1131** 4279097 | High Pressure; 3,000 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | B | 2 | A5 |
| **Bi1.5-CRS524C-ADZ30X2-B1131** 4279098 | High Pressure; 3,000 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | B | 2 | A5 |
| **Bi1.5-CRS317C-ADZ30X2-B1131** 4279099 | High Pressure; 3,000 PSI Operating | 2-wire AC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 400/300 | -25 to +70 | IP67 | Zinc | B | 2 | A5 |

Bi *-CRS-XXXX-.. = Length of probe in mm. Example: CRS260 = 26.0 mm

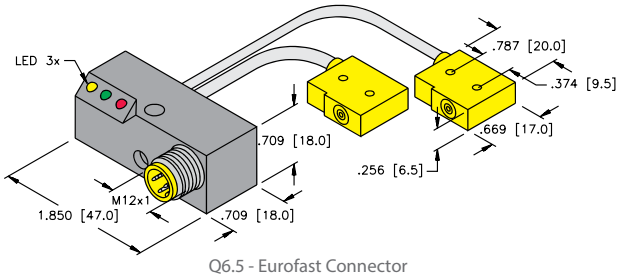
We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | Q6.5

## Power Clamp Position Sensors

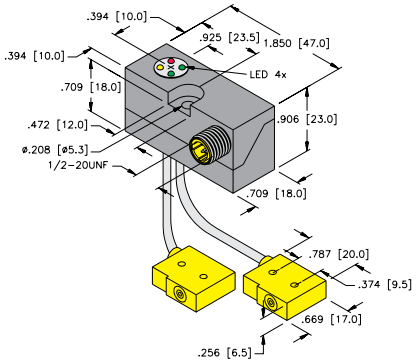
| Housing Style | Dimension Drawings |
|---|---|

A



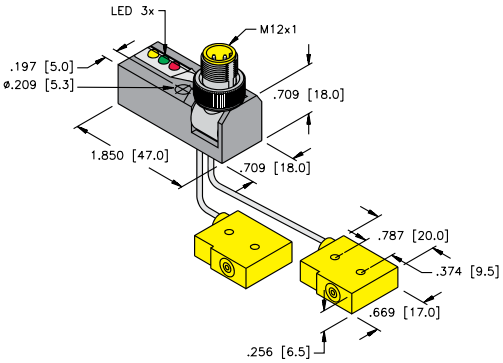

Q6.5 - Eurofast Connector

B




Q6.5 - Microfast Connector

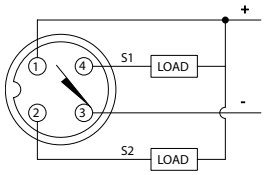
C




Q6.5 - Eurofast Connector

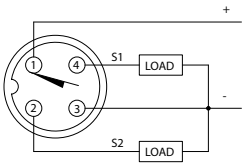
### Wiring Diagrams/Mating Cordsets

1



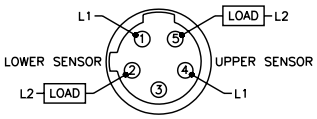

Mating Cordset: RK 4.4T-*

2




Mating Cordset: RK 4.4T-*

3




Mating Cordset: KB 5T-*

### A4 — 3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox 3) | Repeatability: | ≤2% of Rated Operating Distance |

### A5 — 2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Minimum Load Current: | ≥3.0 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Inrush Current: | ≤3 A (≤20 ms, max 5 Hz) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | Power-On Effect: | Per IEC 947-5-2 |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA | Transient Protection: | Per EN 60947-5-2 |
| | AC: ≥120 mA; DC: ≥120 mA | Shock: | 30 g, 11 ms |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | AC: ≤100 mA; DC: ≤100 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Off-State (Leakage) Current: | ≤1.7 mA (AC) | | |
| | ≤1.5 mA (DC) | | |

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | Q6.5

## Power Clamp Position Sensors

| Part Number/ ID Number | Features | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni2-Q6.5-AN6-0.1-FS4.4X3/S304** 1650079 | | 4-wire DC, NPN | 10-30 VDC | 30 | ≤ 500 | -25 to +70 | IP67 | PBT | 0.1M/TPU | A | 1 | A4 |
| **Ni2-Q6.5-AN6-0.16-FS4.4X3/S304** 1650085 | | 4-wire DC, NPN | 10-30 VDC | 30 | ≤ 150 | -25 to +70 | IP67 | PBT | 0.16M/TPU | A | 1 | A4 |
| **Ni2-Q6.5-AP6-0.1-FS4.4X3/S304** 1650048 | | 4-wire DC, PNP | 10-30 VDC | 30 | ≤ 150 | -25 to +70 | IP67 | PBT | 0.1M/TPU | A | 2 | A4 |
| **Ni2-Q6.5-AP6-0.16-FS4.4X3/S304** 1650086 | | 4-wire DC, PNP | 10-30 VDC | 30 | ≤ 150 | -25 to +70 | IP67 | PBT | 0.16M/TPU | A | 2 | A4 |
| **Ni2-Q6.5-AP6-0.2-FS4.4X3/S304** 1650047 | | 4-wire DC, PNP | 10-30 VDC | 30 | ≤ 150 | -25 to +70 | IP67 | PBT | 0.2M/TPU | A | 2 | A4 |
| **Ni2-Q6.5-0.1-BDS-2AP6X3-H1141/S34** 1650098 | WFI | 4-wire DC, PNP | 10-30 VDC | 30 | ≤ 150 | -25 to +70 | IP67 | PBT | 0.1M/TPU | C | 2 | A4 |
| **Ni2-Q6.5-0.16-BDS-2AP6X3-H1141/S34** 1650110 | WFI | 4-wire DC, PNP | 10-30 VDC | 30 | ≤ 150 | -25 to +70 | IP67 | PBT | 0.16M/TPU | C | 2 | A4 |
| **Ni2-Q6.5-ADZ32-0.1-FSB5.4X4/S304** 4200204 | | 4-wire, VAC/DC | 20-250 VAC/10-300 VDC | 30 | ≤ 100 | -25 to +70 | IP67 | PBT | 0.1M/TPU | B | 3 | A5 |
| **Ni2-Q6.5-ADZ32-0.16-FS 5.4X4/S304** 4200203 | | 4-wire, VAC/DC | 20-250 VAC/10-300 VDC | 30 | ≤ 100 | -25 to +70 | IP67 | PBT | 0.16M/TPU | B | 3 | A5 |

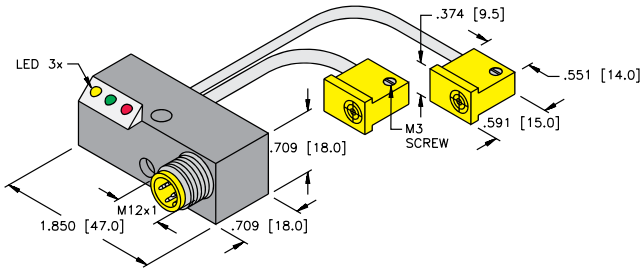
We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | Q9.5

**Power Clamp Position Sensors**

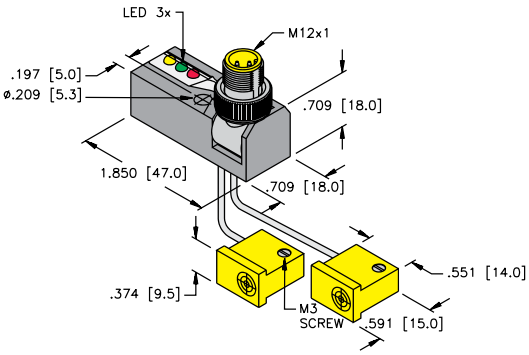
| Housing Style | Dimension Drawings |
|---|---|

A



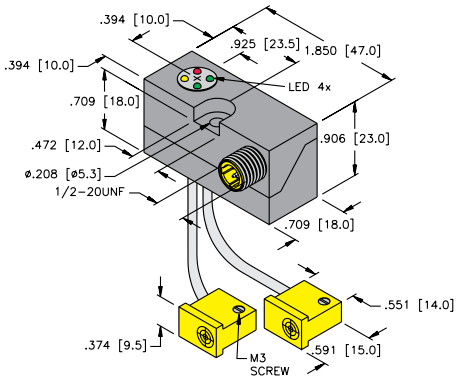

Q9.5 - Eurofast Connector

B




Q9.5 - Eurofast Connector

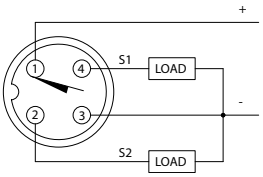
C




Q9.5 - Microfast Connector

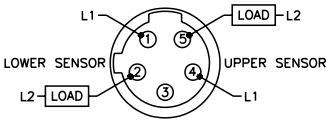
**Wiring Diagrams/Mating Cordsets**

1




Mating Cordset: RK 4.4T-*

2




Mating Cordset: KB 5T-*

**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox 3) | Repeatability: | ≤2% of Rated Operating Distance |

**A5** — **2-wire AC/DC w/ Short-Circuit Protection - (ADZ, RDZ, FDZ, VDZ)**

| | | | |
|---|---|---|---|
| Line Frequency: | ≥50... ≤60 Hz | Minimum Load Current: | ≥3.0 mA |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Inrush Current: | ≤3 A (≤20 ms, max 5 Hz) |
| Voltage Drop Across Conducting Sensor: | ≤6.0 V | Power-On Effect: | Per IEC 947-5-2 |
| Trigger Current for Short Circuit Protection: | AC: ≥440 mA; DC: ≥330 mA | Transient Protection: | Per EN 60947-5-2 |
| | AC: ≥120 mA; DC: ≥120 mA | Shock: | 30 g, 11 ms |
| Continuous Load Current: | AC: ≤400 mA; DC: ≤300 mA | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| | AC: ≤100 mA; DC: ≤100 mA | Repeatability: | ≤2% of Rated Operating Distance |
| Off-State (Leakage) Current: | ≤1.7 mA (AC) | | |
| | ≤1.5 mA (DC) | | |

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | Q9.5

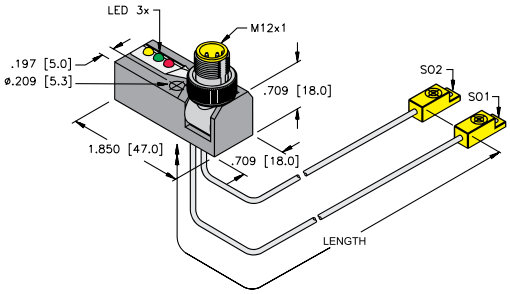
## Power Clamp Position Sensors

| Part Number/ ID Number | Features | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni2-Q9.5-AP6-0.1-FS4.4X3/S304** 1650060 | | 4-wire DC, PNP | 10-30 VDC | 30 | ≤ 150 | -25 to +70 | IP67 | PBT | 0.1M/TPU | A | 1 | A4 |
| **Ni2-Q9.5-0.1-BDS-2AP6X3-H1141/S34** 1650099 | WFI | 4-wire DC, PNP | 10-30 VDC | 30 | ≤ 150 | -25 to +70 | IP67 | PBT | 0.1M/TPU | B | 1 | A4 |
| **Ni2-Q9.5-ADZ32-0.1-FSB5.4X4/S304** 4200210 | | 4-wire, VAC/DC | 20-250 VAC/10-300 VDC | 20 | ≤ 100 | -25 to +70 | IP67 | PBT | 0.1M/TPU | C | 2 | A5 |

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | ISI

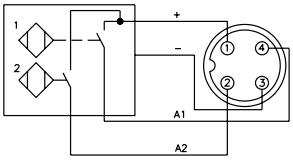
**Power Clamp Position Sensors**

| Housing Style | Dimension Drawings |
|---|---|
| | A  ISI - Eurofast Connector |



**Wiring Diagrams/Mating Cordsets**

1





Mating Cordset: RK 4.4T-*

**A4** — **3 and 4-wire DC - (AN, RN, AP, RP, VN, VP)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Time Delay Before Availability: | ≤8 ms |
| Differential Travel (Hysteresis): | 3-15% (5% typical) | Power-On Effect: | Per IEC 947-5-2 |
| Voltage Drop Across Conducting Sensor: | ≤1.8 V | Reverse Polarity Protection: | Incorporated |
| Trigger Current for Short Circuit Protection: | ≥220 mA on 200 mA Load Current | Wire-Break Protection: | Incorporated |
| | ≥170 mA on 150 mA Load Current | Transient Protection: | Per EN 60947-5-2 |
| | ≥120 mA on 100 mA Load Current | Temperature Drift: | ≤±10% |
| Off-State (Leakage) Current: | ≤0.1 mA | Shock: | 30 g, 11 ms |
| No-Load Current: | ≤15 mA (Ferrite, Uprox) | Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| | ≤20 mA (Uprox+, Uprox 3) | Repeatability: | ≤2% of Rated Operating Distance |

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | ISI

**Power Clamp Position Sensors**

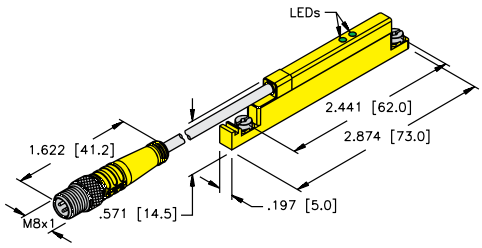
| Part Number/ ID Number | Features | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) | Operating Temp. (°C) | Protection | Housing | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ni2-ISI-0.1-BDS-2AP6X3-H1141/S34**<br>1650133 | WFI | 4-wire DC, PNP | 10-30 VDC | 30 | ≤ 150 | -25 to +70 | IP67 | PBT | 0.1M/TPU | A | 1 | A4 |

We reserve the right to make technical alterations without prior notice.

## Power Clamp Position Sensors

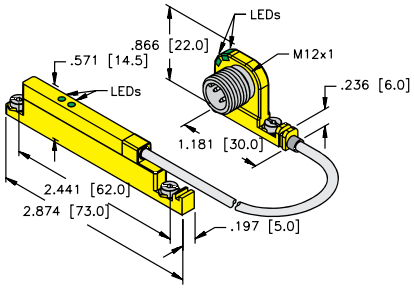
| Housing Style | Dimension Drawings |
|---|---|

A



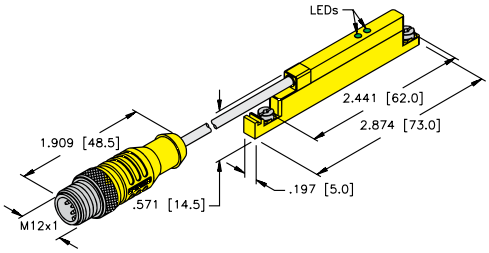

23 mm - Embeddable, T-groove Pneumatic Cylinders Picofast Quick Disconnect

B




23 mm - Embeddable, T-groove Pneumatic Cylinders Eurofast Quick Disconnect

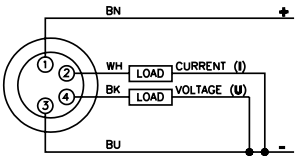
C




23 mm - Embeddable, T-groove Pneumatic Cylinders Eurofast Quick Disconnect

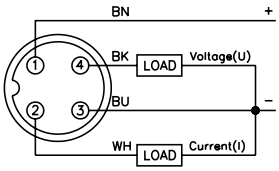
### Wiring Diagrams/Mating Cordsets

1




Mating Cordset: RK 4.4T-*; PKG 4M-*

2




Mating Cordset: RK 4.4T-*

### A7 — 3 and 4-wire DC Analog - (LIU, SIU)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Transient Protection: | Per EN 60947-5-2 |
| No-Load Current: | ≤8.0 mA | Shock: | 30 g, 11 ms |
| Load Resistance Voltage Output: | 0-10 V/$R_L$ ≥4.7 kΩ | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Load Resistance Current Output: | 0-20 mA/$R_L$ ≤0.4 kΩ | Repeatability: | ≤1% of measuring range \|A-B\| |
| Temperature Drift: | ±0.06% / °C | | (0.5% after 30 min. warm up) |
| LIU5: | 4-20 mA, 0-10 V | Short-Circuit Protection: | Yes |
| LIU2: | 4-20 mA, 2-10 V | Reverse Polarity Protection: | Incorporated |

### A8 — 3 and 4-wire DC Analog - (LU)

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Short-Circuit Protection: | Yes |
| No-Load Current: | ≤8.0 mA | Wire-Break Protection: | Yes |
| Load Resistance Voltage Output: | 0-10 V/$R_L$ ≥4.7 kΩ | Shock: | 30 g, 11 ms |
| Temperature Drift: | ±0.06% / °C | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Reverse Polarity Protection: | Incorporated | Repeatability: | ≤1% of measuring range \|A-B\| |
| Transient Protection: | Per EN 60947-5-2 | | (0.5% after 30 min. warm up) |

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | WIM

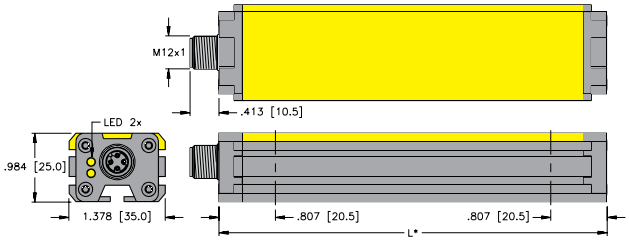
## Power Clamp Position Sensors

| Part Number/ ID Number | Linear Operating Distance (mm) | Resolution | Output | Voltage | Output Voltage/ Current | Operating Temp. (°C) | Protection | Housing | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **WIM45-UNTL-LIU5X2-0.3-PSG4M** 1536620 | 45 | 10 bit | 4-wire DC, Current and Voltage | 15-30 VDC | 0-10 V/4-20 mA | -25 to +70 | IP67 | PA 12 | 0.3M/TPU | A | 1 | A7 |
| **WIM45-UNTL-0.3-BIM-UNT-LUAP6X4-H1141** 1536623 | 45 | 10 bit | 4-wire DC, Current and Voltage | 15-30 VDC | 0-10 V/4-20 mA | -25 to +70 | IP67 | PA 12 | 0.3M/TPU | B | 2 | A8 |
| **WIM45-UNTL-LIU5X2-0.3-RS4** 1536621 | 45 | 10 bit | 4-wire DC, Current and Voltage | 15-30 VDC | 0-10 V/4-20 mA | -25 to +70 | IP67 | PA 12 | 0.3M/TPU | C | 1 | A7 |

We reserve the right to make technical alterations without prior notice.

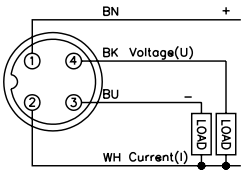
# Cylinder Position Sensors | WIM

**Magnetic Linear Position Sensors**

| Housing Style | Dimension Drawings |
|---|---|
| | A   25 mm - Embeddable, Eurofast Quick Disconnect |

**Wiring Diagrams/ Mating Cordset**

1




Mating Cordset: RK 4.4T-*

**A7** — **3 and 4-wire DC Analog - (LIU, SIU)**

| | | | |
|---|---|---|---|
| Ripple: | ≤10% | Transient Protection: | Per EN 60947-5-2 |
| No-Load Current: | ≤8.0 mA | Shock: | 30 g, 11 ms |
| Load Resistance Voltage Output: | 0-10 V/$R_L$ ≥4.7 kΩ | Vibration: | 55 Hz, 1 mm Amplitude, in all 3 Planes |
| Load Resistance Current Output: | 0-20 mA/$R_L$ ≤0.4 kΩ | Repeatability: | ≤1% of measuring range \|A-B\| |
| Temperature Drift: | ±0.06% / °C | | (0.5% after 30 min. warm up) |
| LIU5: | 4-20 mA, 0-10 V | Short-Circuit Protection: | Yes |
| LIU2: | 4-20 mA, 2-10 V | Reverse Polarity Protection: | Incorporated |

**Additional Specifications**

**Magnetic Actuation Strength (Gauss):** 50-100

For mounting accessories see page G9

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | WIM

## Magnetic Linear Position Sensors

| Part Number/ ID Number | Linear Operating Distance (mm) | Resolution | Output | Voltage | Output Voltage/ Current | Operating Temp. (°C) | Protection | Housing | Face | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **WIM100-Q25L141-LIU5X2-H1141** 1536630 | 100 | 10 bit | 4-wire DC, Current and Voltage | 15-30 VDC | 0-10 V/4-20 mA | -25 to +70 | IP67 | AL | PC-GF20 | A | 1 | A7 |
| **WIM125-Q25L166-LIU5X2-H1141** 1536631 | 125 | 10 bit | 4-wire DC, Current and Voltage | 15-30 VDC | 0-10 V/4-20 mA | -25 to +70 | IP67 | AL | PC-GF20 | A | 1 | A7 |
| **WIM160-Q25L201-LIU5X2-H1141** 1536632 | 160 | 10 bit | 4-wire DC, Current and Voltage | 15-30 VDC | 0-10 V/4-20 mA | -25 to +70 | IP67 | AL | PC-GF20 | A | 1 | A7 |
| **WIM200-Q25L241-LIU5X2-H1141** 1536633 | 200 | 10 bit | 4-wire DC, Current and Voltage | 15-30 VDC | 0-10 V/4-20 mA | -25 to +70 | IP67 | AL | PC-GF20 | A | 1 | A7 |

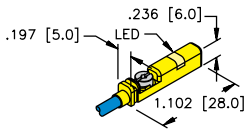
We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | Namur

**Intrinsically Safe**

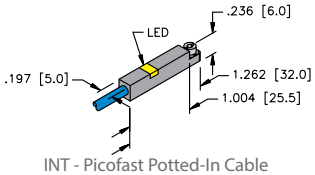
## Dimension Drawings

A



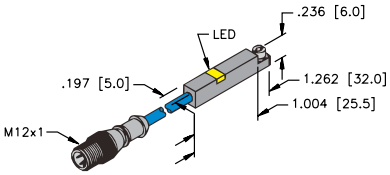

UNT - Potted-In Cable

B



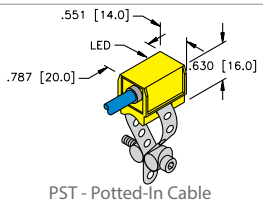

INT - Picofast Potted-In Cable

C



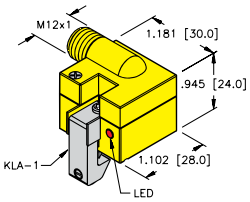

INT - Eurofast Quick Disconnect

D



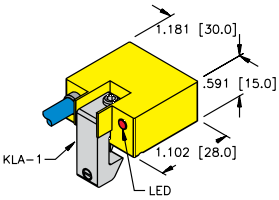

PST - Potted-In Cable

E



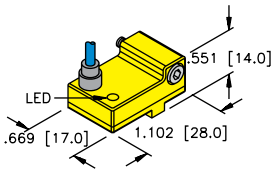

AKT - Eurofast Connector

F



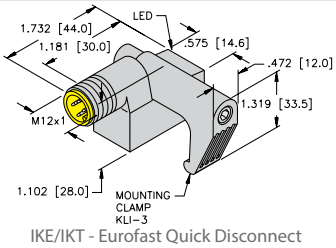

AKT - Potted-In Cable

G



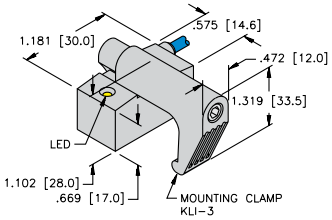

NST - Potted-In Cable

H




IKE/IKT - Eurofast Quick Disconnect

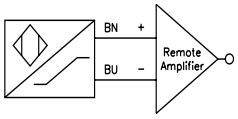
I



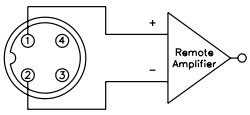

IKE/IKT - Potted-In Cable

## Wiring Diagrams/Mating Cordsets

1




2




Mating Cordset: RK 4.21T-*

## A16 — 2-wire DC NAMUR - Magnetic (Y0 and Y1)

| | |
|---|---|
| Differential Travel (Hysteresis): | ≤1 mm |
| Nominal Voltage: | 8.2 VDC (EN60947-5-6) |
| Load Resistance: | 1000 Ω |
| Non-activated Current Consumption: | ≤1.2 mA |
| Activated Current Consumption: | ≥2.1 mA |
| Recommended Switching Point for Remote Amplifier: | >1.2 to <2.1 mA, typ. 1.55 mA ON/1.75 mA OFF |
| Power-On Effect: | Realized in Amplifier |
| Reverse Polarity Protection: | Incorporated |
| Wire-Break Protection: | Realized in Amplifier |
| Transient Protection: | Realized in Amplifier |
| Shock: | 30 g, 11 ms |
| Vibration: | 55 Hz, 1 mm Amplitude in all 3 Planes |
| Repeatability: | ≥± 0.1 mm |
| Pass Speed: | ≤10 ms |

## Additional Specifications

**Magnetic Actuation Strength (Gauss):** 20-350

We reserve the right to make technical alterations without prior notice.

# Cylinder Position Sensors | Namur

**Intrinsically Safe** IS

| Part Number/ ID Number | Features | Output | Voltage | Switching Freq. (Hz) | Operating Current (mA) VAC/VDC | Operating Temp. (°C) | Protection | Housing | Power LED | Output LED | Cable Length/Jacket | Dimension Drawings | Wiring Diagrams | Spec List |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BIM-UNT-AY1X/S1139** 4685763 | Wider Range | 2-wire DC NAMUR | 8.2 VDC nominal | 1000 | Remote | -25 to +70 | IP67 | PA 12 | N/A | YE | 2M/ PVC | A | 1 | A16 |
| **BIM-INT-Y1X** 1056800 | | 2-wire DC NAMUR | 8.2 VDC nominal | 1000 | Remote | -25 to +70 | IP67 | PA 12 | N/A | YE | 2M/ PVC | B | 1 | A16 |
| **BIM-INT-Y1X-0.2-RS4.21T** 1056892 | | 2-wire DC NAMUR | 8.2 VDC nominal | 1000 | Remote | -25 to +70 | IP67 | PA 12 | N/A | YE | 0.2M/ PVC | C | 2 | A16 |
| **BIM-PST-Y1X W/KLP-80** 1057090 | KLP-80 Included | 2-wire DC NAMUR | 8.2 VDC nominal | 1000 | Remote | -25 to +70 | IP67 | PA 12 | N/A | YE | 2M/ PVC | D | 1 | A16 |
| **BIM-AKT-Y1X-H1141 W/KLA-1** 1055290 | KLA-1 Included | 2-wire DC NAMUR | 8.2 VDC nominal | 1000 | Remote | -25 to +70 | IP67 | PA 12 | N/A | YE | -- | E | 2 | A16 |
| **BIM-AKT-Y1X W/KLA-1** 1055090 | KLA-1 Included | 2-wire DC NAMUR | 8.2 VDC nominal | 1000 | Remote | -25 to +70 | IP67 | PA 12 | N/A | YE | 2M/ PVC | F | 1 | A16 |
| **BIM-IKE-Y1X W/KLI-3** 1056490 | KLI-3 Included | 2-wire DC NAMUR | 8.2 VDC nominal | 1000 | Remote | -25 to +70 | IP67 | Zinc | N/A | YE | 2M/ PVC | I | 1 | A16 |
| **BIM-IKE-Y1X-H1141 W/KLI-3** 1056690 | KLI-3 Included | 2-wire DC NAMUR | 8.2 VDC nominal | 1000 | Remote | -25 to +70 | IP67 | Zinc | N/A | YE | -- | H | 2 | A16 |
| **BIM-NST-Y1X** 1058400 | w/o Bracket | 2-Wire DC NAMUR | 8.2 VDC nominal | 1000 | Remote | -25 to +70 | IP67 | PA 12 | N/A | YE | 2M/ PVC | G | 1 | A16 |

We reserve the right to make technical alterations without prior notice.

Notes

Notes

# Mating Cordset Selection Guide

| | Picofast | |
|---|---|---|
| | | |
| **Housing** | **M8 Cordsets** | **M8 Field Wireables** |
| **Pages** | **H7** | **H11** |

| | Eurofast | |
|---|---|---|
| | | |
| **Housing** | **M12 Cordsets** | **M12 Field Wireables** |
| **Pages** | **H13** | **H17** |

| | Microfast | |
|---|---|---|
| | | |
| **Housing** | **1/2" Cordsets** | **1/2" Field Wireables** |
| **Pages** | **H18** | **H20** |

| | Minifast | |
|---|---|---|
| | | |
| **Housing** | **7/8" Cordsets** | **7/8" Field Wireables** |
| **Pages** | **H21** | **H25** |

We reserve the right to make technical alterations without prior notice.

# Mating Cordset Selection Guide

## Connectivity

Rugged, durable, and reliable, Turck connectivity products consolidate wiring, connect sensing devices, and distribute power and signals.

### Cordsets

- Environmentally sealed for harsh environments
- Pin count 2-28 pole
- Power range up to 35 A
- LED visibility
- Industry specific jacketed cable

### Rugged, Sealed Junction Boxes

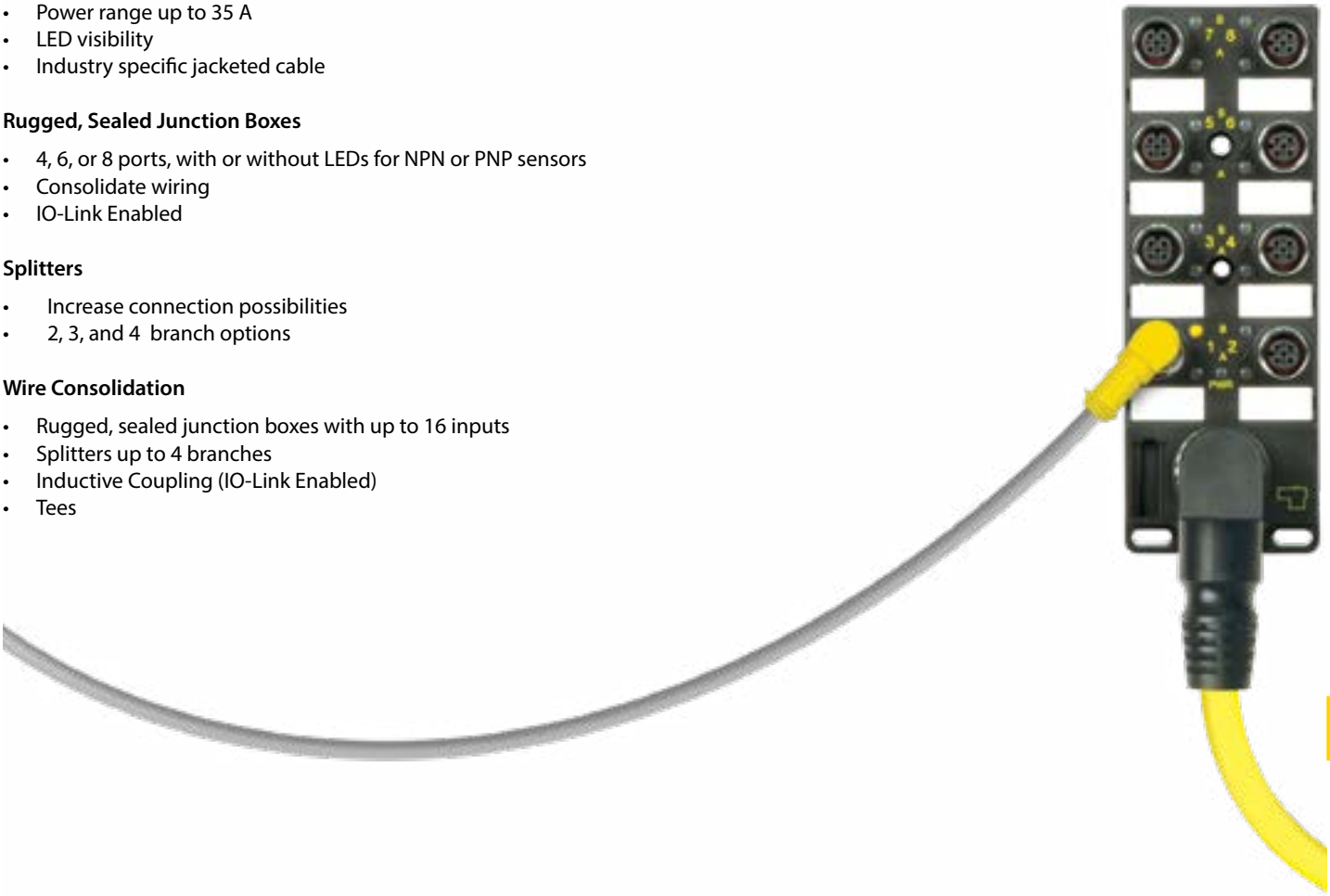
- 4, 6, or 8 ports, with or without LEDs for NPN or PNP sensors
- Consolidate wiring
- IO-Link Enabled

### Splitters

- Increase connection possibilities
- 2, 3, and 4 branch options

### Wire Consolidation

- Rugged, sealed junction boxes with up to 16 inputs
- Splitters up to 4 branches
- Inductive Coupling (IO-Link Enabled)
- Tees



We reserve the right to make technical alterations without prior notice.

# Mating Cordset Selection Guide

| Attributes | Instrumentation Tray Cable | | General Purpose Cable | | Instrumentation Tray/Exposed Run/Direct Burial Cable | |
|---|---|---|---|---|---|---|
| **Material:** | PVC | TPE | PVC | TPU | PVC | TPE |
| **Temp Range:** | -40 to 105 °C | -40 to 105 °C | -40 to 105 °C | -40 to 90 °C | -40 to 105 °C | -40 to 105 °C |
| **Cold Bend:** | -40 °C | -40 °C | -40 °C | -40 °C | -40 °C | -40 °C |
| **Cold Impact:** | --- | --- | --- | --- | --- | --- |
| **Crush and Impact:** | --- | --- | --- | --- | Excellent | Excellent |
| **Cut and Abrasion:** | Fair | Fair/Good | Fair | Excellent | Good | Fair/Good |
| **UV/Sunlight Resistant:** | Excellent | Excellent | Excellent | Poor/Fair | Excellent | Excellent |
| **Flame Retardant:** | UL 1685/CSA FT4 | UL 1685/CSA FT4 | UL 1061/CSA FT1 | UL 1061/ CSA FT1 | UL 1685/CSA FT4 | UL 1685/CSA FT4 |
| **Weld Slag/Spatter:** | Poor | Very Good | Poor | Poor | Poor | Very Good |
| **Water:** | Very Good | Very Good | Very Good | Very Good | Very Good | Very Good |
| **Flexibility:** | Very Good | Very Good | Very Good | Good | Fair | Good |
| **Flexlife:** | Good | Good | Good | Good | Fair | Fair/Good |
| **Oils:** | Excellent | Excellent | Very Good | Good | Very Good | Excellent |
| **Greases:** | Excellent | Excellent | Very Good | Good | Very Good | Excellent |
| **Gasoline:** | Fair | Good | Fair | Fair | Poor | Good |
| **Alcohols:** | Good | Very Good | Good | Poor/Fair | Very Good | Very Good |
| **Acids <20%:** | Good | Poor | Good | Fair | Good | Poor |
| **General Approvals:** | UL ITC, PLTC, AWM CSA AWM CMX OUT-DOOR-CMG, MSHA 300 V, 600 V | UL ITC, PLTC, AWM CSA AWM CMX OUT-DOOR-CMG, MSHA 300 V, 600 V | UL/CSA, AWM, MSHA 300 V or 600 V | UL/CSA, AWM, MSHA 300 V or 600 V | UL ITC, PLTC, ERDB, AWM, CSA CIC or CMX OUTDOOR-CM AWM, Marine Shipboard UL 1309, IEEE 1580-2010, CSA 245, ABS, 300 V, 600 V | UL ITC, PLTC, ERDB, AWM CSA CMX OUTDOOR-CMG 150 V, 300 V, 600 V |

- Attributes are general statements for materials at room temperature. Each application should be evaluated individually.
- Temperature, the percentage of chemical present, type of chemical exposure, and installation practices will all affect performance. For specific recommendations, please contact Turck.

We reserve the right to make technical alterations without prior notice.

# Mating Cordset Selection Guide

| Attributes | Power Tray/Exposed Run/Direct Burial Cable | | Industrial Ethernet Cable | Fieldbus Technology Cable | | |
|---|---|---|---|---|---|---|
| **Material:** | PVC | TPE | TPE | PVC | TPE | TPU |
| **Temp Range:** | -40 to 90 °C | -40 to 105 °C | -40 to 80 °C | -40 to 105 °C | -40 to 80 °C | -40 to 80 °C |
| **Cold Bend:** | -40 °C | -40 °C | -40 °C | -40 °C | -40 °C | -40 °C |
| **Cold Impact:** | --- | --- | --- | --- | --- | --- |
| **Crush and Impact:** | Excellent | Excellent | --- | Excellent | --- | --- |
| **Cut and Abrasion:** | Good | Fair/Good | Fair/Good | Good | Fair/Good | Excellent |
| **UV/Sunlight Resistant:** | Excellent | Excellent | Excellent | Excellent | Excellent | Poor/Fair |
| **Flame Retardant:** | UL 1685/CSA FT4 | UL 1685/CSA FT4 | UL 1061/CSA FT1 | UL 1685/CSA FT4 IEC 60332-3-22 | UL 1061/ CSA FT1 | UL 1061/ CSA FT1 |
| **Weld Slag/Spatter:** | Poor | Very Good | Very Good | Poor | Very Good | Poor |
| **Water:** | Very Good | Very Good | Very Good | Very Good | Very Good | Very Good |
| **Flexibility:** | Fair | Good | Good/Excellent | Fair | Good | Good |
| **Flexlife:** | Fair | Good | Very Good | Poor | Fair | Good |
| **Oils:** | Very Good | Excellent | Excellent | Fair | Excellent | Good |
| **Greases:** | Very Good | Excellent | Excellent | Fair | Excellent | Good |
| **Gasoline:** | Poor | Good | Good | Poor | Good | Fair |
| **Alcohols:** | Very Good | Very Good | Very Good | Good | Very Good | Poor/Fair |
| **Acids <20%:** | Good | Poor | Poor | Good | Poor | Fair |
| **General Approvals:** | UL WTTC, TC-ERDB ITC, PLTC, ERDB CSA CIC/TC 600 V, 1000 V | UL WTTC, TC-ERDB ITC, PLTC, ERDB CSA CIC/TC 600 V, 1000 V | UL AWM, CSA CMX OUTDOOR-CM 300 V or 600 V | UL ITC, PLTC, ERDB, AWM, CSA CIC or CMX OUT-DOOR-CM AWM, Marine Shipboard UL 1309, IEEE 1580-2010, CSA 245, ABS, 300 V, 600 V | UL/CSA, AWM 300 V or 600 V | UL/CSA, AWM 300 V or 600 V |

- Attributes are general statements for materials at room temperature. Each application should be evaluated individually.
- Temperature, the percentage of chemical present, type of chemical exposure, and installation practices will all affect performance. For specific recommendations, please contact Turck.

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# Mating Cordset Selection Guide

| Attributes | Extremelife Cable | Flexlife Cable | | Weldlife Cable |
|---|---|---|---|---|
| **Material:** | EX60 | TPE | TPU | TPE |
| **Temp Range:** | -60 to 105 °C | -40 to 105 °C | -40 to 90 °C | -40 to 105 °C |
| **Cold Bend:** | -60 °C | -40 °C | -40 °C | -40 °C |
| **Cold Impact:** | -40 °C | --- | --- | --- |
| **Crush and Impact:** | Excellent | --- | --- | --- |
| **Cut and Abrasion:** | Very Good | Fair/Good | Excellent | Fair/Good |
| **UV/Sunlight Resistant:** | Excellent | Excellent | Poor/Fair | Excellent |
| **Flame Retardant:** | UL 1685/CSA FT4 IEC 60332-3-22 | UL 1061/CSA FT1 | UL 1061/CSA FT1 | UL 1061/CSA FT1 |
| **Weld Slag/Spatter:** | Good | Very Good | Poor | Very Good |
| **Water:** | Very Good | Very Good | Very Good | Very Good |
| **Flexibility:** | Good | Excellent | Good | Very Good |
| **Flexlife:** | Very Good | Excellent | Good | Good |
| **Oils:** | Excellent | Excellent | Good | Excellent |
| **Greases:** | Excellent | Excellent | Good | Excellent |
| **Gasoline:** | Good | Good | Fair | Good |
| **Alcohols:** | Excellent | Very Good | Poor/Fair | Very Good |
| **Acids <20%:** | Good | Poor | Fair | Poor |
| **General Approvals:** | UL TC-ERDB, ITC, PLTC, ERDB, CSA CIC/TC Marine Shipboard UL 1309, IEEE 1580-2010, ABS, 300 V, 600 V | UL/CSA, AWM 300 V or 600 V | UL/CSA, AWM 300 V or 600 V | UL/CSA, AWM 300 V or 600 V |

- Attributes are general statements for materials at room temperature. Each application should be evaluated individually.
- Temperature, the percentage of chemical present, type of chemical exposure, and installation practices will all affect performance. For specific recommendations, please contact Turck.

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# Mating Cordset Selection Guide

| Attributes | Armorfast Instrumentation Cable | Flexible Service Cable | Washdown Cable | Halogen Free Cable/Low Smoke Cable |
|---|---|---|---|---|
| **Material:** | PVC | PVC | TPV | TPU |
| **Temp Range:** | -40 to 105 °C | -40 to 105 °C | -60 to 105 °C | -40 to 80 °C |
| **Cold Bend:** | -40 °C | -40 °C | -60 °C | -40 °C |
| **Cold Impact:** | --- | --- | --- | --- |
| **Crush and Impact:** | Excellent | --- | --- | --- |
| **Cut and Abrasion:** | Good | Good | Poor/Fair | Excellent |
| **UV/Sunlight Resistant:** | Excellent | Excellent | Poor | Poor/Fair |
| **Flame Retardant:** | UL 1685/CSA FT4 | UL Horizontal Flame/CSA FT2 | Poor | UL 1061/CSA FT1 |
| **Weld Slag/Spatter:** | Poor | Poor | --- | Poor |
| **Water:** | Very Good | Very Good | Excellent | Very Good |
| **Flexibility:** | Fair | Good | Excellent | Good |
| **Flexlife:** | Poor | Good | --- | Good |
| **Oils:** | Very Good | Very Good | Poor | Good |
| **Greases:** | Very Good | Very Good | Poor | Good |
| **Gasoline:** | Poor | Poor | Poor | Fair |
| **Alcohols:** | Very Good | Very Good | Good | Poor/Fair |
| **Acids <20%:** | Good | Good | Good | Fair |
| **General Approvals:** | UL MC, ITC, PLTC, ERDB, CSA ACIC, 300 V, 600 V, HL ABCD | UL/CSA, STOOW MSHA, 600 V | None | UL/CSA, AWM 300 V |

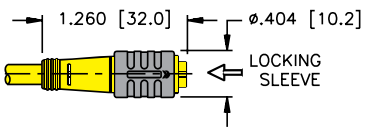
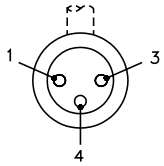
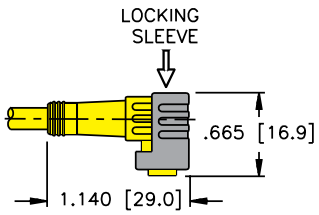
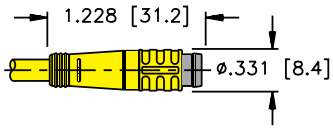
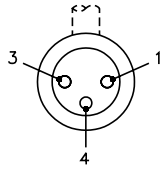
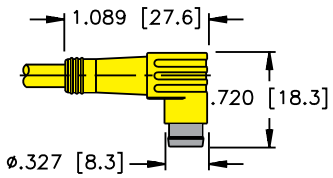
- Attributes are general statements for materials at room temperature. Each application should be evaluated individually.
- Temperature, the percentage of chemical present, type of chemical exposure, and installation practices will all affect performance. For specific recommendations, please contact Turck.

We reserve the right to make technical alterations without prior notice.

# M8 Picofast Connectivity

**3-Wire Cordsets, Snap Lock (Locking Sleeve)**

- NEMA 1, 3, 4, 6P
- IEC IP67 Protection
- 125 V, 4 A

| Connector Style | Female Part Number | Male Part Number | Features | Pinout | |
|---|---|---|---|---|---|
| **PKG ..Z****   | **PKG 3Z-***<br>**PKW 3Z-*** | **PSG 3-***<br>**PSW 3-*** | AWM, PVC Yellow, 3x24 AWG, 105 °C, 4.4 mm OD, Cable #RF50642-*M, Flexlife® | 1. BN<br>3. BU<br>4. BK | **Female**   |
| **PKW ..Z****   | **PKG 3Z-*/S90**<br>**PKW 3Z-*/S90** | **PSG 3-*/S90**<br>**PSW 3-*/S90** | AWM, TPU Black, 3x24 AWG, 90 °C, 4.2 mm OD, Cable #RF50587-*M, Cut/Abrasion Immune | | |
| **PSG ..**   | **PKG 3Z-*/S90/S101**<br>**PKW 3Z-*/S90/S101** | **PSG 3-*/S90/S101**<br>**PSW 3-*/S90/S101** | AWM, TPU Black, 3x24 AWG, 90 °C, 4.4 mm OD, Cable #RF51166-*M, Cut/Abrasion Immune, Flexlife-20, High Flex - Over 20 Million Cycles | | |
| | **PKG 3Z-*/S90/S618**<br>**PKW 3Z-*/S90/S618** | **PSG 3-*/S90/S618**<br>**PSW 3-*/S90/S618** | AWM, TPU Black, 3x24 AWG, 90 °C, 4.2 mm OD, Cable #RF50601-*M, Cut/Abrasion Immune, EMI/RFI Protection | | **Male**   |
| **PSW ..**   | **PKG 3Z-*/S760**<br>**PKW 3Z-*/S760** | **PSG 3-*/S760**<br>**PSW 3-*/S760** | AWM, PVC Black, 3x24 AWG, 105 °C, 4.2 mm OD, Cable #RF50585-M, Flexlife | | |

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters.

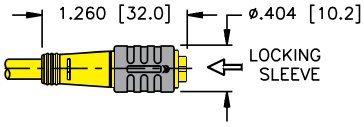
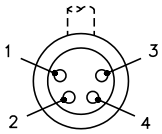
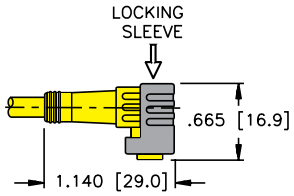
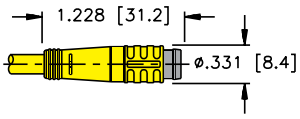
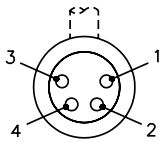
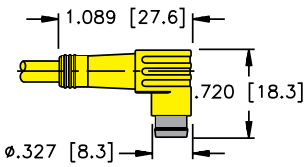
** Locking sleeve material is POM.."PKG..Z".

We reserve the right to make technical alterations without prior notice.

# M8 Picofast Connectivity

## 4-Wire Cordsets, Snap Lock (Locking Sleeve)

- NEMA 1, 3, 4, 6P
- IEC IP67 Protection
- 125 V, 2 A

| Connector Style | Female Part Number | Male Part Number | Features | Pinout | |
|---|---|---|---|---|---|
| PKG ..Z**<br>  <br> | PKG 4Z-*<br>PKW 4Z-* | PSG 4-*<br>PSW 4-* | AWM, PVC Yellow, 4x26 AWG, 105 °C, 4.4 mm OD, Cable #RF50697-*M, Flexlife® | 1. BN<br>2. WH<br>3. BU<br>4. BK | Female<br>  <br> |
| | PKG 4Z-*/S90<br>PKW 4Z-*/S90 | PSG 4-*/S90<br>PSW 4-*/S90 | AWM, TPU Black, 4x26 AWG, 90 °C, 4.2 mm OD, Cable #RF50586-*M, Cut/Abrasion Immune | | |
| PKW ..Z**<br>  <br> | PKG 4Z-*/S90/S101<br>PKW 4Z-*/S90/S101 | PSG 4-*/S90/S101<br>PSW 4-*/S90/S101 | AWM, TPU Black, 4x26 AWG, 90 °C, 4.4 mm OD, Cable #RF50935-*M, Cut/Abrasion Immune, Flexlife-20, High Flex - Over 20 Million Cycles | | |
| PSG ..<br>  <br> | PKG 4Z-*/S90/S618<br>PKW 4Z-*/S90/S618 | PSG 4-*/S90/S101<br>PSW 4-*/S90/S101 | AWM, TPU Black, 4x26 AWG, 90 °C, 4.2 mm OD, Cable #RF50602-*M, Cut/Abrasion Immune, EMI/RFI Protection | | Male<br>  <br> |
| | PKG 4Z-*/S760<br>PKW 4Z-*/S760 | PSG 4-*/S760<br>PSW 4-*/S760 | AWM, PVC Black, 4x26 AWG, 105 °C, 4.4 mm OD, Cable #RF50870-*M, Flexlife | | |
| PSW ..<br>  <br> | PKG 4Z-*/S90/S653<br>PKW 4Z-*/S90/S653 | PSG 4-*/S90/S653<br>PSW 4-*/S90/S653 | AWM, TPU Black, 3x24 AWG, 90 °C, 4.2 mm OD, Cable #RF50601-*M, Cut/Abrasion Immune, EMI/RFI Protection | 1. BN<br>2. Drain<br>3. BU<br>4. BK | |

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters.

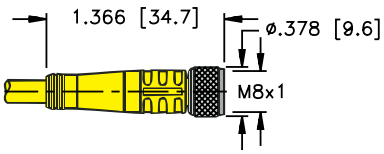
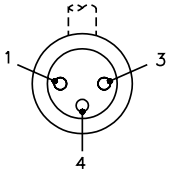
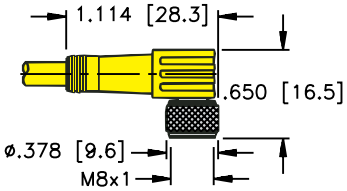
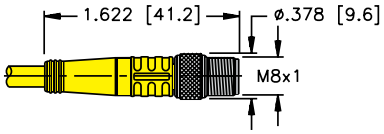
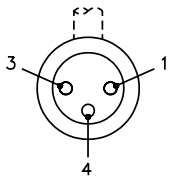
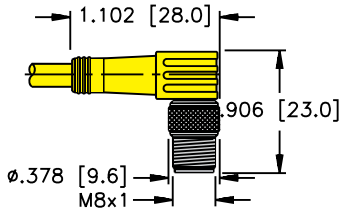
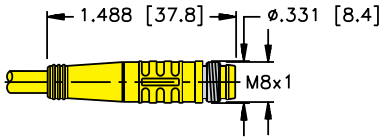
** Locking sleeve material is POM.."PKG..Z".

We reserve the right to make technical alterations without prior notice.

# M8 Picofast Connectivity

## 3-Wire Cordsets, Threaded Coupling Nut

- NEMA 1, 3, 4, 6P
- IEC IP67 Protection
- 125 V, 4 A

| Connector Style | Female Part Number | Male Part Number | Features | Pinout | |
|---|---|---|---|---|---|
| PKG ..Z**   | PKG 3M-*<br>PKW 3M-* | PSG 3M-*<br>PSW 3M-* | AWM, PVC Yellow, 3x24 AWG, 105 °C, 4.4 mm OD, Cable #RF50642-*M, Flexlife® | 1. BN<br>3. BU<br>4. BK | Female   |
| | PKG 3M-*/S90<br>PKW 3M-*/S90 | PSG 3M-*/S90<br>PSW 3M-*/S90 | AWM, TPU Black, 3x24 AWG, 90 °C, 4.2 mm OD, Cable #RF50587-*M, Cut/Abrasion Immune | | |
| PKW ..M**   | PKG 3M-*/S90/S101<br>PKW 3M-*/S90/S101 | PSG 3M-*/S90/S101<br>PSW 3M-*/S90/S101 | AWM, TPU Black, 3x24 AWG, 90 °C, 4.4 mm OD, Cable #RF51166-*M, Cut/Abrasion Immune, Flexlife-20, High Flex - Over 20 Million Cycles | | |
| PSG .. M**   | PKG 3M-*/S90/S618<br>PKW 3M-*/S90/S618 | PSG 3M-*/S90/S618<br>PSW 3M-*/S90/S618 | AWM, TPU Black, 3x24 AWG, 90 °C, 4.2 mm OD, Cable #RF50601-*M, Cut/Abrasion Immune, EMI/RFI Protection | | |
| | PKG 3M-*/S1587<br>PKW 3M-*/S1587 | PSG 3M-*/S1587<br>PSW 3M-*/S1587 | AWM, TPE Yellow, 3x24 AWG, 105 °C, 4.4 mm OD, Cable #RF51271-*M, Weldlife®, Weld Flash Immune | | Male   |
| PSW .. M**   | PKG 3M-*/S760<br>PKW 3M-*/S760 | PSG 3M-*/S760<br>PSW 3M-*/S760 | AWM, PVC Black, 3x24 AWG, 4.2 mm OD, Cable #RF50585-M, Flexlife | 1. BN<br>3. BU<br>4. Drain | |
| | PKG 3M-*/S90/S1084<br>PKW 3M-*/S90/S1084 | PSG 3M-*/S90/S1084<br>PSW 3M-*/S90/S1084 | AWM, TPU Black, 2x24 AWG, 90 °C, 4.2 mm OD, Cable #RF51197-*M, Cut/Abrasion Immune, Shielded | 1. BN<br>3. BU<br>4. BK | |
| PSG 3F .. **   | | PSG 3F-* | AWM, PVC Yellow, 3x24 AWG, 105 °C, 4.4 mm OD, Cable #RF50642-*M, Fixed coupling nut | | |

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters.

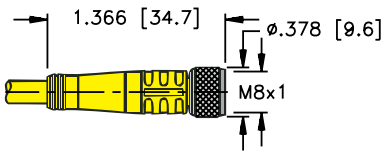
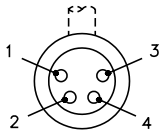
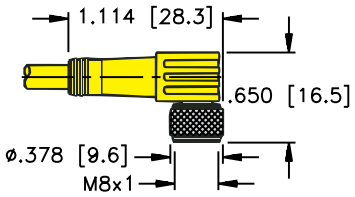
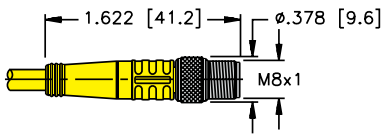
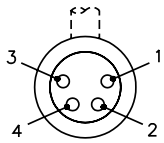
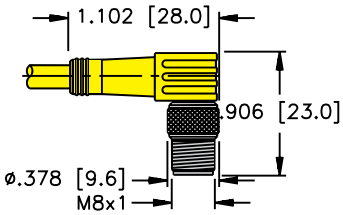
** Standard coupling material is nickel plated brass.."PKG..M"; "PKGV..M" indicates stainless steel.

We reserve the right to make technical alterations without prior notice.

# M8 Picofast Connectivity

## 4-Wire Cordsets, Threaded Coupling Nut

- NEMA 1, 3, 4, 6P
- IEC IP67 Protection
- 125 V, 4 A

| Connector Style | Female Part Number | Male Part Number | Features | Pinout | |
|---|---|---|---|---|---|
| PKG ..M**   | PKG 4M-*<br>PKW 4M-* | PSG 4M-*<br>PSW 4M-* | AWM PVC Yellow, 4x26 AWG, 105 °C, 4.4 mm OD, Cable #RF50697-*M, Flexlife® | 1. BN<br>2. WH<br>3. BU<br>4. BK | Female   |
| | PKG 4M-*/S90<br>PKW 4M-*/S90 | PSG 4M-*/S90<br>PSW 4M-*/S90 | AWM TPU Black, 4x26 AWG, 90 °C, 4.2 mm OD, Cable #RF50586-*M, Cut/Abrasion Immune | | |
| PKW ..M**   | PKG 4M-*/S90/S101<br>PKW 4M-*/S90/S101 | PSG 4M-*/S90/S101<br>PSW 4M-*/S90/S101 | AWM TPU Black, 4x26 AWG, 90 °C, 4.4 mm OD, Cable #RF50935-*M, Cut/Abrasion Immune, Flexlife-20, High Flex - Over 20 Million Cycles | | |
| PSG .. M**   | PKG 4M-*/S90/S618<br>PKW 4M-*/S90/S618 | PSG 4M-*/S90/S618<br>PSW 4M-*/S90/S618 | AWM TPU Black, 4x26 AWG, 90 °C, 4.2 mm OD, Cable #RF50602-*M, Cut/Abrasion Immune, EMI/RFI Protection | | Male   |
| | PKG 4M-*/S760<br>PKW 4M-*/S760 | PSG 4M-*/S760<br>PSW 4M-*/S760 | AWM PVC Black, 4x26 AWG, 105 °C, 4.4 mm OD, Cable #RF50870-*M, Flexlife | | |
| PSW .. M**   | PKG 4M-*/S90/S653<br>PKW 4M-*/S90/S653 | PSG 4M-*/S90/S653<br>PSW 4M-*/S90/S653 | AWM TPU Black, 3x24 AWG, 90 °C, 4.2 mm OD, Cable #RF50601-*M, Cut/Abrasion Immune, EMI/RFI Protection | 1. BN<br>2. Drain<br>3. BU<br>4. BK | |

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters.

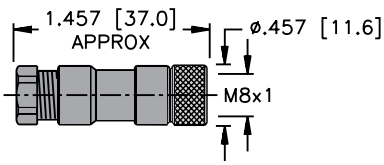
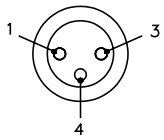
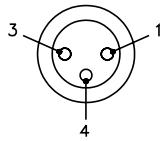
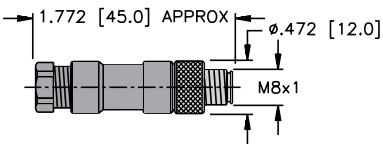
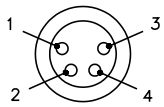
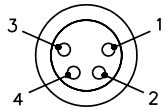
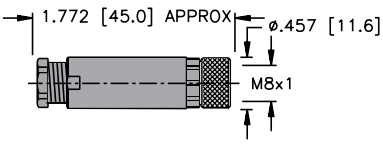
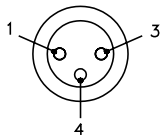
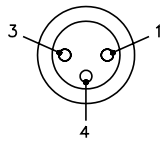
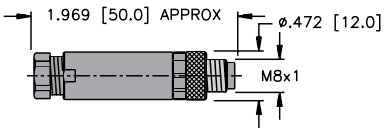
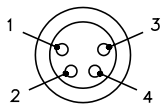
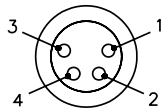
** Standard coupling material is nickel plated brass..”PKG..M”; “PKGV..M” indicates stainless steel.

We reserve the right to make technical alterations without prior notice.

# M8 Picofast Connectivity

**3 and 4-Pin Field Wireable Connectors, Standard**

- IEC IP67 Protection

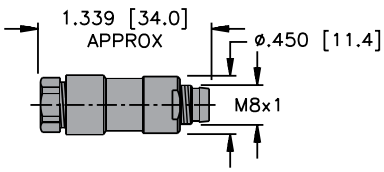
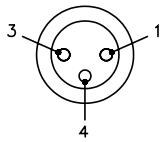
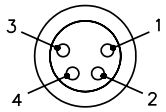
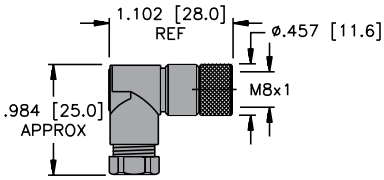
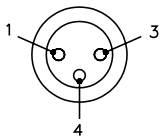
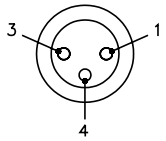
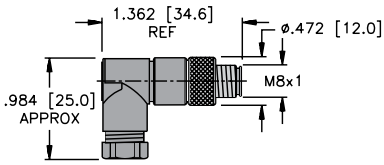
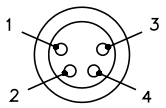
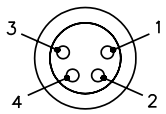
| Housing Style | Female Part Number | Male Part Number | Features | Pinout |
|---|---|---|---|---|
| B 513(4)1-0<br>  | **B 5131-0** | **BS 5131-0** | PBT, Black, accepts 3-5 mm cable diameter, solder terminals, accepts up to 24 AWG conductors, 85 °C, 60 VAC/75 VDC, 4 A, mates with 4-pin threaded cordsets and receptacles | Female<br>  <br>Male<br>  |
| BS 513(4)1-0<br>  | **B 5141-0** | **BS 5141-0** | PBT, Black, accepts 3-5 mm cable diameter, solder terminals, accepts up to 24 AWG conductors, 85 °C, 30 VAC/36 VDC, 4 A, mates with 4-pin threaded cordsets and receptacles | Female<br>  <br>Male<br>  |
| B 513(4)3-0<br>  | **B 5133-0** | **BS 5133-0** | PBT, Black, accepts 3-5 mm cable diameter, screw terminals, accepts up to 22 AWG conductors, 85 °C, 60 VAC/75 VDC, 4 A, mates with 3-pin threaded cordsets and receptacles | Female<br>  <br>Male<br>  |
| BS 513(4)3-0<br>  | **B 5143-0** | **BS 5143-0** | PBT, Black, accepts 3-5 mm cable diameter, screw terminals, accepts up to 22 AWG conductors, 85 °C, 60 VAC/75 VDC, 4 A, mates with 4-pin threaded cordsets and receptacles | Female<br>  <br>Male<br>  |

We reserve the right to make technical alterations without prior notice.

# M8 Picofast Connectivity

## 3 and 4-Pin Field Wireable Connectors, Standard

- IEC IP67 Protection

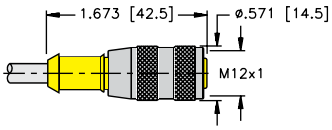
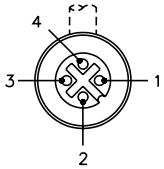
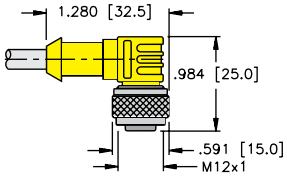
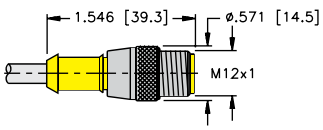
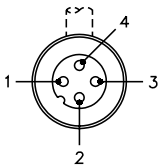
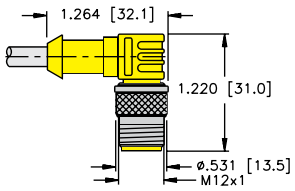
| Housing Style | Female Part Number | Male Part Number | Features | Pinout |
|---|---|---|---|---|
| BS 513(4)2-0<br>  <br> | | BS 5132-0 | PBT, Black, accepts 3-5 mm cable diameter, solder terminals, accepts up to 26 AWG conductors, 85 °C, 60 VAC/75 VDC, 4 A, mates with 3-pin female snap-lock cordsets, receptacles and junction boxes and threaded cordsets | Male<br>  <br> |
| | | BS 5142-0 | PBT, Black, accepts 3-5 mm cable diameter, solder terminals, accepts up to 26 AWG conductors, 85 °C, 60 VAC/75 VDC, 2 A, mates with 3-pin female snap-lock cordsets, receptacles and junction boxes and threaded cordsets | Male<br>  <br> |
| B 523(4)1-0<br>  <br> | B 5231-0 | BS 5231-0 | PBT, Black, Accepts 3-5 mm cable diameter, solder terminals, accepts up to 24 AWG conductors, 85 °C, 60 VAC/75 VDC, 4 A, mates with 3-pin threaded cordsets and receptacles | Female<br>  <br><br>Male<br>  <br> |
| BS 523(4)1-0<br>  <br> | B 5241-0 | BS 5241-0 | PBT, Black, accepts 3-5 mm cable diameter, solder terminals, accepts up to 24 AWG conductors, 85 °C, 30 VAC/36 VDC, 4 A, mates with 4-pin threaded cordsets and receptacles | Female<br>  <br><br>Male<br>  <br> |

We reserve the right to make technical alterations without prior notice.

# M12 Eurofast Connectivity

## 2-Wire Cordsets, Standard Plug Body

- NEMA 1, 3, 4, 6P
- IEC IP68 Protection
- 250 V, 4 A

| Connector Style | Female Part Number | Male Part Number | Features | Pinout | |
|---|---|---|---|---|---|
| RK ..**<br>  <br> | **RK 4.2T-***<br>**WK 4.2T-*** | **RS 4.2T-***<br>**WS 4.2T-*** | ITC/PLTC PVC Grey, 2x20 AWG, 105 °C, 5.1 mm OD, Cable #RF50529-*M, Flexlife® | 1. N/C<br>2. N/C<br>3. BN<br>4. BU | Female<br>  <br> |
| | **RK 4.2T-*/S90**<br>**WK 4.2T-*/S90** | **RS 4.2T-*/S90**<br>**WS 4.2T-*/S90** | AWM TPU Grey, 2x20 AWG, 90 °C, 4.8 mm OD, Cable #RF50772-*M, Cut/Abrasion Immune | | |
| WK ..**<br>  <br> | **RK 4.2T-*/S748**<br>**WK 4.2T-*/S748** | **RS 4.2T-*/S748**<br>**WS 4.2T-*/S748** | ITC/PLTC PVC Yellow, 2x22 AWG, 105 °C, 5.1 mm OD, Cable #RF50650-*M, Flexlife | 1. WH<br>2. N/C<br>3. N/C<br>4. BK | |
| | **RK 4.21T-*/S1511**<br>**WK 4.21T-*/S1511** | **RS 4.21T-*/S1511**<br>**WS 4.21T-*/S1511** | ITC/PLTC PVC Grey, 2x20 AWM PVC, 105 °C, 5.1 mm OD, Cable #RF50529-*M, Flexlife | | |
| RS ..**<br>  <br> | **RK 4.21T-***<br>**WK 4.21T-*** | **RS 4.21T-***<br>**WS 4.21T-*** | ITC/PLTC PVC NAMUR Blue, 2x20 AWG, 105 °C, 5.1 mm OD, Cable #RF51923-*M | 1. BN<br>2. BU<br>3. N/C<br>4. N/C | Male<br>  <br> |
| | **RK 4.21T-*/S90**<br>**WK 4.21T-*/S90** | **RS 4.21T-*/S90**<br>**WS 4.21T-*/S90** | AWM TPU NAMUR Blue, 2x20 AWG, 90 °C, 5.1 mm OD, Cable #RF50657-*M, Cut/Abrasion Immune | | |
| WS ..**<br>  <br> | **RK 4.22T-***<br>**WK 4.22T-*** | **RS 4.22T-***<br>**WS 4.22T-*** | ITC/PLTC PVC Grey, 2x20 AWG, 105 °C, 5.1 mm OD, Cable #RF50529-*M, Flexlife | 1. BN<br>2. N/C<br>3. BU<br>4. N/C | |
| | **RK 4.23T-***<br>**WK 4.23T-*** | **RS 4.23T-***<br>**WS 4.23T-*** | | 1. BN<br>2. N/C<br>3. N/C<br>4. BU | |

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.

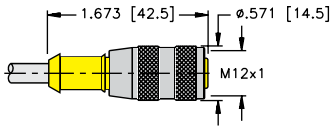
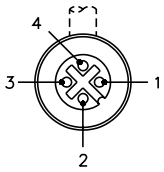
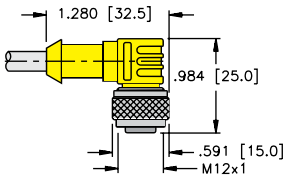
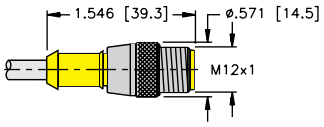
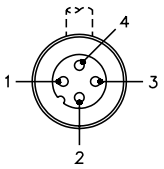
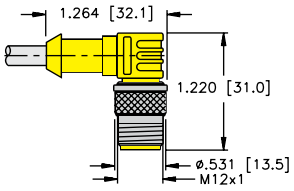
** Standard coupling nut material is nickel plated brass "RK .."; "RKK .." indicates nylon and "RKV .." indicates stainless steel.

We reserve the right to make technical alterations without prior notice.

# M12 Eurofast Connectivity

## 3-Wire Cordsets, Standard Plug Body

- NEMA 1, 3, 4, 6P
- IEC IP68 Protection
- 250 V, 4 A

| Connector Style | Female Part Number | Male Part Number | Features | Pinout | |
|---|---|---|---|---|---|
| RK ..**<br>  <br> | **RK 4T-***<br>**WK 4T-*** | **RS 4T-***<br>**WS 4T-*** | ITC/PLTC PVC Grey, 3x20 AWG, 105 °C, 5.1 mm OD, Cable #RF52081-*M, Flexlife® | 1. BN<br>2. N/C<br>3. BU<br>4. BK | Female<br>  <br> |
| | **RK 4T-*/S90**<br>**WK 4T-*/S90** | **RS 4T-*/S90**<br>**WS 4T-*/S90** | AWM TPU Grey, 3x22 AWG, 90 °C, 4.8 mm OD, Cable #RF52080-*M, Cut/Abrasion Immune | | |
| WK ..**<br>  <br> | **RK 4T-*/S101**<br>**WK 4T-*/S101** | **RS 4T-*/S101**<br>**WS 4T-*/S101** | AWM TPE Grey, 3x22 AWG, 105 °C, 4.8 mm OD, Cable #RF52085-*M, Flexlife-20, High Flex Over 20 Million Cycles | | |
| | **RK 4T-*/S529**<br>**WK 4T-*/S529** | **RS 4T-*/S529**<br>**WS 4T-*/S529** | TPU/Heavy Braid Double Jacket Yellow, 3x22 AWG, 90 °C, 4.8 mm OD, Cable #RF52084-*M, Cut/Abrasion Immune Braided Mechanical Shield | | |
| RS ..**<br>  <br> | **RK 4T-*/S824**<br>**WK 4T-*/S824** | **RS 4T-*/S824**<br>**WS 4T-*/S824** | ITC/PLTC AWM PVC Grey, 3x22 AWG, 105 °C, 5.1 mm OD, Cable #RF52081-*M, Tray Rated, Flexlife | | Male<br>  <br> |
| | **RK 4T-*/S715**<br>**WK 4T-*/S715** | **RS 4T-*/S715**<br>**WS 4T-*/S715** | ITC/PLTC PVC Yellow, 3x22 AWG, 105 °C, 5.1 mm OD, Cable #RF52087-*M, Flexlife | | |
| WS ..**<br>  <br> | **RK 4T-*/S760**<br>**WK 4T-*/S760** | **RS 4T-*/S760**<br>**WS 4T-*/S760** | ITC/PLTC PVC Black, 3x22 AWG, 105 °C, 5.1 mm OD, Cable #RF52083-*M, Flexlife | | |
| | **RK 4T-*/S618**<br>**WK 4T-*/S618** | **RS 4T-*/S618**<br>**WS 4T-*/S618** | ITC/PLTC PVC Grey, 3x22 AWG, Foil/Drain, 105 °C, 5.1 mm OD, Cable #RF52082-*M, RFI/EMI Shielding, Tray Rated | | |

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.

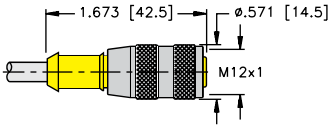
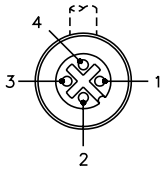
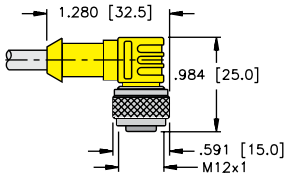
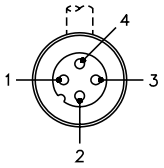
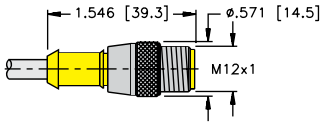
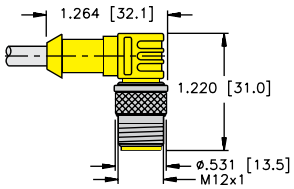
** Standard coupling nut material is nickel plated brass "RK .."; "RKK .." indicates nylon and "RKV .." indicates stainless steel.

We reserve the right to make technical alterations without prior notice.

# M12 Eurofast Connectivity

## 4-Wire Cordsets, Standard Plug Body

- NEMA 1, 3, 4, 6P
- IEC IP68 Protection
- 250 V, 4 A

| Connector Style | Female Part Number | Male Part Number | Features | Pinout | |
|---|---|---|---|---|---|
| RK ..**<br>  <br> | **RK 4.41T-***<br>**WK 4.41T-*** | **RS 4.41T-***<br>**WS 4.41T-*** | ITC/PLTC PVC NAMUR Blue, 4x22 AWG, 105 °C, 5.3 mm OD, Cable #RF50598-*M, Flexlife® | 1. BN<br>2. WH<br>3. BU<br>4. BK | Female<br>  <br> |
| | **RK 4.41T-*/S529**<br>**WK 4.41T-*/S529** | **RS 4.41T-*/S529**<br>**WS 4.41T-*/S529** | TPU/Heavy Braid Double Jacket Yellow, 4x20 AWG, 90 °C, 5.7 mm OD, Cable #RF50526-*M, Cut/Abrasion Immune Braided Mechanical Shield | | |
| | **RK 4.43T-***<br>**WK 4.43T-*** | **RS 4.43T-***<br>**WS 4.43T-*** | ITC/PLTC PVC Yellow, 4x22 AWG, 105 °C, 5.3 mm OD, Cable #RF50530-*M, Flexlife | | |
| WK ..**<br>  <br> | **RK 4.43T-*/S90**<br>**WK 4.43T-*/S90** | **RS 4.43T-*/S90**<br>**WS 4.43T-*/S90** | AWM TPU Yellow, 4x22 AWG, 90 °C, 5.1 mm OD, Cable #RF50613-*M, Cut/Abrasion Immune | | |
| | **RK 4.4T-***<br>**WK 4.4T-*** | **RS 4.4T-***<br>**WS 4.4T-*** | ITC/PLTC PVC Grey, 4x22 AWG, 105 °C, 5.3 mm OD, Cable #RF50516-*M, Flexlife | | |
| | **RK 4.4T-*/S90**<br>**WK 4.4T-*/S90** | **RS 4.4T-*/S90**<br>**WS 4.4T-*/S90** | AWM TPU Grey, 4x22 AWG, 90 °C, 5.1 mm OD, Cable #RF50532-*M, Cut/Abrasion Immune | | Male<br>  <br> |
| RS ..**<br>  <br> | **RK 4.4T-*/S101**<br>**WK 4.4T-*/S101** | **RS 4.4T-*/S101**<br>**WS 4.4T-*/S101** | AWM TPE Grey, 4x22 AWG, 105 °C, 5.1 mm OD, Cable #RF50941-*M, Flexlife-20, High Flex Over 20 Million Cycles | | |
| | **RK 4.4T-*/S824**<br>**WK 4.4T-*/S824** | **RS 4.4T-*/S824**<br>**WS 4.4T-*/S824** | ITC/PLTC PVC Grey, 4x22 AWG, 105 °C, 5.3 mm OD, Cable #RF50698-*M, Tray Rated | | |
| WS ..**<br>  <br> | **RK 4.4T-*/S618**<br>**WK 4.4T-*/S618** | **RS 4.4T-*/S618**<br>**WS 4.4T-*/S618** | ITC/PLTC PVC Grey, 4x22 AWG Foil/Drain, 105 °C, 5.3 mm OD, Cable #RF50577-*M, RFI/EMI Shielding | | |
| | **RK 4.4T-*/S618/S824**<br>**WK 4.4T-*/S618/S824** | **RS 4.4T-*/S618/S824**<br>**WS 4.4T-*/S618/S824** | ITC/PLTC PVC Grey, 4x22 AWG Foil/Drain, 105 °C, 5.3 mm OD, Cable #RF50777-*M, RFI/EMI Shielding, Tray Rated | | |

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.

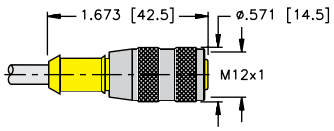
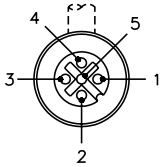
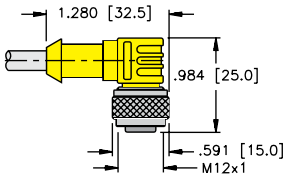
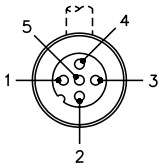
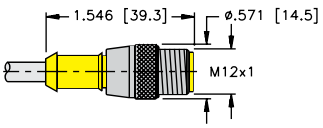
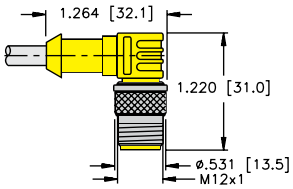
** Standard coupling nut material is nickel plated brass "RK .."; "RKK .." indicates nylon and "RKV .." indicates stainless steel.

We reserve the right to make technical alterations without prior notice.

# M12 Eurofast Connectivity

## 5-Wire Cordsets, Standard Plug Body

- NEMA 1, 3, 4, 6P
- IEC IP68 Protection
- 250 V, 4 A

| Connector Style | Female Part Number | Male Part Number | Features | Pinout | |
|---|---|---|---|---|---|
| RK ..**<br>  <br> | **RK 4.5T-***<br>**WK 4.5T-*** | **RS 4.5T-***<br>**WS 4.5T-*** | ITC/PLTC PVC Grey, 5x22 AWG, 105 °C, 5.7 mm OD, Cable #RF50543-*M, Flexlife® | 1. BN<br>2. WH<br>3. BU<br>4. BK<br>5. GY | **Female**<br>  <br> |
| | **RK 4.5T-*/S90**<br>**WK 4.5T-*/S90** | **RS 4.5T-*/S90**<br>**WS 4.5T-*/S90** | AWM TPU Grey, 5x22 AWG, 90 °C, 5.3 mm OD, Cable #RF50649-*M, Cut/Abrasion Immune | | |
| WK ..**<br>  <br> | **RK 4.5T-*/S101**<br>**WK 4.5T-*/S101** | **RS 4.5T-*/S101**<br>**WS 4.5T-*/S101** | AWM TPE Grey, 5x22 AWG, 105 °C, 5.1 mm OD, Cable #RF50909-*M, Flexlife-20, High Flex Over 20 Million Cycles | | |
| | **RK 4.5T-*/S618**<br>**WK 4.5T-*/S618** | **RS 4.5T-*/S618**<br>**WS 4.5T-*/S618** | ITC/PLTC PVC Grey, 5x22 AWG Foil/Drain, 105 °C, 5.7 mm OD, Cable #RF50609-*M, RFI/EMI Protection | | **Male**<br>  <br> |
| RS ..**<br>  <br> | **RS 4.5T-*/S715**<br>**WS 4.5T-*/S715** | **RS 4.5T-*/S715**<br>**WS 4.5T-*/S715** | ITC/PLTC PVC Yellow, 5x22 AWG, 105 °C, 5.7 mm OD, Cable #RF50684-*M, Flexlife | | |
| | **RK 4.5T-*/S653**<br>**WK 4.5T-*/S653** | **RS 4.5T-*/S653**<br>**WS 4.5T-*/S653** | ITC/PLTC PVC Grey, 4x22 AWG Foil/Drain, 105 °C, 5.3 mm OD, Cable #RF50577-*M, RFI/EMI Shielding | 1. BN<br>2. WH<br>3. BU<br>4. BK<br>5. Drain | |
| WS ..**<br>  <br> | **RK 4.5T-*/S1554**<br>**WK 4.5T-*/S1554** | **RS 4.5T-*/S1554**<br>**WS 4.5T-*/S1554** | ITC/PLTC PVC Black, 5x22 AWG Foil/Drain, 105 °C, 5.7 mm OD, Cable #RF50794-*M, RFI/EMI Shielding | 1. BN<br>2. WH<br>3. BU<br>4. BK<br>5. GY | |

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.

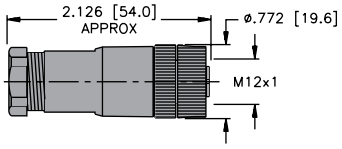
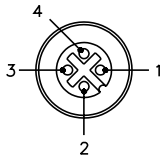
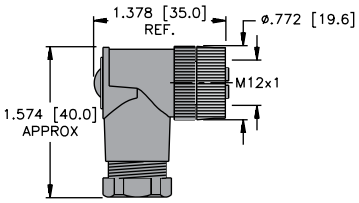
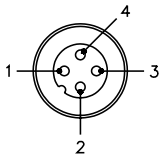
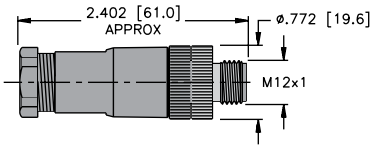
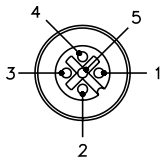
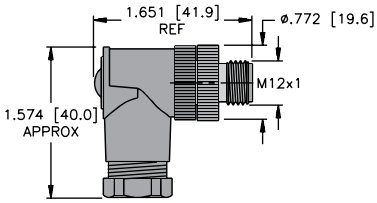
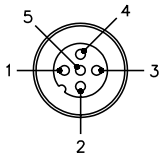
** Standard coupling nut material is nickel plated brass "RK .."; "RKK .." indicates nylon and "RKV .." indicates stainless steel.

We reserve the right to make technical alterations without prior notice.

# M12 Eurofast Connectivity

**4 and 5-Pin Field Wireable Connectors, Standard Key**

- IEC IP67 Protection

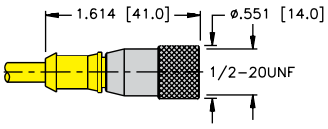
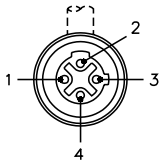
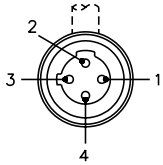
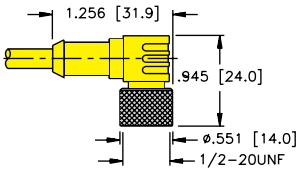
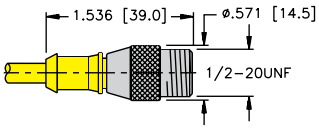
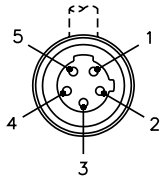
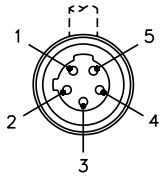
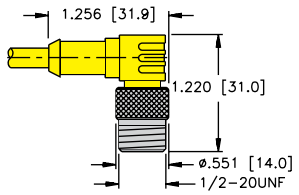
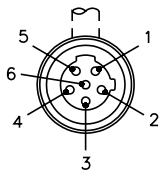
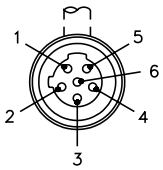
| Housing Style | Female Part Number | Male Part Number | Features | Pinout |
|---|---|---|---|---|
| **B 81..**<br>  <br> | **B 8141-0**<br>**B 8241-0** | **BS 8141-0**<br>**BS 8241-0** | PBT, Black, PG 7 cable gland, accepts 4-6 mm cable diameter, screw terminals, accepts up to 18 AWG conductors, 85 °C, 250 V, 4 A, mates with standard key 4-pin cordsets and receptacles | **Female**<br>  <br> |
| **B 82..**<br>  <br> | **B 8141-0/PG 9**<br>**B 8241-0/PG 9** | **BS 8141-0/PG 9**<br>**BS 8241-0/PG 9** | PBT, Black, PG 9 cable gland, accepts 6-8 mm cable diameter, screw terminals, accepts up to 18 AWG conductors, 85 °C, 250 V, 4 A, mates with standard key 4-pin cordsets and receptacles | **Male**<br>  <br> |
| BS 81..<br>  <br> | **B 8151-0/PG 9**<br>**B 8251-0/PG 9** | **BS 8151-0/PG 9**<br>**BS 8251-0/PG 9** | PBT, Black, PG 9 cable gland, accepts 4-8 mm cable diameter, screw terminals, accepts up to 18 AWG conductors, 85 °C, 60 V, 4 A, mates with standard key 5-pin cordsets and receptacles | **Female**<br>  <br> |
| **BS 82..**<br>  <br> | **BM 8151-0/PG 9** | | PBT, Black, PG 9 cable gland, accepts 6-8 mm cable diameter, screw terminals, accepts up to 18 AWG conductors, metal coupling nut, 85 °C, 60 V, 4 A, mates with standard key 5-pin cordsets and receptacles | **Male**<br>  <br> |

We reserve the right to make technical alterations without prior notice.

# 1/2" Microfast Connectivity

## Reverse Key (B-Code) Cordset Part Number Key

- NEMA 1, 3, 4, 6P
- IEC IP67 Protection
- 250 V, 4 A

| Connector Style | Female Part Number | Male Part Number | Features | Pinout | |
|---|---|---|---|---|---|
| KB ..**   | **KB 4T-***<br>**WKB 4T-*** | **SB 4T-***<br>**WSB 4T-*** | ITC/PLTC PVC Yellow, 4x22 AWG, 105 °C, 5.3 mm OD, Cable #RF50555-*M, Flexlife® | 1. RD/BK<br>2. RD/WH<br>3. RD<br>4. GN | Female   |
| | **KB 4T-*/S90**<br>**WKB 4T-*/S90** | **SB 4T-*/S90**<br>**WSB 4T-*/S90** | AWM TPU Yellow, 4x22 AWG, 90 °C, 4.7 mm OD, Cable #RF50614-*M, Cut/Abrasion Immune | | |
| | **KB 4T-*/S105**<br>**WKB 4T-*/S105** | **SB 4T-*/S105**<br>**WSB 4T-*/S105** | ITC/PLTC PVC Yellow, 4x22 AWG, 105 °C, 6.2 mm OD, Cable #RF50656-*M, Braided Copper Shield | | Male   |
| WKB ..**   | **KB 4T-*/S727**<br>**WKB 4T-*/S727** | **SB 4T-*/S727**<br>**WSB 4T-*/S727** | AWM TPU Grey, 4x22 AWG, 90 °C, 5.1 mm OD, Cable #RF50532-*M, Special Conductor Color Code | 1. BN<br>2. BU<br>3. BK<br>4. WH | |
| SB ..**   | **KB 5T-***<br>**WKB 5T-*** | **SB 5T-***<br>**WSB 5T-*** | ITC/PLTC PVC Yellow, 5x22 AWG, 105 °C, 5.7 mm OD, Cable #RF50556-*M, Flexlife | 1. RD/WH<br>2. RD<br>3. GN<br>4. RD/YE<br>5. RD/BK | Female   |
| | | | | | Male   |
| WSB ..**   | **KB 6T-***<br>**WKB 6T-*** | **SB 6T-***<br>**WSB 6T-*** | ITC/PLTC PVC Yellow, 6x22 AWG, 105 °C, 6.2 mm OD, Cable #RF51003-*M, Flexlife | 1. RD/WH<br>2. RD<br>3. GN<br>4. RD/YE<br>5. RD/BK<br>6. RD/BU | Female   |
| | | | | | Male   |

* Length in meters. Standard cable lengths are 2, 4, 6, 8 and 10 meters. Consult factory for other lengths.

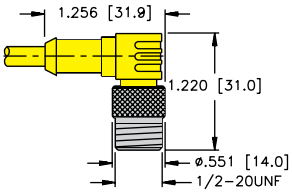
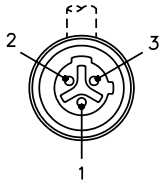
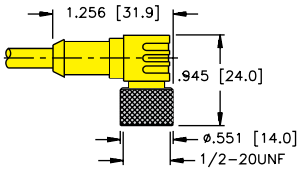
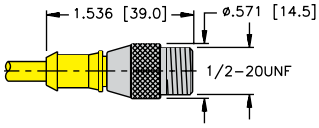
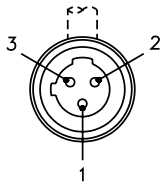
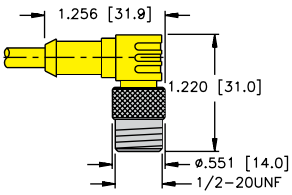
** Standard coupling nut material is nickel plated brass "KB .."; "KBK .." indicates nylon and "KBV .." indicates stainless steel.

We reserve the right to make technical alterations without prior notice.

# 1/2" Microfast Connectivity

## 3-Wire Cordsets, Standard Duty

- NEMA 1, 3, 4, 6P
- IEC IP67 Protection
- 250 V, 4 A

| Connector Style | Female Part Number | Male Part Number | Features | Pinout | |
|---|---|---|---|---|---|
| **WSB ..****   | **KB 3T-***<br>**WKB 3T-*** | **SB 3T-***<br>**WSB 3T-*** | ITC/PLTC PVC Yellow, 3x22 AWG, 105 °C, 5.1 mm OD, Cable #RF50531-*M | 1. GN<br>2. RD/BK<br>3. RD/WH | **Female**   |
| **WKB ..****   | **KB 3T-*/S90**<br>**WKB 3T-*/S90** | **SB 3T-*/S90**<br>**WSB 3T-*/S90** | AWM TPU Yellow, 3x18 AWG, 90 °C, 5.3 mm OD, Cable #RF50547-*M, Cut/Abrasion Immune | | |
| | **KB 3T-*/S105**<br>**WKB 3T-*/S105** | **SB 3T-*/S105**<br>**WSB 3T-*/S105** | ITC/PLTC PVC Yellow, 3x22 AWG,105 °C, 6.2 mm OD, Cable #RF50535-*M, Braided Shield | | |
| **SB ..****   | **KB 3T-*/S749**<br>**WKB 3T-*/S749** | **SB 3T-*/S749**<br>**WSB 3T-*/S749** | ITC/PLTC PVC Yellow, 2x22 AWG, 105 °C, 5.1 mm OD, Cable #RF50650-*M, 3-pin with 2 conductors | 1. N/C<br>2. BK<br>3. WH | **Male**   |
| **WSB ..****   | **KB 3T-*/S1507**<br>**WKB 3T-*/S1507** | **SB 3T-*/S1507**<br>**WSB 3T-*/S1507** | AWM TPE Grey, 3x22 AWG 105 °C, 4.8 mm OD, Cable #RF52085-*M, Flexlife-20, High Flex - Over 20 million cycles | 1. BK<br>2. BN<br>3. BU | |

* Length in meters. Standard cable lengths are 2, 4, 6, 8 and 10 meters. Consult factory for other lengths.

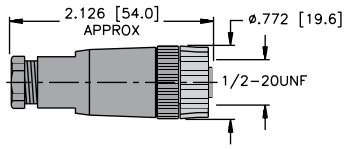
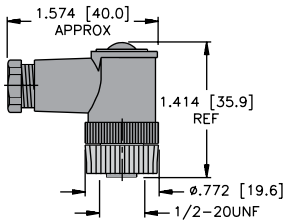
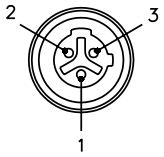
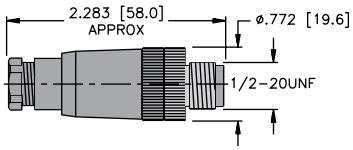
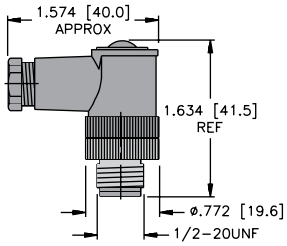
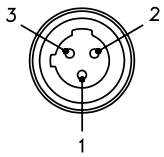
** Standard coupling nut material is nickel plated brass "KB .."; "KBK .." indicates nylon and "KBV .." indicates stainless steel.

We reserve the right to make technical alterations without prior notice.

# 1/2" Microfast Connectivity

## 3-Pin Field Wireable Connectors

- NEMA 1, 3, 4, 6P
- IEC IP67 Protection

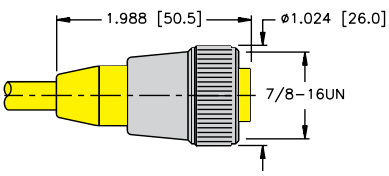
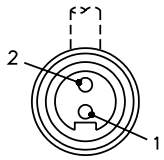
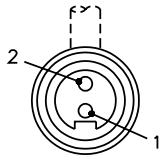
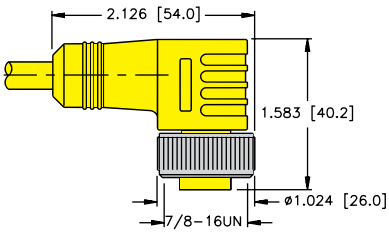
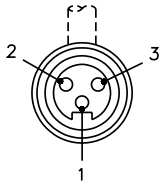
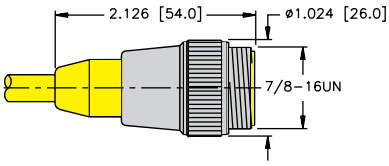
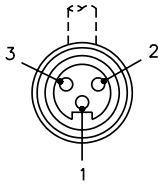
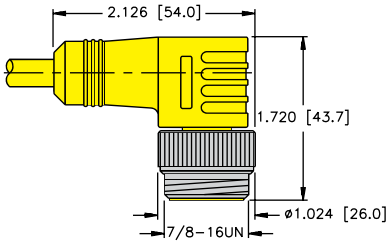
| Housing Style | Female Part Number | Male Part Number | Features | Pinout |
|---|---|---|---|---|
| **MF 3131-0**<br>  <br><br>**MF 3231-0**<br>  <br> | **MF 3131-0** | **MFS 3131-0** | PBT, black, PG 7 cable diameter gland, accepts 4-6 mm cable diameter, screw terminals, accepts up to 18 AWG conductor, 85 °C, 250 V, 4 A, mates with 3-wire cordsets and receptacles | **Female**<br>  <br> |
| **MFS 3131-0**<br>  <br><br>**MFS 3231-0**<br>  <br> | **MF 3231-0** | **MFS 3231-0** | PBT, black, PG 7 cable diameter gland, accepts 4-6 mm cable diameter, screw terminals, accepts up to 18 AWG conductor, 85 °C, 250 V, 4 A, mates with 3-wire cordsets and receptacles | **Male**<br>  <br> |

We reserve the right to make technical alterations without prior notice.

# 7/8" Minifast Connectivity Products

**2 and 3-Wire Cordsets, Standard**

- NEMA 1, 3, 4, 6P
- IEC IP67 Protection
- 9 A

| Connector Style | Female Part Number | Male Part Number | Features | Pinout | |
|---|---|---|---|---|---|
| RKM ..**<br>  <br> | **RKM 20- *M**<br>**WKM 20- *M** | **RSM 20- *M**<br>**WSM 20- *M** | ITC/PLTC PVC Yellow 2x18 AWG, 105 °C, 6.2 mm OD, Cable #RF50511-*M, Flexlife®, 600 V | 1. BN<br>2. BU | Female<br>  <br><br>Male<br>  <br> |
| WKM ..**<br>  <br> | **RKM 30-*M**<br>**WKM 30-*M** | **RSM 30-*M**<br>**WSM 30-*M** | ITC/PLTC PVC Yellow, 3x18 AWG, 105 °C, 6.2 mm OD, Cable #RF50880-*M, Flexlife, 600 V | 1. GN/YE<br>2. BN<br>3. BU | Female<br>  <br> |
| | **RKM 30-*M/S90**<br>**WKM 30-*M/S90** | **RSM 30-*M/S90**<br>**WSM 30-*M/S90** | AWM TPU Yellow, 3x18 AWG , 90 °C, 6.0 mm OD, Cable #RF50545-*M, Cut Abrasion Immune, 600 V | | |
| RSM ..**<br>  <br> | **RKM 30-*M/S101**<br>**WKM 30-*M/S101** | **RSM 30-*M/S101**<br>**WSM 30-*M/S101** | AWM TPE Yellow, 3x18 AWG , 105 °C, 5.7 mm OD, Cable #RF51173-*M, Flexlife-20, high flex over 20 million cycles, 600 V C-track | | |
| | **RKM 311-*M**<br>**WKM 311-*M** | **RSM 311-*M**<br>**WSM 311-*M** | ITC/PLTC PVC Yellow, 3x18 AWG, 105 °C, 6.2 mm OD, Cable #RF50520-*M, Flexlife, 600 V | 1. GN<br>2. RD/BK<br>3. RD/WH | Male<br>  <br> |
| WSM ..**<br>  <br> | **RKM 311-*M/S600**<br>**WKM 311-*M/S600** | **RSM 311-*M/S600**<br>**WSM 311-*M/S600** | SJOOW CPE, Yellow, 3x18 AWG , 105 °C, 8.0 mm OD, Cable #RF50658-*M, Weld Flash Immune, Flame Immune, 300 V | | |

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.

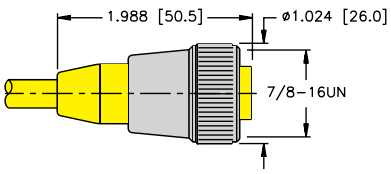
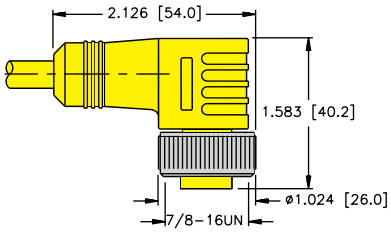
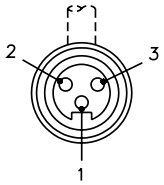
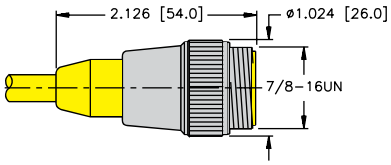
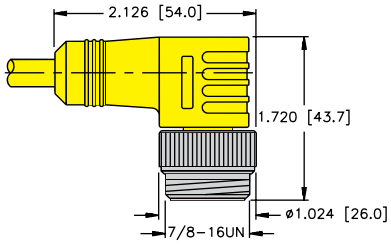
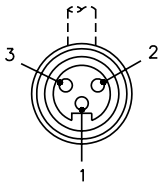
** Standard coupling nut material is nickel plated brass "RKM .."; "RK .." indicates nylon, "RKV .." indicates stainless steel, and "RKVH .." indicates stainless steel hex.

We reserve the right to make technical alterations without prior notice.

# 7/8" Minifast Connectivity Products

## 3-Wire Cordsets, Standard

- NEMA 1, 3, 4, 6P
- IEC IP67 Protection
- 9 A

| Connector Style | Female Part Number | Male Part Number | Features | Pinout | |
|---|---|---|---|---|---|
| RKM ..**<br>  <br><br>WKM ..**<br>  <br> | RKM 31-*M<br>WKM 31-*M | RSM 31-*M<br>WSM 31-*M | ITC/PLTC PVC Yellow, 3x18 AWG, 105 °C, 6.2 mm OD, Cable #RF50513-*M, Flexlife®, 600 V | 1. BK<br>2. BN<br>3. BU | Female<br>  <br> |
| RSM ..**<br>  <br>WSM ..**<br>  <br> | RKM 31-*M/S600<br>WKM 31-*M/S600 | RSM 31-*M/S600<br>WSM 31-*M/S600 | SJOOW CPE Yellow, 3x18 AWG, 105 °C, 8.0 mm OD, Cable #RF50654-*M, Weld Flash Immune, Flame Immune, 300 V | | Male<br>  <br> |

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.

** Standard coupling nut material is nickel plated brass "RKM .."; "RK .." indicates nylon, "RKV .." indicates stainless steel, and "RKVH .." indicates stainless steel hex.

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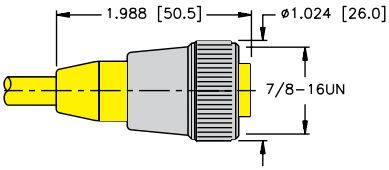
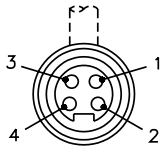
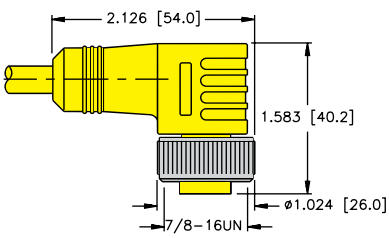
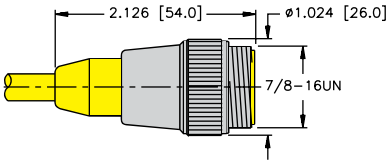
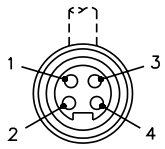
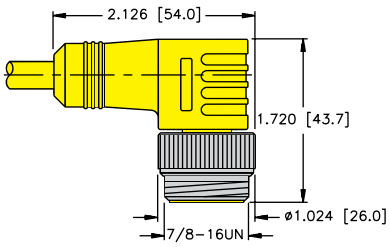
# 7/8" Minifast Connectivity Products

**3 and 4-Wire Cordsets, Standard**

- NEMA 1, 3, 4, 6P
- IEC IP67 Protection
- 9 A

| Connector Style | Female Part Number | Male Part Number | Features | Pinout | |
|---|---|---|---|---|---|
| **RKM ..****   | **RKM 40-*M**<br>**WKM 40-*M** | **RSM 40-*M**<br>**WSM 40-*M** | ITC/PLTC PVC Yellow, 4x18 AWG, 105 °C, 6.7 mm OD, Cable #RF50548-*M, Flexlife®, 600 V | 1. BN<br>2. WH<br>3. BU<br>4. BK | **Female**   |
| **WKM ..****   | **RKM 40-*M/S90**<br>**WKM 40-*M/S90** | **RSM 40-*M/S90**<br>**WSM 40-*M/S90** | AWM TPU Yellow, 4x18 AWG, 90 °C, 7.2 mm OD, Cable #RF50544-*M, Cut/Abrasion Immune, 600 V | | |
| **RSM ..****   | **RKM 40-*M/S101**<br>**WKM 40-*M/S101** | **RSM 40-*M/S101**<br>**WSM 40-*M/S101** | AWM TPE Yellow, 4x18 AWG, 105 °C, 6.2 mm OD, Cable #RF50968-*M, Flexlife-20, High Flex - Over 20 million cycles, 600 V, C-track | | |
| | **RKM 40-*M/S529**<br>**WKM 40-*M/S529** | **RSM 40-*M/S529**<br>**WSM 40-*M/S529** | TPU Yellow, 4x20 AWG, 90 °C, 5.7 mm OD, Cable #RF50526-*M, Cut/Abrasion Immune, Braided Mechanical Shield, 300 V | | **Male**   |
| **WSM ..****   | **RKM 40-*M/S600**<br>**WKM 40-*M/S600** | **RSM 40-*M/S600**<br>**WSM 40-*M/S600** | SJOOW CPE Yellow, 4x18 AWG, 105 °C, 8.5 mm OD, Cable #RF50644-*M, Weld Flash Immune, Flame Immune, 300 V | | |

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.

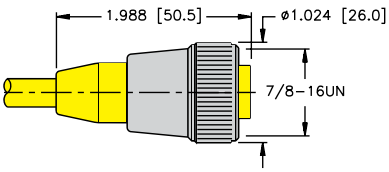
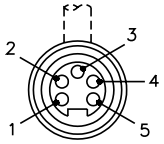
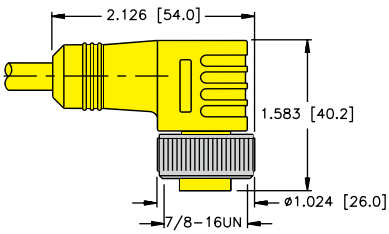
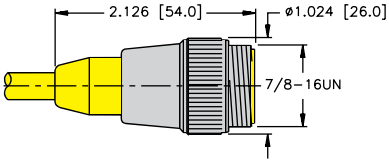
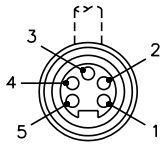
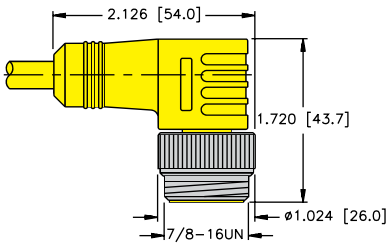
** Standard coupling nut material is nickel plated brass "RKM .."; "RK .." indicates nylon, "RKV .." indicates stainless steel, and "RKVH .." indicates stainless steel hex.

We reserve the right to make technical alterations without prior notice.

# 7/8" Minifast Connectivity Products

## 5-Wire Cordsets, Standard

- NEMA 1, 3, 4, 6P
- IEC IP67 Protection
- 9 A

| Connector Style | Female Part Number | Male Part Number | Features | Pinout | |
|---|---|---|---|---|---|
| **RKM ..****   | **RKM 50-*M**<br>**WKM 50-*M** | **RSM 50-*M**<br>**WSM 50-*M** | ITC/PLTC PVC Yellow, 5x18 AWG, 105 °C, 7.6 mm OD, Cable #RF50549-*M, Flexlife®, 600 V | 1. BK<br>2. BU<br>3. GN/YE<br>4. BN<br>5. WH | **Female**   |
| | **RKM 50-*M/S90**<br>**WKM 50-*M/S90** | **RSM 50-*M/S90**<br>**WSM 50-*M/S90** | AWM TPU Yellow, 5x18 AWG, 90 °C, 7.2 mm OD, Cable #RF50751-*M, Cut/Abrasion Immune, 600 V | | |
| **WKM ..****   | **RKM 50-*M/S101**<br>**WKM 50-*M/S101** | **RSM 50-*M/S101**<br>**WSM 50-*M/S101** | AWM TPE Yellow, 5x18 AWG, 105 °C, 6.7 mm OD, Cable #RF51174-*M, Flexlife-20, high flex over 20 million cycles, 600 V, C-track | | |
| **RSM ..****   | **RKM 50-*M/S1551**<br>**WKM 50-*M/S1551** | **RSM 50-*M/S1551**<br>**WSM 50-*M/S1551** | ITC/PLTC PVC Yellow, 5x18 AWG, 105 °C, 7.6 mm OD, Cable #RF50578-*M, Yellow conductor instead of Green/Yellow, 600 V | 1. BK<br>2. BU<br>3. YE<br>4. BN<br>5. WH | **Male**   |
| | **RKM 511-*M**<br>**WKM 511-*M** | **RSM 511-*M**<br>**WSM 511-*M** | ITC/PLTC PVC Yellow, 5x18 AWG, 105 °C, 7.6 mm OD, Cable #RF50521-*M, Flexlife, 600 V | 1. RD/WH<br>2. RD/BU<br>3. GN<br>4. RD/OG<br>5. RD/BK | |
| **WSM ..****   | **RKM 511-*M/S600**<br>**WKM 511-*M/S600** | **RSM 511-*M/S600**<br>**WSM 511-*M/S600** | SJOOW CPE Yellow, 5x18 AWG, 105 °C, 9.4 mm OD, Cable #RF50659-*M, Weld Flash Immune, Flame Immune, 300 V | | |

* Length in meters. Standard cable lengths are 2, 4, 5, 6, 8 and 10 meters. Consult factory for other lengths.

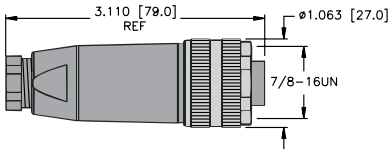
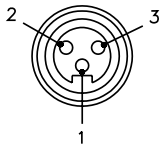
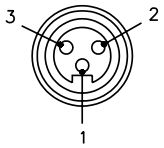
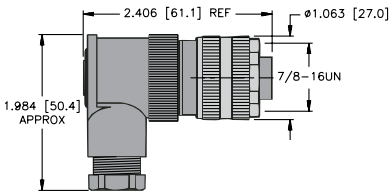
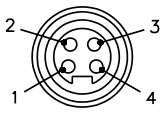
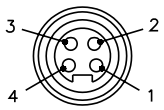
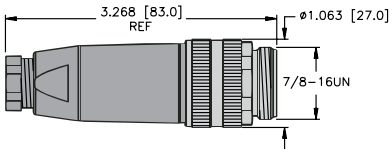
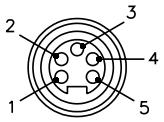
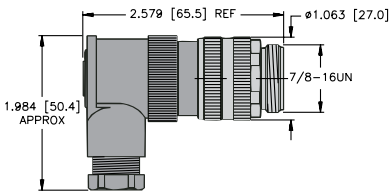
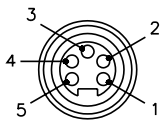
** Standard coupling nut material is nickel plated brass "RKM .."; "RK .." indicates nylon, "RKV .." indicates stainless steel, and "RKVH .." indicates stainless steel hex.

We reserve the right to make technical alterations without prior notice.

# 7/8" Minifast Connectivity Products

**3, 4 and 5-Pin Field Wireable Connectors**

- NEMA 1, 3, 4, 6P
- IEC IP67 Protection

| Housing Style | Female Part Number | Male Part Number | Features | Pinout |
|---|---|---|---|---|
| **B 41 ..**<br>  <br> | **B 4131-0/9**<br>**B 4231-0/9** | **BS 4131-0/9**<br>**BS 4231-0/9** | Glass filled nylon, PG 9 cable gland, accepts 6-8 mm cable diameter screw terminals, accepts up to 16 AWG conductors, 85 °C, 250 V, 12 A, Mates with all 3-pin cordsets and receptacles | **Female**<br>  <br> |
| | **B 4131-0/13.5** | **BS 4131-0/13.5** | Glass filled nylon, PG 13.5 cable gland, accepts 10-12 mm cable diameter screw terminals, accepts up to 16 AWG conductors, 85 °C, 250 V, 12 A, Mates with all 3-pin cordsets and receptacles | **Male**<br>  <br> |
| **B 42 ..**<br>  <br> | **B 4141-0/9**<br>**B 4241-0/9** | **BS 4141-0/9**<br>**BS 4241-0/9** | Glass filled nylon, PG 9 cable gland, accepts 6-8 mm cable diameter screw terminals, accepts up to 16 AWG conductors 85 °C, 250 V, 9 A, Mates with all 4-pin cordsets and receptacles | **Female**<br>  <br> |
| | **B 4141-0/13.5** | **BS 4141-0/13.5** | Glass filled nylon, PG 13.5 cable gland, accepts 10-12 mm cable diameter screw terminals, accepts up to 16 AWG conductors, 85 °C, 250 V, 9 A, Mates with all 4-pin cordsets and receptacles | **Male**<br>  <br> |
| **BS 41 ..**<br>  <br> | **B 4151-0/9**<br>**B 4251-0/9** | **BS 4151-0/9**<br>**BS 4251-0/9** | Glass filled nylon, PG 9 cable gland, accepts 6-8 mm cable diameter, screw terminals, accepts up to 16 AWG conductors, 85 °C, 250 V, 9 A, Mates with all 5-pin cordsets and receptacles | **Female**<br>  <br> |
| **BS 42 ..**<br>  <br> | **B 4151-0/13.5** | **BS 4151-0/13.5** | Glass filled nylon, PG 13.5 cable gland, accepts 10-12 mm cable diameter screw terminals, accepts up to 16 AWG conductors, 85 °C, 250 V, 9 A | **Male**<br>  <br> |
| | **B 4151-0/16** | **BS 4151-0/16** | Glass filled nylon, PG 16 cable gland, accepts 12-14 mm cable diameter screw terminals, accepts up to 16 AWG conductors, 85 °C, 250 V, 9 A | |

We reserve the right to make technical alterations without prior notice.

Notes

# Accessories Selection Guide

| | Die Protector | Whisker Probe | Quick Mount |
|---|---|---|---|
| | | | |
| **Pages** | **I3** | **I3** | **I4** |

| | Cushion Mount | Mounting Clamps | Mounting Brackets |
|---|---|---|---|
| | | | |
| **Pages** | **I4** | **I5** | **I6** |

| | Mounting Clamps | Mounting Brackets | Protective Housing - "Wet Suit" |
|---|---|---|---|
| | | | |
| **Pages** | **I7 - 8** | **I9 - 11** | **I11** |

| | PTFE/Ceramic Caps | Protective Covers | Lockwashers and Locknuts |
|---|---|---|---|
| | | | |
| **Pages** | **I12** | **I13** | **I14** |

We reserve the right to make technical alterations without prior notice.

# Accessories Selection Guide

| | Smart Plugs | Cable Glands |
|---|---|---|
| | | |
| Pages | I15 | I16 |

| | Conduit Adapters | Actuation Magnets |
|---|---|---|
| | | |
| Pages | I17 | I18 |

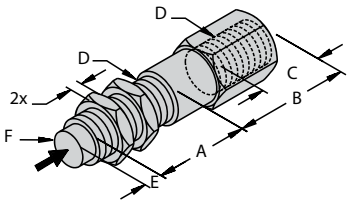
| | Spacer Plates | Threaded and Bolt-on Tank Wells |
|---|---|---|
| | | |
| Pages | I18 | I21 - 22 |

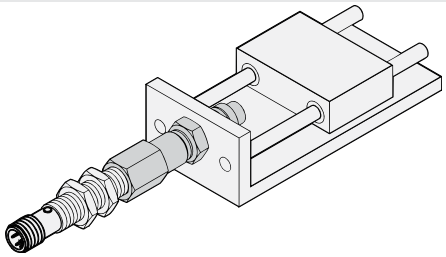
| | Test Box | Limit Value Monitor |
|---|---|---|
| | | |
| Pages | I23 | I23 |

We reserve the right to make technical alterations without prior notice.

# Accessories

## Die Protector



| Part Number | ID Number | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|
| **DP-08-25-08** | **A2521** | 0.98 [25.0] | 1.25 [31.8] | 0.66 [16.7] | M8x1 | 0.17 [4.3] | 0.44 [11.1] |
| **DP-08-50-08** | **A9473** | 1.97 [50.0] | 1.25 [31.8] | 0.66 [16.7] | M8x1 | 0.17 [4.3] | 0.44 [11.1] |
| **DP-12-25-12** | **A2519** | 0.98 [25.0] | 1.25 [31.8] | 0.66 [16.7] | M12x1 | 0.17 [4.3] | 0.62 [15.7] |
| **DP-12-50-12** | **A9169** | 1.97 [50.0] | 1.25 [31.8] | 0.66 [16.7] | M12x1 | 0.17 [4.3] | 0.62 [15.7] |
| **DP-18-25-18** | **A2520** | 0.98 [25.0] | 1.25 [31.8] | 0.66 [16.7] | M18x1 | 0.17 [4.3] | 0.87 [22.1] |
| **DP-18-75-18** | **A9527** | 2.95 [75.0] | 1.25 [31.8] | 0.66 [16.7] | M18x1 | 0.17 [4.3] | 0.87 [22.1] |

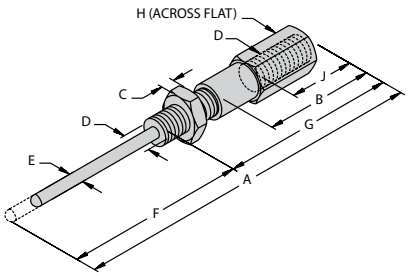
Inches [mm]
Spring rate for plunger actuation: 9 oz

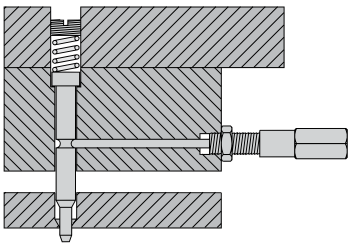
### Recommended Sensors for Die Protector

| Die Protector | DP-08-25-08 | DP-12-25-12 | DP-18-25-18 |
|---|---|---|---|
| **Sensors** | Bi1.5U-EG08-AP6X<br>Bi2-EG08-AP6X | Bi2-G12-AP6X-H1141 | Bi5-G18-AP6X<br>(When not fully engaged) |

**Note:** Works with all shielded NPN, PNP, quick disconnect or potted-in-cable versions of the listed part numbers.

## Whisker Probe



| Part Number | ID Number | A | B | C | D | E | F | G | H | J |
|---|---|---|---|---|---|---|---|---|---|---|
| **WP-08-50-03** | **A2527** | 3.92 [99.6] | 1.25 [31.8] | 0.15 [3.8] | M8x1 | 0.13 [3.2] | 2.00 [50.8] | 1.95 [49.5] | 0.44 [11.1] | 0.86 [21.8] |
| **WP-12-50-03** | **A2528** | 3.92 [99.6] | 1.25 [31.8] | 0.15 [3.8] | M12x1 | 0.13 [3.2] | 2.00 [50.8] | 1.95 [49.5] | 0.44 [11.1] | 0.86 [21.8] |
| **WP-12-50-06** | **A2529** | 3.92 [99.6] | 1.25 [31.8] | 0.15 [3.8] | M12x1 | 0.25 [6.4] | 2.00 [50.8] | 1.95 [49.5] | 0.62 [15.8] | 0.71 [18.0] |
| **WP-12-100-06** | **A9195** | 5.91 [150] | 1.25 [31.8] | 0.15 [3.8] | M12x1 | 0.25 [6.4] | 4.00 [102] | 1.95 [49.5] | 0.62 [15.8] | 0.71 [18.0] |

Inches [mm]

### Recommended Sensors for Whisker Probe

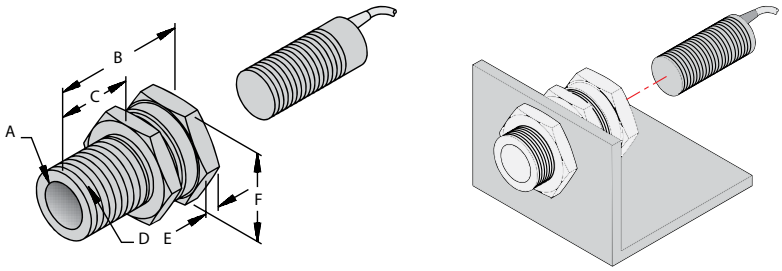
| Whisker Probe | WP-08-50-03 | | WP-12-50-03 | WP-12-50-06 |
|---|---|---|---|---|
| **Sensors** | Bi1-G08-AN6<br>Bi1.5-G08-AP6X | Bi1.5U-EG08-AP6X<br>Bi2-EG08-AP6X | Bi2-G12-AP6X-H1141<br>Bi3U-M12-AP6X-H1141 | Bi2-G12-AP6X-H1141<br>Bi3U-M12-AP6X-H1141 |

**Note:** Works with all shielded NPN, PNP, quick disconnect or potted-in-cable versions of the listed part numbers. Not for use with Uprox3.

We reserve the right to make technical alterations without prior notice.

# Accessories

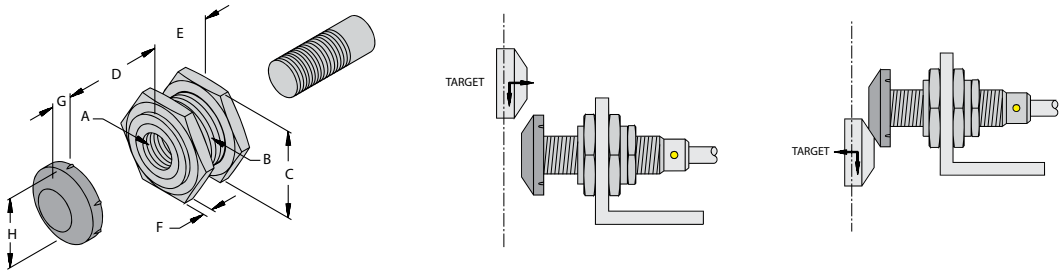
## Quick Mount




| Part Number | ID Number | Features | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|
| QM-08 | A2511 | — | 0.32 [8.18] | 1.28 [32.4] | 0.69 [17.5] | M12x1 | 0.15 [3.85] | 0.67 [16.9] |
| QM-08L | A2512 | Ext. Length | 0.32 [8.18] | 1.90 [48.0] | 1.34 [34.0] | M12x1 | 0.15 [3.85] | 0.67 [16.9] |
| QM-12 | A2513 | — | 0.48 [12.1] | 1.34 [33.7] | 0.77 [19.5] | M16x1 | 0.16 [4.01] | 0.86 [21.8] |
| QM-12L | A2514 | Ext. Length | 0.48 [12.1] | 1.76 [44.8] | 1.18 [30.0] | M16x1 | 0.16 [4.01] | 0.86 [21.8] |
| QM-12L-T | A2542 | Ext. Length, PTFE | 0.48 [12.1] | 1.76 [44.8] | 1.18 [30.0] | M16x1 | 0.16 [4.01] | 0.86 [21.8] |
| QM-18 | A2515 | — | 0.71 [18.1] | 1.52 [38.5] | 0.79 [20.0] | M24x1.5 | 0.19 [4.95] | 1.18 [30.0] |
| QM-18L | A2516 | Ext. Length | 0.71 [18.1] | 2.28 [58.0] | 1.57 [40.0] | M24x1.5 | 0.19 [4.95] | 1.18 [30.0] |
| QM-18L-T | A2543 | Ext. Length, PTFE | 0.71 [18.1] | 2.28 [58.0] | 1.57 [40.0] | M24x1.5 | 0.19 [4.95] | 1.18 [30.0] |
| QM-30 | A2517 | — | 1.19 [30.1] | 1.50 [35.0] | 0.79 [20.0] | M36x1.5 | 0.24 [6.13] | 1.61 [41.0] |
| QM-30L | A2518 | Ext. Length | 1.19 [30.1] | 2.28 [58.0] | 1.57 [40.0] | M36x1.5 | 0.24 [6.13] | 1.61 [41.0] |

Inches [mm]
Material: Nickel plated brass

## Cushion Mount




| Part Number | ID Number | A | B | C | D | E | F | G | H | Cap Part Number | Cap ID Number |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Inside Thread | Outside Thread | Across Flats | Max Allowable Overtravel | | | | | | |
| CM-08 | A2503 | M8x1 | M16x1.5 | 0.88 [22.2] | 0.35 [8.89] | 0.87 [22.1] | 0.16 [3.94] | 0.21 [5.33] | 0 .60 [15.2] | CAP-EN08 | A6100 |
| CM-08N | A2504 | | | | | | | | | CAP-EN08N | A6200 |
| CM-12 | A2505 | M12x1 | M22x1.5 | 1.12 [28.6] | 0.40 [10.0] | 0.87 [22.1] | 0.16 [4.06] | 0.245 [6.22] | 0 .90 [22.9] | CAP-EN12 | A6300 |
| CM-12N | A2506 | | | | | | | | | CAP-EN12N | A6300-1 |
| CM-18 | A2507 | M18x1 | M30x1.5 | 1.41 [35.8] | 0.49 [12.4] | 1.17 [29.7] | 0.20 [5.10] | 0.33 [8.38] | 1.18 [30.0] | CAP-EN18 | A6400 |
| CM-18N | A2508 | | | | | | | | | CAP-EN18N | A6400-1 |
| CM-30 | A2509 | M30x1.5 | M47x1.5 | 2.01 [51.0] | 0.57 [14.5] | 1.47 [37.3] | 0.20 [5.10] | 0 .30 [7.62] | 1.72 [43.7] | CAP-EN30 | A 9567 |
| CM-30N | A2510 | | | | | | | | | — | — |

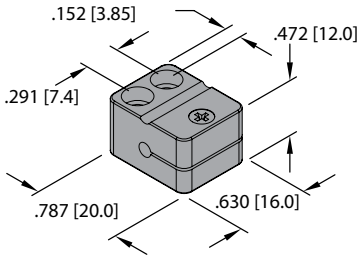
Inches [mm]
Material: Anodized aluminum
Cap: Plastic
Stainless Versions available (CM-*NSS)

We reserve the right to make technical alterations without prior notice.

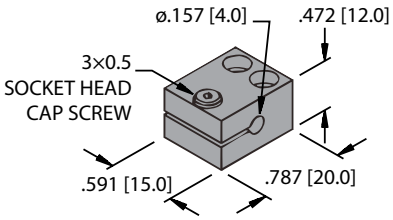
# Accessories

## Mounting Clamps

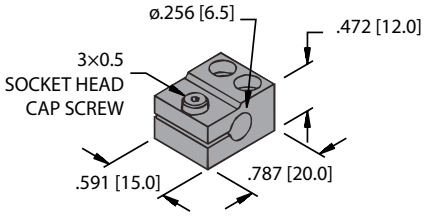
**MBS 30**



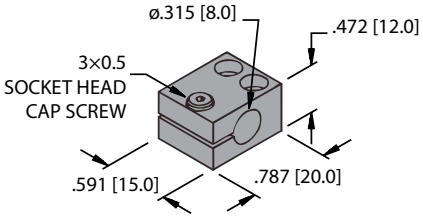

**MBS 40**




**MBS 65**



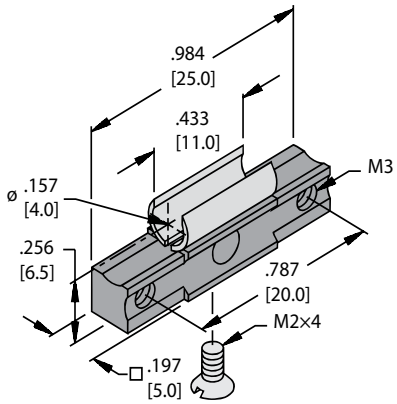

**MBS 80**



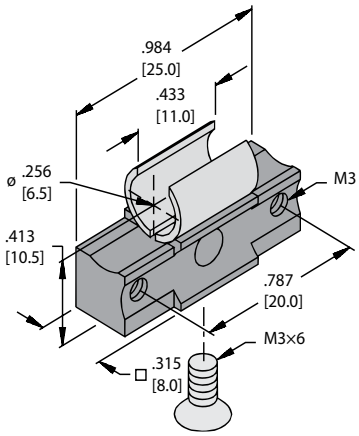

| Part Number | ID Number | Barrel Diameter |
|---|---|---|
| **MBS30** | **6948000** | 3.0 mm |
| **MBS40** | **69477** | 4.0 mm |
| **MBS65** | **69478** | 6.5 mm |
| **MBS80** | **69479** | 8.0 mm |

Inches [mm]
Material: Aluminum
Finish: Black anodized
*For use with smooth barrel Picoprox® sensors

**BS 540**




**BS 865**



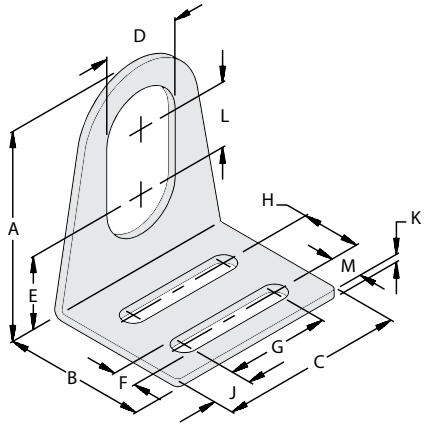

| Part Number | ID Number | Barrel Diameter |
|---|---|---|
| **BS540** | **69475** | 4.0 mm |
| **BS865** | **69476** | 6.5 mm |

Inches [mm]
Block Material: Aluminum
Sleeve Material: Steel
*For use with smooth barrel Picoprox sensors

We reserve the right to make technical alterations without prior notice.

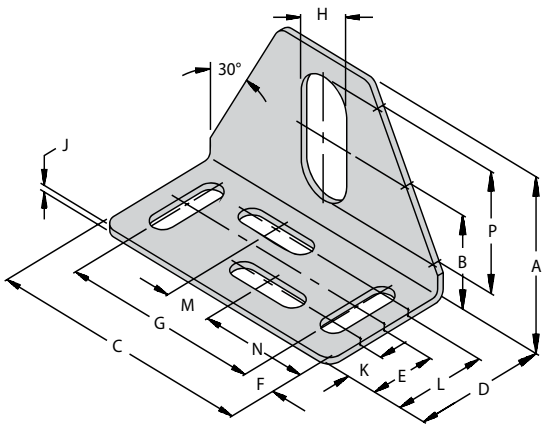
# Accessories

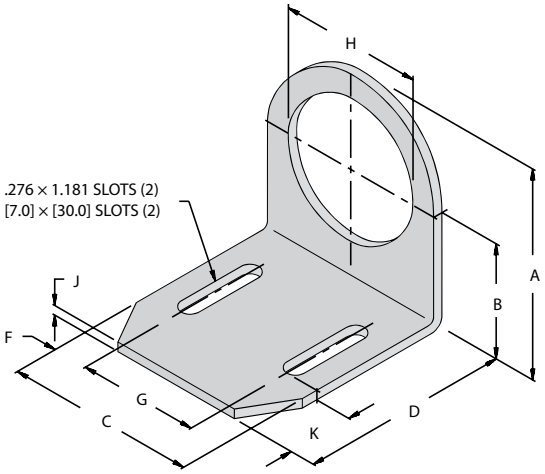
## Mounting Brackets




| Part Number | ID Number | Barrel Diameter | A | B | C | D | E | F | G | H | J | K | L | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MBSS-08** | **A2522** | 8 mm | 1.00 [25.4] | 1.13 [28.7] | 1.25 [31.8] | 0.34 [8.74] | 0.31 [7.92] | 0.22 [5.54] | 0.63 [15.9] | 0.47 [11.9] | 0.31 [7.92] | 0.070 [1.78] | 0.37 [9.53] | 0.28 [7.14] |
| **MBSS-12** | **A2523** | 12 mm | 1.50 [38.1] | 1.37 [34.8] | 1.50 [38.1] | 0.50 [12.7] | 0.55 [13.9] | 0.22 [5.54] | 0.75 [19.1] | 0.56 [14.3] | 0.37 [9.53] | 0.070 [1.78] | 0.50 [12.7] | 0.31 [7.92] |
| **MBSS-18** | **A2524** | 18 mm | 2.00 [50.8] | 1.37 [34.8] | 1.75 [44.5] | 0.75 [19.1] | 0.22 [19.1] | 0.22 [5.54] | 1.00 [25.4] | 0.56 [14.3] | 0.37 [9.53] | 0.070 [1.78] | 0.62 [15.9] | 0.31 [7.92] |
| **MBSS-30** | **A2525** | 30 mm | 2.50 [63.5] | 1.75 [44.5] | 2.25 [57.2] | 1.18 [30.5] | 0.91 [23.0] | 0.22 [5.54] | 1.37 [34.8] | 0.81 [20.6] | 0.44 [11.2] | 0.085 [2.16] | 0.75 [19.1] | 0.41 [10.3] |
| **MBSS-47** | **A2526** | 47 mm | 3.50 [88.9] | 2.00 [50.8] | 2.50 [63.5] | 1.87 [47.5] | 1.50 [38.1] | 0.22 [5.54] | 1.50 [38.1] | 1.00 [25.4] | 0.50 [12.7] | 0.120 [3.05] | 0.75 [19.1] | 0.50 [12.7] |

Inches [mm]
Material: 304 stainless steel



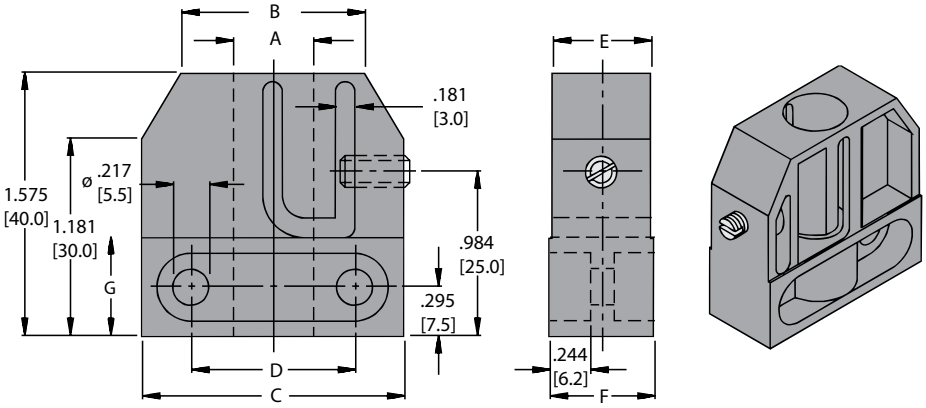

| Part Number | ID Number | Barrel Diameter | A | B | C | D | E | F | G | H | J | K | L | M | N | P |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MB-8** | **A3130-1** | 8 mm | 1.26 [32.0] | 0.66 [16.7] | 2.00 [50.8] | 1.00 [25.4] | 0.45 [11.5] | 0.30 [7.5] | 1.41 [35.8] | 0.33 [8.4] | 0.06 [1.5] | 0.24 [6.0] | 0.67 [17.0] | 0.35 [8.8] | 0.83 [21.0] | .84 [21.4] |
| **MB-12** | **A3130** | 12 mm | 1.63 [41.5] | 0.87 [22.15] | 2.50 [63.5] | 1.25 [31.8] | 0.61 [15.5] | 0.31 [7.9] | 1.88 [47.8] | 0.50 [12.7] | 0.06 [1.5] | 0.35 [9.0] | 0.87 [22.0] | 0.45 [11.5] | 1.02 [26.0] | 1.13 [28.7] |
| **MB-18** | **A3135** | 18 mm | 1.63 [41.5] | 0.79 [20.0] | 2.50 [63.5] | 1.25 [31.8] | 0.61 [15.5] | 0.31 [7.9] | 1.88 [47.8] | 0.75 [19.1] | 0.06 [1.5] | 0.35 [9.0] | 0.87 [22.0] | 0.45 [11.5] | 1.04 [26.3] | 1.15 [29.1] |
| **MB-30** | **A3140** | 30 mm | 2.62 [66.5] | 1.32 [33.5] | 4.25 [108.0] | 1.75 [44.5] | 0.88 [22.4] | 0.37 [9.5] | 3.50 [88.9] | 1.19 [30.2] | 0.07 [1.8] | 0.63 [16.0] | 1.14 [29.0] | 1.18 [30.0] | 1.54 [39.0] | 2.06 [52.2] |
| **MB-47** | **69452** | 47 mm | 2.74 [69.5] | 1.48 [37.5] | 2.52 [64.0] | 252 [64.0] | — | 0.47 [12.0] | 1.58 [40.0] | 1.87 [47.5] | 0.12 [3.00] | 0.63 [16.0] | — | — | — | — |

Inches [mm]
Material: Cold roll steel
Finish: Galvanized

We reserve the right to make technical alterations without prior notice.

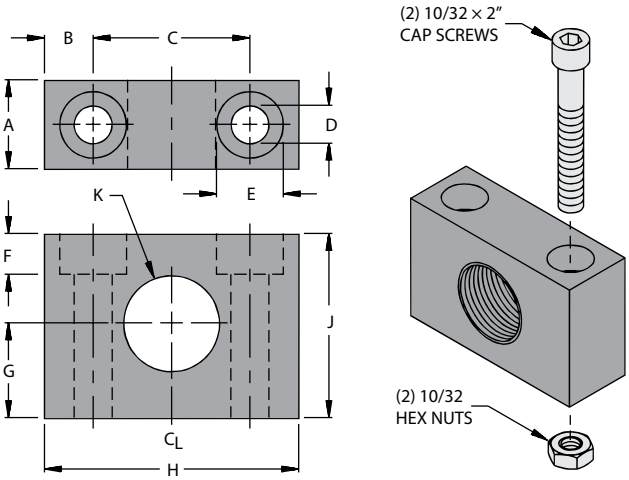
# Accessories

## Mounting Clamps




| Part Number | ID Number | Barrel Diameter | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|---|---|
| **BS-12** | **M6947000** | 12 mm | 0.48 [12.2] | 1.10 [28.0] | 1.57 [40.0] | 0.98 [25.0] | 0.59 [15.0] | 0.63 [16.0] | 0.59 [15.0] |
| **BS-18** | **M6947100** | 18 mm | 0.72 [18.2] | 1.30 [33.0] | 1.77 [45.0] | 1.18 [30.0] | 0.83 [21.0] | 0.87 [22.0] | 0.59 [15.0] |

Inches [mm]
Material: PA 66-GF
*For use with 12 and 18 mm threaded barrel sensors




| Part Number | ID Number | Barrel Diameter | A | B | C | D | E | F | G | H | J | K |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MB-S12** | **A3150** | 12 mm | 0.44 [11.2] | 0.24 [6.2] | 0.77 [19.6] | 0.20 [5.0] | 0.34 [8.7] | 0.20 [5.0] | 0.45 [11.4] | 1.26 [32.0] | 0.91 [23.0] | M12x1 |
| **MB-S18** | **A3155** | 18 mm | 0.63 [16.0] | 0.30 [7.6] | 1.20 [30.5] | 0.22 [5.5] | 0.38 [9.6] | 0.25 [6.4] | 0.57 [14.5] | 1.80 [45.8] | 1.15 [29.3] | M18x1 |

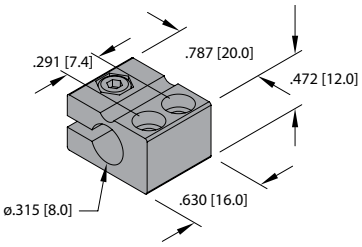
Inches [mm]
Material: Delrin
*For use with 12 and 18 mm threaded barrel sensors. Mounting hardware included.

We reserve the right to make technical alterations without prior notice.

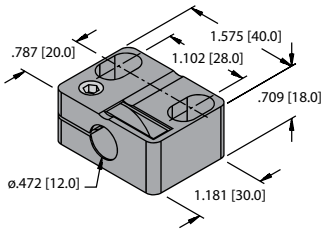
# Accessories

## Mounting Clamps

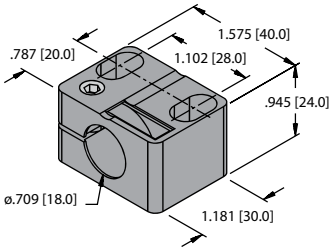
**BST-08B**



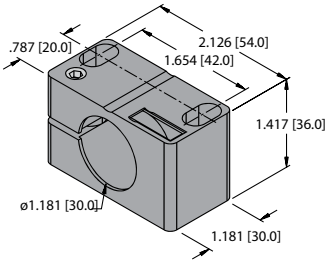

**BST-12B/12N**




**BST-18B/18N**

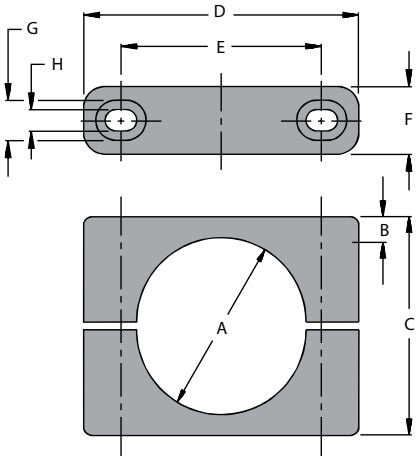



**BST-30B/30N**

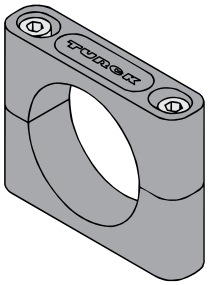



| Part Number | ID Number | Barrel Diameter |
|---|---|---|
| **BST-08B** | **6947210** | 8 mm |
| **BST-12B** | **6947212** | 12 mm |
| **BST-12N** | **6945200** | 12 mm |
| **BS-18B** | **6947214** | 18 mm |
| **BST-18N** | **6947215** | 18 mm |
| **BST-30B** | **6947216** | 30 mm |
| **BST-30N** | **6947217** | 30 mm |

Inches [mm]
B Version comes with dead stop for flush mounted sensors
Material: PA 66-6F




SCREWS INCLUDED:
BS-11: (2) M4 × 22 —SLOTTED HEAD
BS-20: (2) M5 × 30 —CAP SCREWS
BS-40: (2) M5 × 50 —CAP SCREWS



| Part Number | ID Number | Barrel Diameter | A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|---|---|
| **BS-11** | **A3075** | 11 mm | 0.43 [11.0] | 0.20 [5.0] | 0.79 [20.0] | 1.26 [32.0] | 0.79 [0.0] | 0.47 [12.0] | 0.32 [8.2] | 0.17 [4.3] |
| **BS-20** | **69464** | 20 mm | 0.79 [20.0] | 0.24 [6.0] | 1.18 [30.0] | 1.81 [46.0] | 1.22 [31.0] | 0.59 [15.0] | 0.37 [9.5] | 0.21 [5.3] |
| **BS-40** | **69466** | 40 mm | 1.57 [40.0] | 0.24 [6.0] | 1.97 [50.0] | 2.56 [65.0] | 1.87 [47.5] | 0.63 [16.0] | 0.37 [9.5] | 0.21 [5.3] |

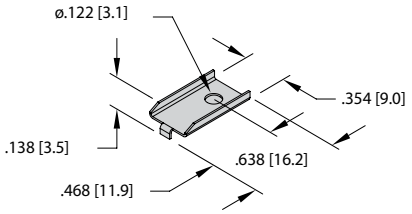
Inches [mm]
Bracket Material: PBT
Screw Bracket: Galvanized zinc
*For use with 11, 20, and 40 mm smooth plastic barrel sensors

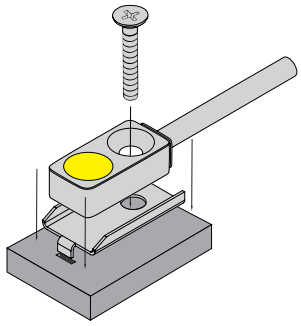
We reserve the right to make technical alterations without prior notice.

# Accessories

## Mounting Brackets

**MW-Q4.7/5.5**

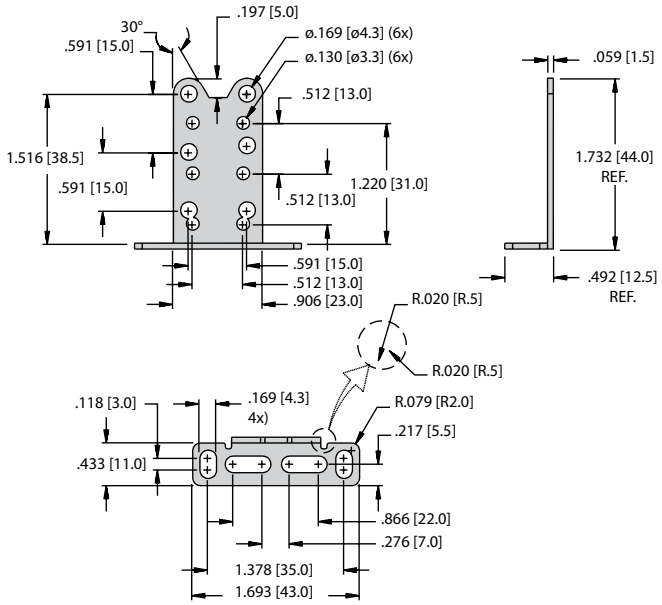


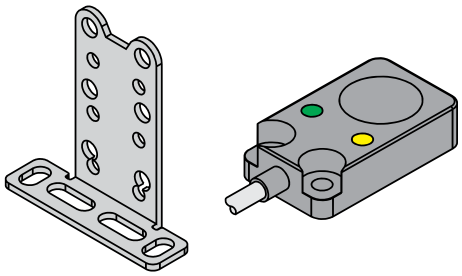



| Part Number | ID Number |
|---|---|
| MW-Q4.7/5.5 | 6945013 |

Inches [mm]
Material: Stainless steel
*For surface mounting of Q4.7 or Q5.5 sensors

**MB-Q08/Q10**

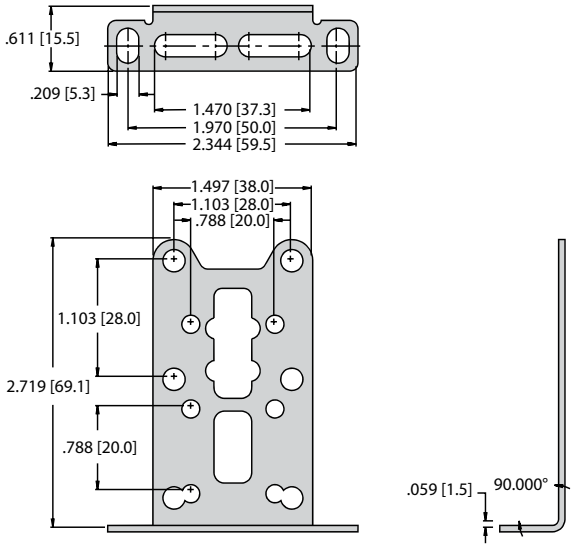


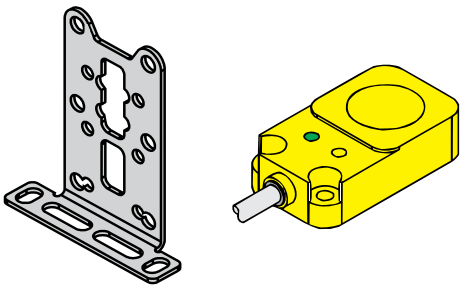



| Part Number | ID Number |
|---|---|
| MB-Q08/Q10 | A3563 |

Inches [mm]
Material: Stainless steel
*For use with Q08 or Q10 sensors

**MB-Q14/20**



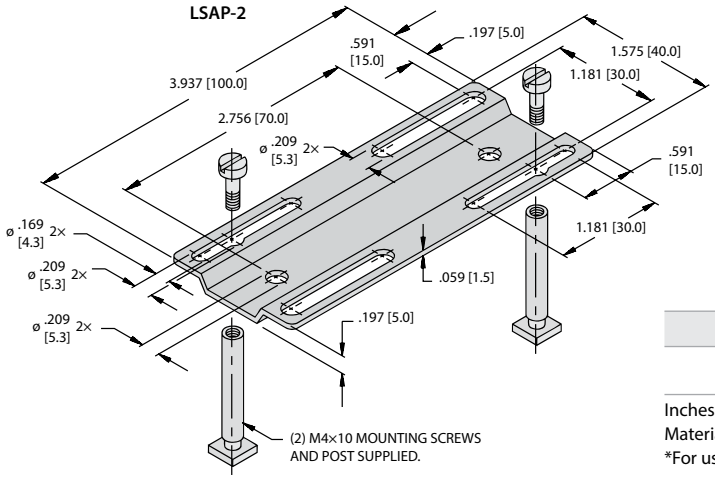
| Part Number | ID Number |
|---|---|
| MB-Q14/20 | A3147 |

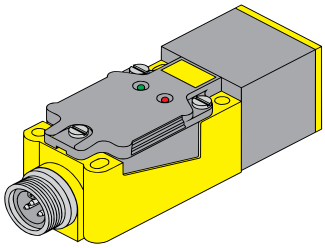
Inches [mm]
Material: Stainless steel
*For use with Q14 or Q20 sensors

We reserve the right to make technical alterations without prior notice.

# Accessories

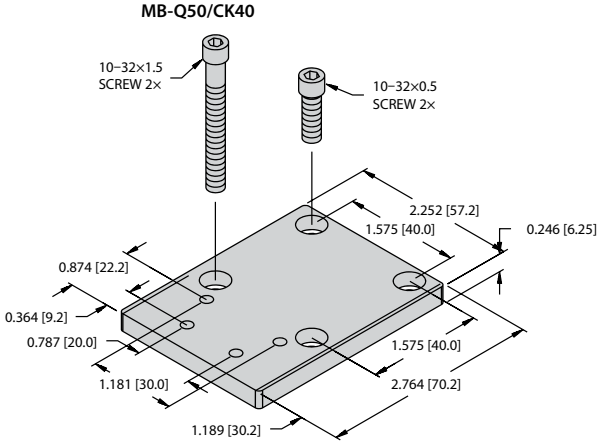
## Mounting Brackets

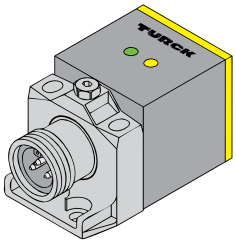


| Part Number | ID Number |
|---|---|
| LSAP-2 | M6942900 |

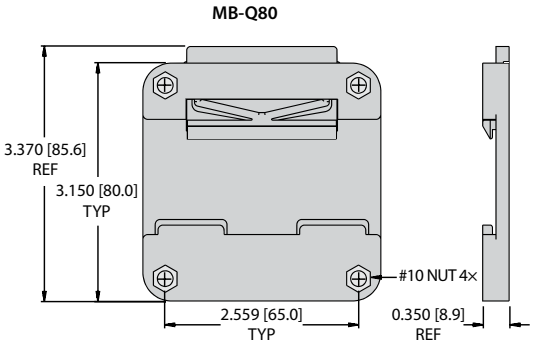
Inches [mm]
Material: Stainless steel
*For use with CP40

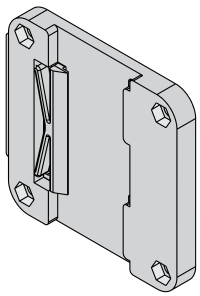


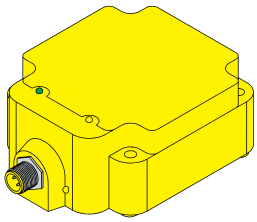



| Part Number | ID Number |
|---|---|
| MB-Q50/CK40 | A3148 |

Inches [mm]
Material: Stainless steel
*For use with Q50 or CK40 sensors





| Part Number | ID Number |
|---|---|
| MB-Q80 | A3144 |

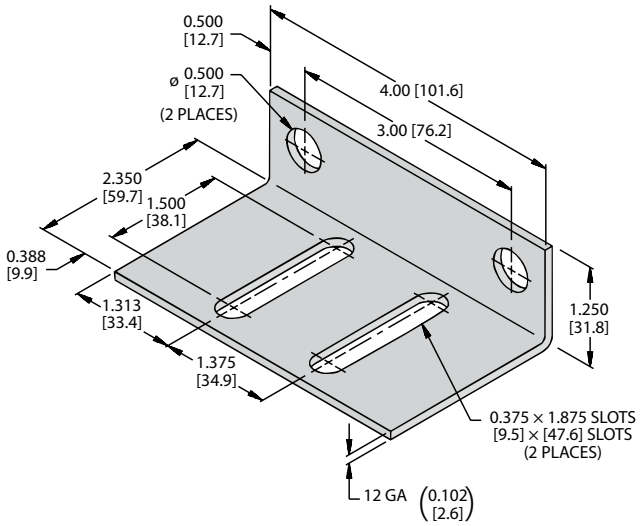
Inches [mm]
Bracket Material: Plastic
Insert Material: Stainless steel
*For use with Q80 sensors

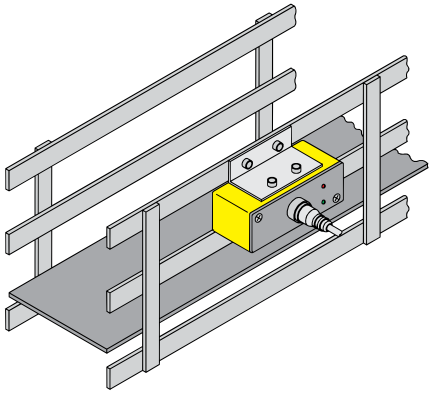
We reserve the right to make technical alterations without prior notice.

# Accessories

## Mounting Brackets

**MB-Q130**



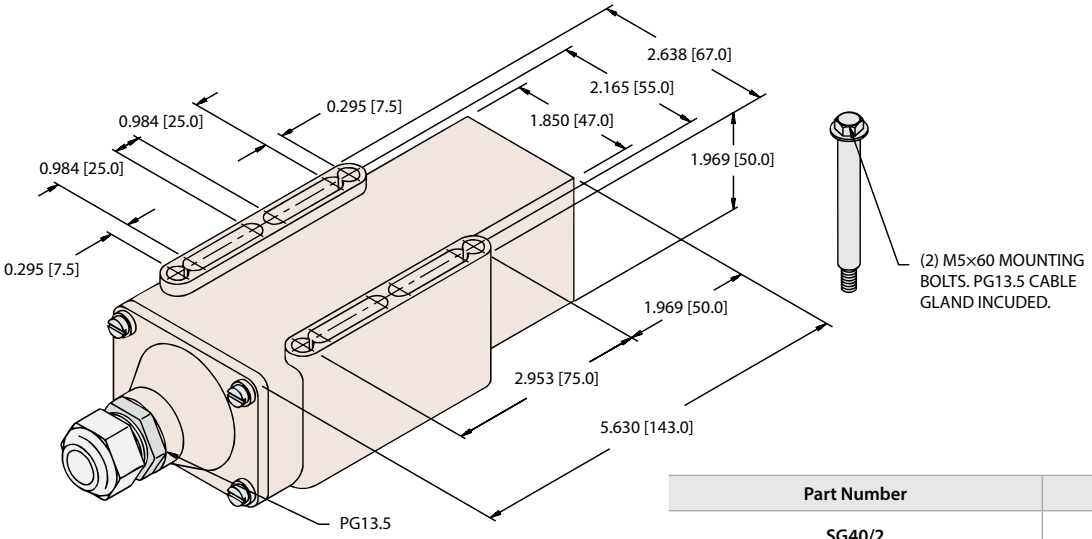



| Part Number | ID Number |
|---|---|
| **MB-Q130** | **A3145** |

Inches [mm]
Material: Stainless steel
*For use with Q130 sensors

## Protective Housing "Wet Suit"

**SG40/2**



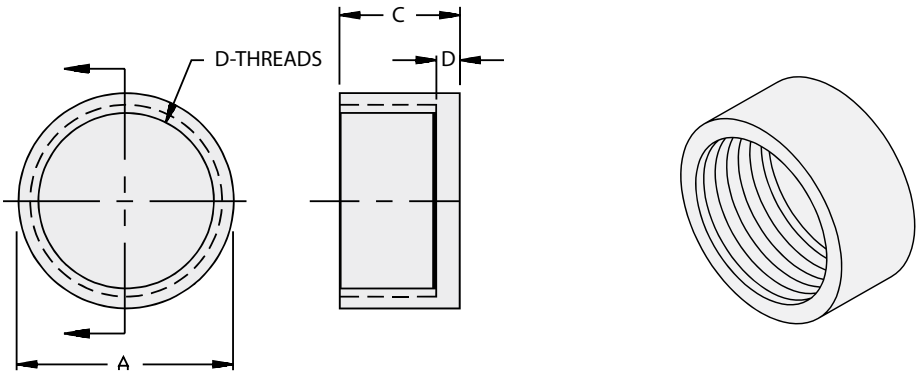

| Part Number | ID Number |
|---|---|
| **SG40/2** | **69497** |

Inches [mm]
Material: Plastic, Ultem
*Recommended cable diameters: 5 - 12 mm.
For use with CP40 sensors. For extreme protection class IP68 temperatures from –30 to 170 °C (338°F), and long term submersion up to 5 meters. Especially resistant to UV-radiation and ozone.

We reserve the right to make technical alterations without prior notice.

# Accessories

## PTFE / Ceramic Caps




| Part Number | ID Number | Barrel Diameter | Material | A | B | C | D |
|---|---|---|---|---|---|---|---|
| CAP 08-PTFE | A3055-1 | 8 mm Embeddable | PTFE | 0.375 [9.5] | 0.03 [0.7] | 0.437 [11.1] | M8x1 |
| CAP 08-DER | A9326 | 8 mm Embeddable | Delrin | 0.375 [9.53] | 0.03 [0.76] | 0.437 [11.1] | M8x1 |
| CAP 12-PTFE | M6966200 | 12 mm Embeddable | PTFE | 0.63 [16.0] | 0.03 [0.7] | 0.63 [16.0] | M12x1 |
| CAP 12-CER | A2530 | 12 mm Embeddable | Ceramic | 0.58 [14.7] | 0.035 [.89] | 0.35 [8.90]] | M12x1 |
| CAP 12-DER | A9321 | 12 mm Embeddable | Delrin | 0.58 [14.7] | 0.035 [.89] | 0.35 [8.90] | M12x1 |
| CAP 12N-CER | A9129 | 12 mm Non-embeddable | Ceramic | 0.58 [14.7] | 0.035 [.89] | 0.60 [15.2] | M12x1 |
| CAP 12N-DER | A9322 | 12 mm Non-embeddable | Delrin | 0.58 [14.7] | 0.035 [.89] | 0.60 [15.2] | M12x1 |
| CAP 18-PTFE | A3055 | 18 mm Embeddable | PTFE | 0.87 [22.0] | 0.04 [1.0] | 0.35 [9.0] | M18x1 |
| CAP 18N-PTFE | A3056 | 18 mm Non-embeddable | PTFE | 0.87 [22.0] | 0.04 [1.0] | 0.79 [20.0] | M18x1 |
| CAP 18-CER | A2531 | 18 mm Embeddable | Ceramic | 0.95 [24.1] | 0.045 [1.14] | 0.35 [8.90] | M18x1 |
| CAP 18-DER | A9323 | 18 mm Embeddable | Delrin | 0.95 [24.1] | 0.045 [1.14] | 0.35 [8.90] | M18x1 |
| CAP 18N-CER | A3056-4 | 18 mm Non-embeddable | Ceramic | 0.95 [24.1] | 0.045 [1.14] | 0 .70 17.8 | M18x1 |
| CAP 18N-DER | A9324 | 18 mm Non-embeddable | Delrin | 0.95 [24.1] | 0.045 [1.14] | 0 .70 17.8 | M18x1 |
| CAP 30-PTFE | A3057 | 30 mm Embeddable | PTFE | 1.34 [34.0] | 0.05 [1.2] | 0.35 [9.0] | M30x1.5 |
| CAP 30N-PTFE | A3058 | 30 mm Non-embeddable | PTFE | 1.34 [34.0] | 0.05 [1.2] | 1.14 [29.0] | M30x1.5 |
| CAP 30-CER | A2532 | 30 mm Embeddable | Ceramic | 1.50 [38.1] | 0.08 [2.03] | 0 .39 [9.90] | M30x1.5 |
| CAP 30-DER | A9325 | 30 mm Embeddable | Delrin | 1.50 [38.1] | 0.08 [2.03] | 0.39 [9.90] | M30x1.5 |
| CAP 30N-DER | A9320 | 30 mm Non-embeddable | Delrin | 1.50 [38.1] | 0.08 [2.03] | 1.00 [25.4] | M30x1.5 |
| CAP 47-PTFE | A3060 | 47 mm Embeddable | PTFE | 2.20 [55.8] | 0.06 [1.6] | 0.38 [9.7] | PG 36 |

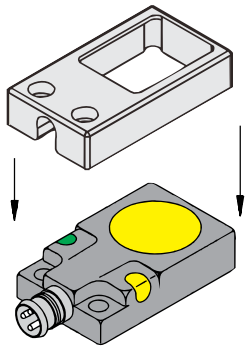
Inches [mm]

We reserve the right to make technical alterations without prior notice.

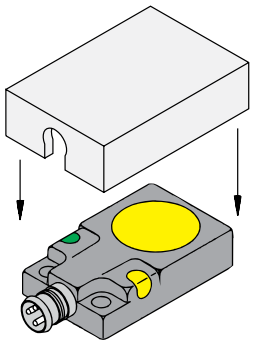
# Accessories

## Protective Covers

1



2



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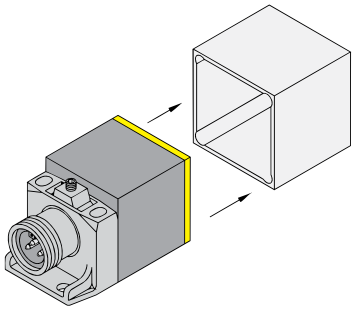

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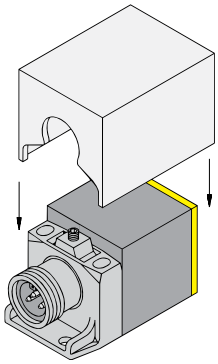
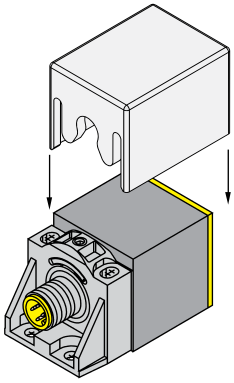
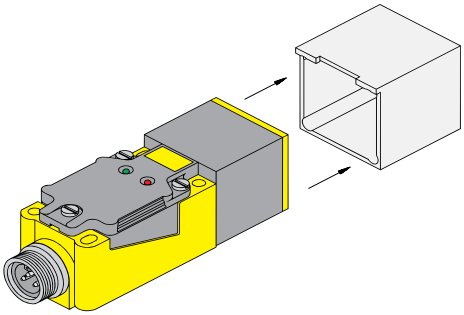


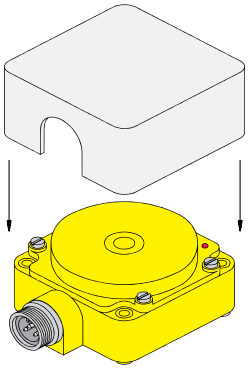
5



6



7

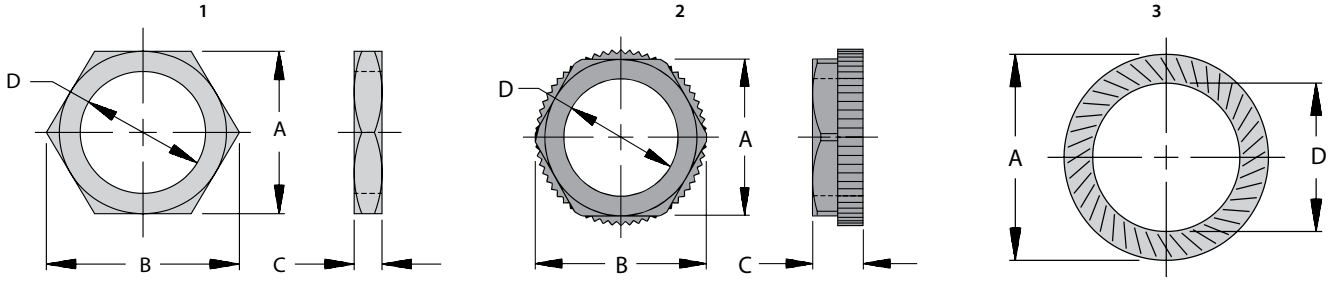


| Part Number | ID Number | Material | For Use With Sensor Housing | Drawing Image |
|---|---|---|---|---|
| **MBS-Q08TS** | **A9492** | Nickel Plated Steel | Q08 | 1 |
| **T-Q08-T-MCC** | **A5155** | PTFE | Q08 | 2 |
| **T-Q14-T-MCC** | **A5154** | PTFE | Q14 | 2 |
| **T-Q20-T-MCC** | **A5156** | PTFE | Q20 | 2 |
| **T-CK40-T-FC** | **A5202** | PTFE | CK40 | 3 |
| **T-CK40-D-FC** | **A5160** | Delrin | CK40 | **3** |
| **T-CK40-T-MCC** | **A5201** | PTFE | CK40 | **4** |
| **T-CK40-T-MCB** | **A9126** | PTFE | CK40 | **5** |
| **T-CP40-T-C** | **A5204** | PTFE | CP40 | **6** |
| **T-CP80-T** | **A5207** | PTFE | CP80 | **7** |

We reserve the right to make technical alterations without prior notice.

# Accessories

## Locknuts and Washers

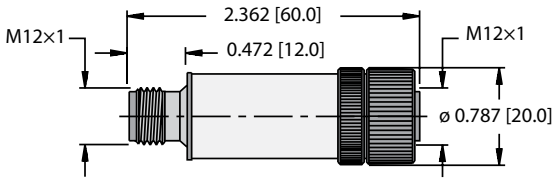



| Part Number | ID Number | Barrel Diameter | Materials | A | B | C | D | Dimension Drawing |
|---|---|---|---|---|---|---|---|---|
| **Locknut-M05** | **A3119** | 5 mm | SS | 0.28 [7.0] | 0.32 [8.0] | 0.10 [2.5] | M5x0.5 | 1 |
| **Locknut-SS08** | **A3123-08** | 8 mm | SS | 0.51 [13.0] | 0.58 [14.7] | 0.16 [4.0] | M8x1 | 1 |
| **Locknut-M8X1PTFE** | **A9696** | 8 mm | PTFE | 0.51 [13.0] | 0.58 [14.7] | 0.16 [4.0] | M8x1 | 1 |
| **Locknut-M12** | **A3122** | 12 mm | CPB | 0.67 [17.0] | 0.76 [19.4] | 0.16 [4.0] | M12x1 | 1 |
| **Locknut-MT12** | **A3109** | 12 mm | PTFE | 0.67 [17.0] | 0.76 [19.4] | 0.16 [4.0] | M12x1 | 1 |
| **Locknut-SS12** | **A3123** | 12 mm | SS | 0.67 [17.0] | 0.76 [19.4] | 0.16 [4.0] | M12x1 | 1 |
| **Locknut-P12** | **A3446** | 12 mm | PA | 0.67 [17.0] | 0.75 [19.0] | 0.32 [8.0] | M12x1 | 2 |
| **Locknut-M18** | **A3125** | 18 mm | CPB | 0.94 [24.0] | 1.08 [27.4] | 0.16 [4.0] | M18x1 | 1 |
| **Locknut-MT18** | **A3108** | 18 mm | PTFE | 0.94 [24.0] | 1.08 [27.4] | 0.16 [4.0] | M18x1 | 1 |
| **Locknut-SS18** | **A3123-0** | 18 mm | SS | 0.94 [24.0] | 1.08 [27.4] | 0.16 [4.0] | M18x1 | 1 |
| **Locknut-P18** | **A3448** | 18 mm | PA | 0.94 [24.0] | 1.06 [27.0] | 0.32 [8.0] | M18x1 | 2 |
| **Locknut-M30** | **A3126** | 30 mm | CPB | 1.42 [36.0] | 1.63 [41.4] | 0.20 [5.0] | M30x1.5 | 1 |
| **Locknut-MT30** | **A3107** | 30 mm | PTFE | 1.42 [36.0] | 1.63 [41.4] | 0.20 [5.0] | M30x1.5 | 1 |
| **Locknut-SS30** | **A3123-1** | 30 mm | SS | 1.42 [36.0] | 1.63 [41.4] | 0.20 [5.0] | M30x1.5 | 1 |
| **Locknut-P30** | **A3450** | 30 mm | PA | 1.42 [36.0] | 1.58 [40.1] | 0.39 [10.0] | M30x1.5 | 2 |
| **Locknut-PG36** | **A3440** | 47 mm | CPB | 2.01 [51.1] | 2.20 [56.0] | 0.20 [5.0] | PG36 | 1 |
| **LW-05** | **A100066** | 5 mm | SS | 0.39 [10] | N/A | N/A | 0.21 [5.3] | 3 |
| **LW-08** | **A3124** | 8 mm | SS | 0.55 [14] | N/A | N/A | 0.32 [8.2] | 3 |
| **LW-12** | **A3127** | 12 mm | SS | 0.70 [17.8] | N/A | N/A | 0.52 [13.2] | 3 |
| **LW-18** | **A3128** | 18 mm | SS | 1.06 [26.8] | N/A | N/A | 0.76 [19.3] | 3 |
| **LW-30** | **A3129** | 30 mm | SS | 1.76 [44.8] | N/A | N/A | 1.26 [32.0] | 3 |

Inches [mm]
*For use with threaded barrel sensors

We reserve the right to make technical alterations without prior notice.

## Smart Plugs

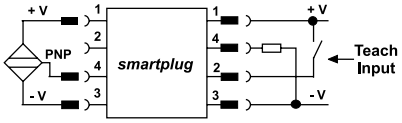
| Housing Style | Dimension Drawing |
|---|---|
| | A  |



Add function to existing installations. Solve control problems quickly in the field. Simple plug-in installation - uses industry standard M12×1 4-pin connectors (Eurofast). Programmed through "teach" input - Pin 2. LED aids programming.

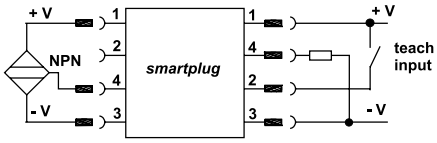
### Wiring Diagrams

1





2





### Technical Data

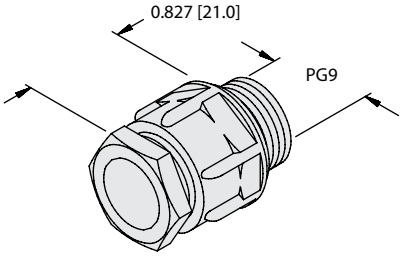
| | | | |
|---|---|---|---|
| Operating Voltage: | 10 - 30 VDC | Ambient Temperature Range: | 0 to 60 °C (32 to 140 °F) |
| Own Current Consumption: | < 10 mA | Display: | Red LED |
| Input Resistance: | > 10 kΩ | Housing Material: | Plastic PBTP/PA |
| Max. Input Frequency: | 10 kHz | Protection Standard: | IP 67 |
| Min. Response Time: | 0.1 ms | Connection Input: | 4-pin socket M12×1 |
| Max. Output Current: | 400 mA, Short-circuit proof | Connection Output: | 4-pin connector M12×1 |

| Part Number | ID Number | Teachable Function | Dimension Drawing | Wiring Diagram |
|---|---|---|---|---|
| **SPC1-AP6X** | **A0620** | Programmable pulse or interval counter. Adjustable N.O./N.C. Inverter | A | 1 |
| **SPC1-AN6X** | **A0600** | Programmable pulse or interval counter. Adjustable N.O./N.C. Inverter | A | 2 |
| **SPF1-AP6X** | **A0622** | Programmable over or under speed monitor. | A | 1 |
| **SPF1-AN6X** | **A0602** | Programmable over or under speed monitor. | A | 2 |
| **SPN1-AP6-ARN6X** | **A0624** | Converts a PNP input signal to an NPN output. Adjustable N.O./N.C. Inverter. | A | 1 |
| **SPN1-AN6-ARP6X** | **A0604** | Converts a NPN input signal to an PNP output. Adjustable N.O./N.C. Inverter. | A | 2 |
| **SPT1-AP6X** | **A0626** | Programmable timer for on-delay or off-delay between 1 and 65000 ms. | A | 1 |
| **SPT1-AN6X** | **A0606** | Programmable timer for on-delay or off-delay between 1 and 65000 ms. | A | 2 |

We reserve the right to make technical alterations without prior notice.

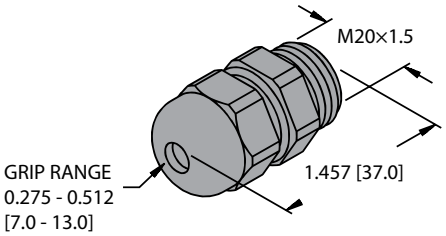
# Accessories

## Cable Glands



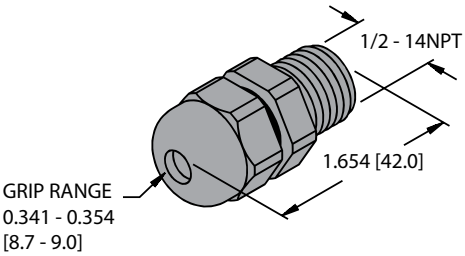

| Part Number | ID Number |
|---|---|
| **Cable Gland PG 9** | **A3054** |

Inches [mm]
Material: Polyamide plastic
Recommended Cable Style: 18 and 20 AWG
*For use with integral terminal chamber style sensors



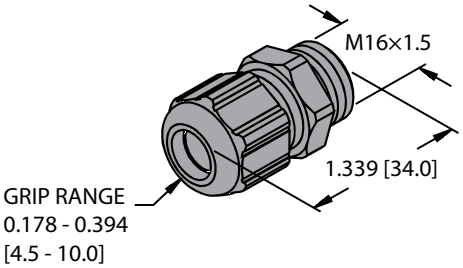

| Part Number | ID Number |
|---|---|
| **Cable Gland M20** | **A0936** |

Inches [mm]
Material: Polyamide plastic
*For use with integral terminal chamber style sensors




| Part Number | ID Number |
|---|---|
| **Cable Gland 1/2 - 14NPT** | **A3480** |

Inches [mm]
Material: Polyamide plastic
Recommended Cable Style: 18 and 20 AWG
*For use with integral terminal chamber style sensors



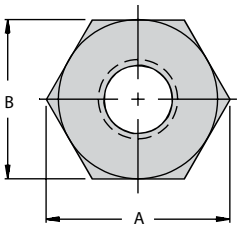

| Part Number | ID Number |
|---|---|
| **Cable Gland M16X1.5** | **A9348** |

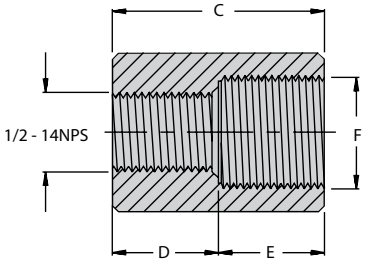
Inches [mm]
Material: Polyamide plastic
Recommended Cable Style: 18-24 AWG
*For use with integral terminal chamber style sensors

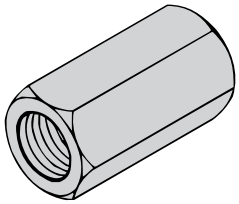
We reserve the right to make technical alterations without prior notice.

# Accessories

## Conduit Adapters

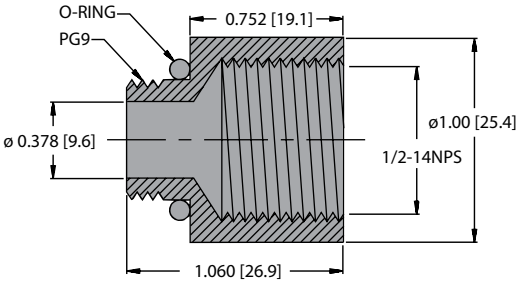


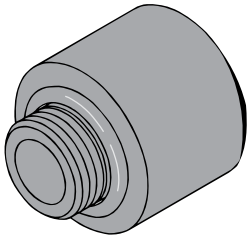



| Part Number | ID Number | Barrel Diameter | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|
| **TMF 12-G** | **A3310** | **12 mm** | 1.15 [29.2] | 1.00 [25.4] | 1.97 [50.0] | 0.50 [12.7] | 0.56 [14.2] | M12x1 |
| **TMF 18-G** | **A3320** | **18 mm** | 1.15 [29.2] | 1.00 [25.4] | 1.00 [25.4] | 0.50 [12.7] | 0.50 [12.7] | M18x1 |
| **TMF 30-G** | **A3345** | **30 mm** | 1.73 [44.0] | 1.50 [38.1] | 1.00 [25.4] | 0.60 [15.2] | 0.40 [10.2] | M30x1.5 |
| **TMF 47-G** | **A3360** | **47 mm** | 2.30 [58.4] | 2.00 [50.8] | 1.75 [44.5] | 1.05 [26.7] | 0.70 [17.8] | PG36 |
| *For use with G and P threaded barrel sensors | | | | | | | | |
| **TMF 18-MS** | **A3330** | **18 mm** | 1.15 [29.2] | 1.00 [25.4] | 2.00 [50.8] | 1.50 [38.1] | 0.50 [12.7] | M18x1 |
| **TMF 30-MS** | **A3355** | **30 mm** | 1.73 [44.0] | 1.50 [38.1] | 2.00 [50.8] | 0.60 [15.2] | 1.40 [35.6] | M30x1.5 |

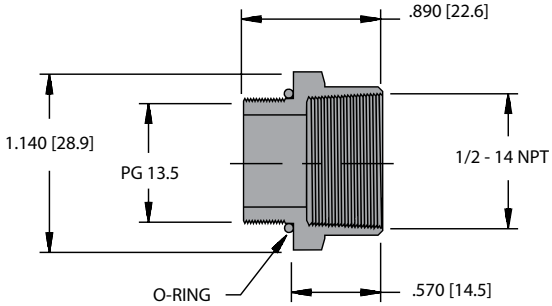
Inches [mm]
*For use with M and S threaded barrel sensors
Material: Aluminum

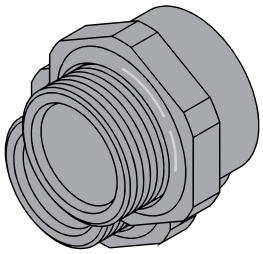


| Part Number | ID Number |
|---|---|
| **TMF 09-14** | **A3290** |

Inches [mm]
Material: Derlin
*For use with terminal chamber style sensors



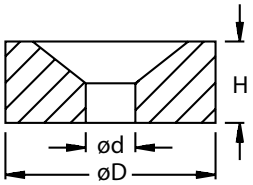
| Part Number | ID Number |
|---|---|
| **TMF 13.5-14** | **A4500** |
| **TMF 13.5-14/SS** | **A9639** |

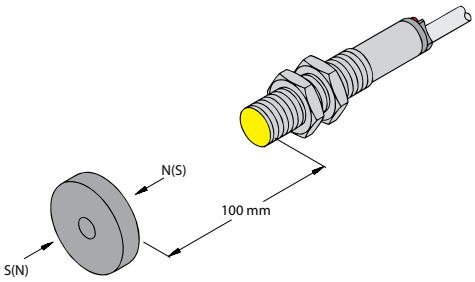
Inches [mm]
Material: Nickel plated brass
SS =Stainless steel
*For use with integral terminal chamber style sensors

We reserve the right to make technical alterations without prior notice.

# Accessories

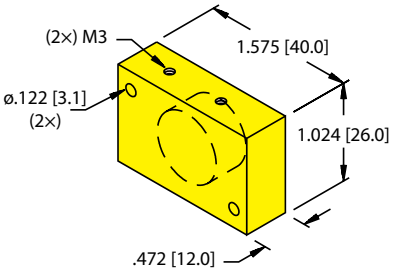
## Actuation Magnets




| Part Number | ID Number | Diameter-D | Height-H | Drilling for mounting-d | Sensing Range To BIM-M12 | Sensing Range To BIM-EG08 |
|---|---|---|---|---|---|---|
| **DMR15-6-3** | **6900216** | 15 | 6 | 3 | 36 | 32 |
| **DMR20-10-4** | **6900214** | 20 | 10 | 4 | 59 | 50 |
| **DMR31-15-5** | **6900215** | 31 | 15 | 5 | 90 | 78 |

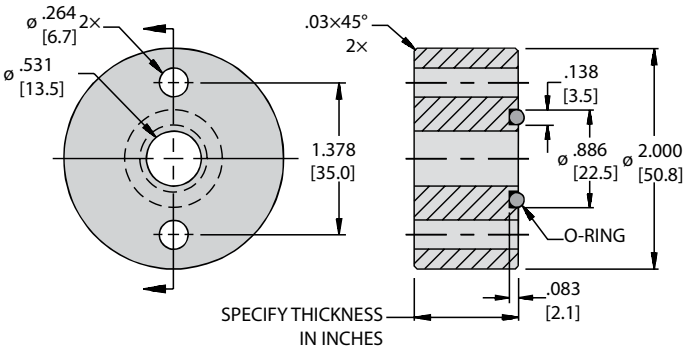
Inches [mm]
Material: Barium ferrite (Oxyd 300)




| Part Number | ID Number |
|---|---|
| **DM-Q12** | **6900367** |

Inches [mm]
Material: Plastic

## Spacer Plates

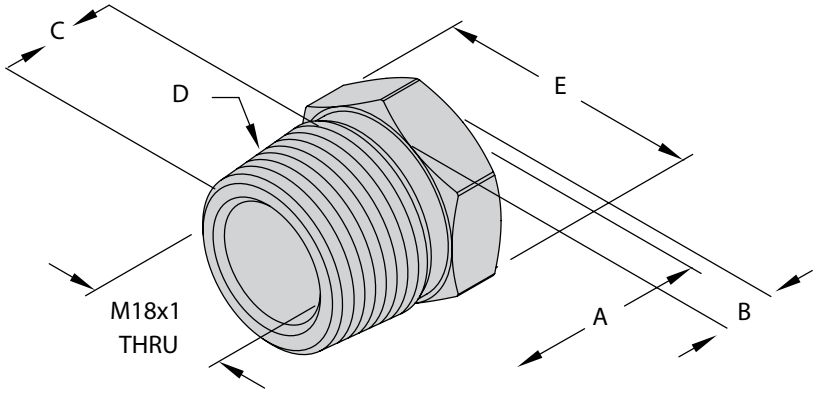



| Part Number |
|---|
| **SP–_.___ [1] –C** |

Inches [mm]
Material: Aluminum
*[1] Add desired thickness in inches.
Minimum thickness: 0.125", in .005 increments.
For use with cylinder position sensors, CRS Series.

We reserve the right to make technical alterations without prior notice.

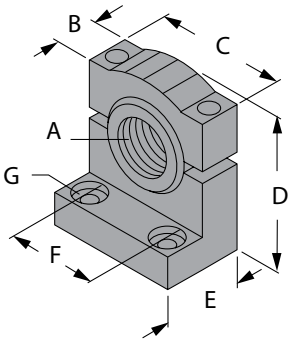
## Tank Adapter




| Part Number | ID Number | Barrel Diameter | A | B | C | D | E |
|---|---|---|---|---|---|---|---|
| **FSU-SS-M18-N3/4** | **A9983** | 18 mm | 1.0625 [27.05] | 0.32 [8.00] | 0.750 [19.05] | 3/4 - 14 NPT | 1-1/16" HEX |

Inches [mm]
Material: Stainless steel

## Gimble Bracket For Ultrasonic Sensors




| Part Number | ID Number | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|---|
| **TMB18SF** | **7700396** | M18×1 | 0.46 [11.71] | 2.31 [50.8] | 1.70 [43.2] | 1.00 [25.4] | 1.42 [36.1] | ø5 |
| **TMB30SC** | **7700400** | M30×1.5 | 0.50 [12.7] | 2.62 [66.5] | 2.31 [58.7] | 1.14 [29.0] | 2.00 [50.8] | ø7 |

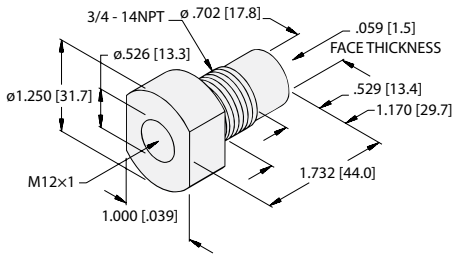
Inches [mm]
Material: Polyester

We reserve the right to make technical alterations without prior notice.

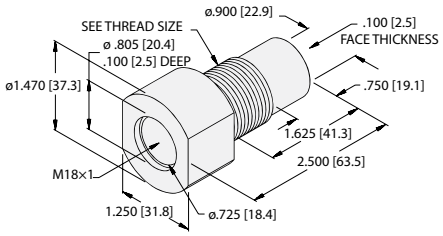
# Accessories

## Threaded Tank Wells

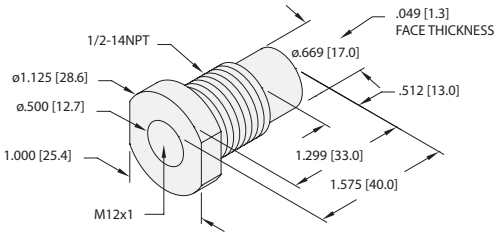
**TWD-12S**




**TWT-18**
**TWD-18**



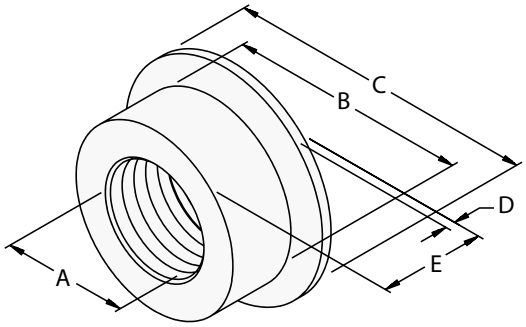

**TWN-12S-1/2NPT**



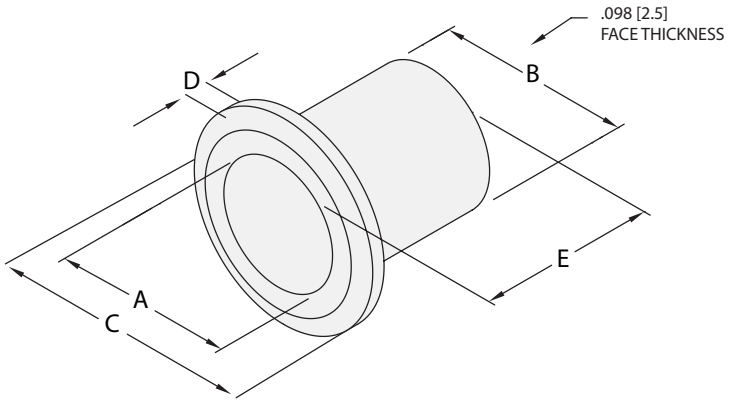

| Part Number | ID Number | Material | Thread Size | Drill Size | C |
|---|---|---|---|---|---|
| **TWD-12S** | **A5051** | Delrin | 3/4 - 14 NPT | 59/64 | 12 mm threaded capacitive sensors for liquid level sensing |
| **TWN-12S-1/2 NPT** | **A900028** | Nylon | 1/2 - 14NPT | 23/32 | 12 mm threaded capacitive sensors for liquid level sensing |
| **TWD-18S** | **A5055** | Delrin | 3/4 - 14 NPT | 59/64 | 18 mm threaded capacitive sensors for liquid level sensing |
| **TWT-18S** | **A5050** | PTFE | 3/4 - 14 NPT | 59/64 | 18 mm threaded capacitive sensors for liquid level sensing |
| **TWD-18S-1** | **A5057** | Delrin | 1 - 11 1/2NPT | 1 - 5/32 | 18 mm threaded capacitive sensors for liquid level sensing |
| **TWT-18S-1** | **A5056** | PTFE | 1 - 11 1/2NPT | 1 - 5/32 | 18 mm threaded capacitive sensors for liquid level sensing |

Inches [mm]

**TWTS-30**




**TWT-30TRi**



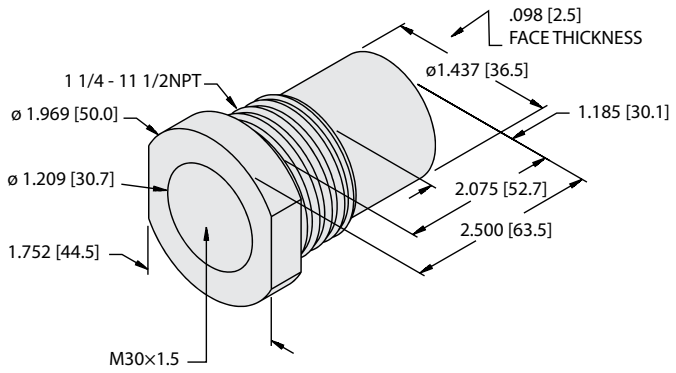

| Part Number | ID Number | A | B | C | D | E |
|---|---|---|---|---|---|---|
| **TWTS-1.5-30** | **A5077** | M30×1.5 | 1.500 [38.1] | 1.984 [50.4] | 0.11 [2.80] | 1.000 [25.4] |
| **TWTS-2-30** | **A5076** | M30×2.0 | 2.008 [51.0] | 2.520 [64.0] | 0.11 [2.80] | 1.000 [25.4] |
| **TWT-30TRI** | **A5061** | M30×1.5 | 1.339 [34.0] | 1.984 [50.4] | 0.187 [4.7] | 1.722 [43.7] |

Inches [mm]

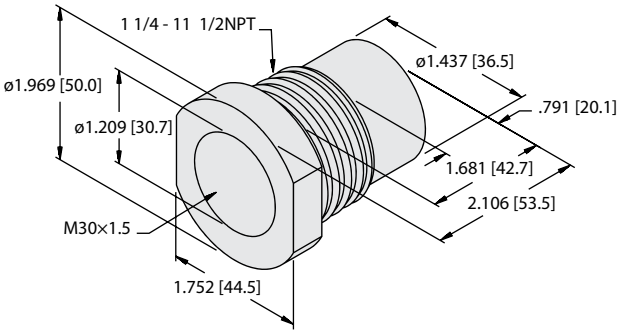
We reserve the right to make technical alterations without prior notice.

## Threaded Tank Wells

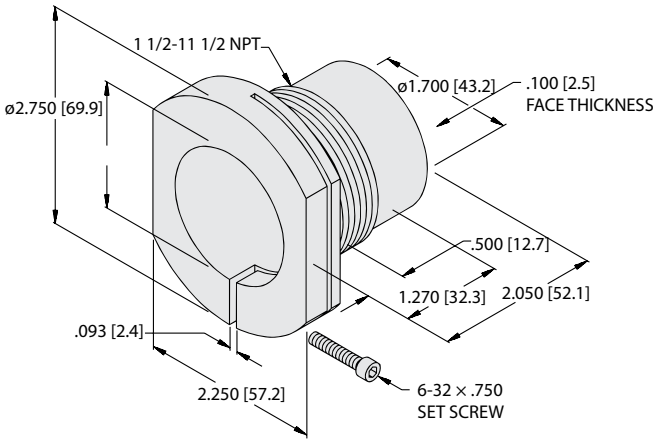
**TWD-30S**
**TWT-30S**




**TWD-30S-SHORT**
**TWT-30S-SHORT**




**TWD-40S**
**TWT-40S**



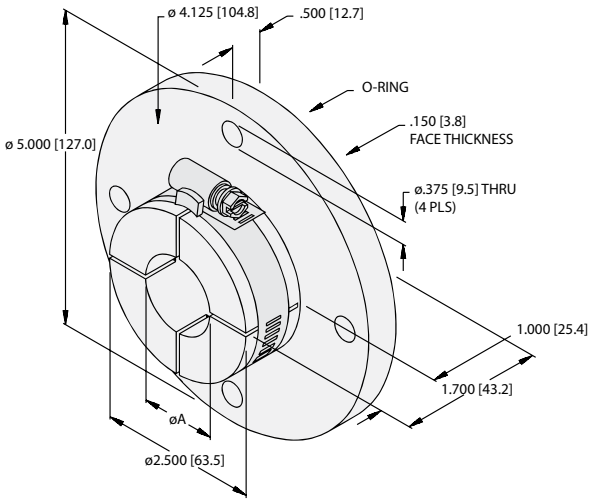

| Part Number | ID Number | Barrel Diameter | Thread Size | Drill Size | Application |
|---|---|---|---|---|---|
| **TWD-30S** | **A5065** | Delrin | 1 1/4 - 11 1/2NPT | 1 - 1/2 | 30 mm threaded capacitive sensors for liquid level sensing |
| **TWT-30S** | **A5060** | PTFE | 1 1/4- 11 1/2NPT | 1 - 1/2 | 30 mm threaded capacitive sensors for liquid level sensing |
| **TWD-30S-SHORT** | **A5063** | Delrin | 1 1/4 - 11 1/2NPT | 1 - 1/2 | 30 mm threaded capacitive sensors for liquid level sensing |
| **TWT-30S-SHORT** | **A5062** | PTFE | 1 1/4 - 11 1/2NPT | 1 - 1/2 | 30 mm threaded capacitive sensors for liquid level sensing |
| **TWD-40S** | **A5075** | Delrin | 1 1/4 - 11 1/2NPT | 1 - 47/64 | 40 mm smooth capacitive sensors for liquid level sensing |
| **TWT-40S** | **A5070** | PTFE | 1 1/4 - 11 1/2NPT | 1 - 47/64 | 40 mm smooth capacitive sensors for liquid level sensing |

Inches [mm]

We reserve the right to make technical alterations without prior notice.

# Accessories

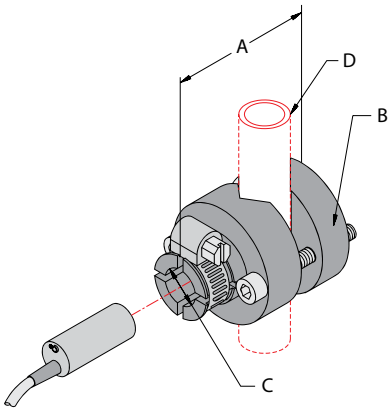
## Bolt-on Tank Wells

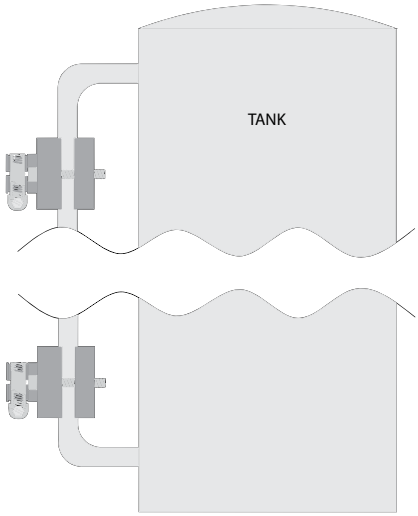



| Part Number | ID Number | A |
|---|---|---|
| TWU-30B | A5005 | 1.181 [30.0] |
| TWU-40B | A5000 | 1.575 [40.0] |

Inches [mm]
Material: UHMW/PE
Pressure Rating: 80 PSI
*For use with 30 and 40 mm barrel sensors

## Bolt-on Site Bracket




| Part Number | ID Number | A | B | C | D |
|---|---|---|---|---|---|
| | | | | (Non/or Threaded) | Across Flats |
| TSG-12 | A2500 | 1.75 [44.5] | 1.25 [31.8] | 12 mm | 0.37-0.81 [9.40-20.6] |
| TSG-18 | A2501 | 1.90 [48.3] | 1.48 [37.5] | 18 mm | 0.63-1.12 [16.0-28.4] |
| TSG-30 | A2502 | 3.45 [87.6] | 2.00 [50.8] | 30 mm | 1.00-1.75 [25.4-44.5] |

Inches [mm]

We reserve the right to make technical alterations without prior notice.

# Accessories

## Test Box

**TB3-CP80**

**TB4 V.2**

**TX1-Q20L60**

**USB-2-IOL-0002**

| Part Number | ID Number | Description |
|---|---|---|
| TB3-CP80 | 6967112 | DC powered test box allows you to quickly test 2, 3, 4 wire DC sensors or Namur output sensors, includes batteries. |
| TB4 V.2 | 6967113 | Analog test box for sensors with analog or switching outputs, includes batteries. |
| TX1-Q20L60 | 6967114 | Teach adapter for inductive encoders, linear position, angle, ultrasonic and capacitive sensors. |
| USB-2-IOL-0002 | 6825482 | IO Link master with integrated USB interface for parameterization of IO Link compliant linear position sensors via PC. |

## Limit Value Monitor

**Functional Description:**
The limit value monitors IM43-13-SR and IM43-14-SRi are single-channel devices and alternately monitor measuring current of 0/4-20 mA or measuring voltages of 0/2-10 V. The three limit values are set via the front panel teach button. In addition, a voltage of approx. 18 V (at 35 mA max.) is provided, which can be used to power transmitters or sensors. The output mode is jumper programmable at terminals 5-8.

| PIN | Terminal Function |
|---|---|
| 1 | (+) 18 VDC Sensor Supply |
| 2 | (+) Current Input |
| 3 | (+) Voltage Input |
| 4 | (-) 0 V Sensor Common |
| 5 | (-) Common for 0/4 mA Minimum Selection |
| 9 | Input for 0/4 mA Minimum Selection |
| 12 | Relay Output 1 |
| 13 | Relay Output 1 |
| 14 | Relay Output 2 |
| 15 | Relay Output 2 |
| 11 | SRi - 0/4-20 mA Output |
| 16 | SRi - 0/4-20 mA Output |
| 17 | Relay Output 3 |
| 18 | Relay Output 2 |
| 19 | 20-250 VUC Supply Power |
| 20 | 20-250 VUC Supply Power |

We reserve the right to make technical alterations without prior notice.

Notes

Notes

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## Important Safety Warning

Turck sensors and peripheral devices DO NOT include the self-checking redundant circuitry required to permit their use in personnel safety applications. A device failure or malfunction can result in either an energized or a de-energized output condition.

Never use these products as sensing devices for personnel protection. Their use as safety devices may create unsafe conditions that could lead to serious bodily injury or death.

## Proximity Sensing Compared to Conventional Methods

Turck proximity sensors are designed using solid state technology and contain no moving parts to wear out, as is common in mechanical switches. They require no physical contact for actuation, no cams or linkages, have no contacts to bounce or arc and are completely encapsulated, making them impervious to most liquids, chemicals and corrosive agents. In addition, Turck has a line of sensors that can be used in hazardous explosive environments without any special enclosures.
See Hazardous Area Locations in Section A.

**If any of the following conditions exists, a Proximity Sensor should be used:**

- The object being detected is too small, too lightweight, or too soft to operate a mechanical switch.
- Rapid response and high switching rates are required, as in counting or ejection control applications.
- Object has to be sensed through non-metallic barriers such as glass, plastic, or paper carton.
- Harsh environments demand improved sealing properties, preventing proper operation of mechanical switches.
- Long life and reliable service are required.
- Fast electronic control system requires bounce-free input signal.

## Common Industries for Proximity Sensors

- Mining and Metallurgy
- Foundries
- Automatic Assembly and Robotics
- Conveyor Systems in Airports and Factories
- Chemical Plants and Oil Refineries
- Semiconductor Equipment
- Sheet Metal Fabrication
- Automotive and Appliance Plants
- Electroplating Installations
- Can Plants, Food Processing and Breweries
- Shipyards, Docks, and Off-shore Drilling Rigs
- PC-board Handling Machinery

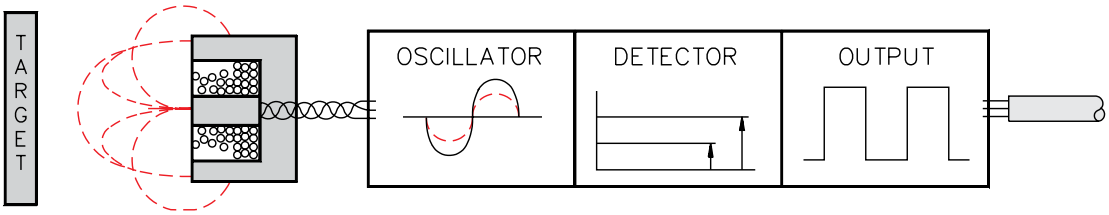
## Typical Applications

- Parts Detection
- Parts Counting
- Positioning
- Motion and Speed Control
- Bottle Cap or Can Lid Detection
- Punch Press Feed and Ejection Control
- Broken or Damaged Tool Detection
- Void or Jam Control
- Feed Control
- Indexing
- Inter-lock Control
- Liquid Level Control
- Leak Detection
- Machine Programming
- Valve Position Indication
- Missing Parts Control
- Parts Diverting
- Coin Counting and Sorting
- Edge Guide Control
- Robotics and Conveyors

We reserve the right to make technical alterations without prior notice.

## Operating Principle Ferrite Core

Figure 1



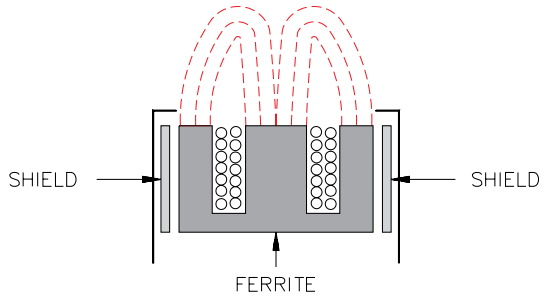

An inductive proximity sensor consists of a coil and ferrite core arrangement, an oscillator and detector circuit, and a solid-state output (**Figure 1**). The oscillator creates a high frequency field radiating from the coil in front of the sensor, centered around the axis of the coil. The ferrite core bundles and directs the electro-magnetic field to the front.

When a metal object enters the high-frequency field, eddy currents are induced on the surface of the target. This results in a loss of energy in the oscillator circuit and, consequently, a smaller amplitude of oscillation. The detector circuit recognizes a specific change in amplitude and generates a signal which will turn the solid-state output "ON" or "OFF". When the metal object leaves the sensing area, the oscillator regenerates, allowing the sensor to return to its normal state.

## Mounting

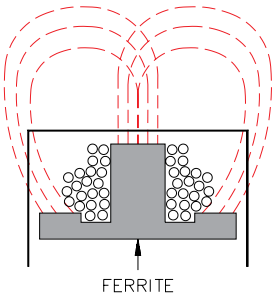
Turck inductive proximity sensors are available with either a shielded coil, designated by "Bi" in the part number, or a unshielded coil, designated by "Ni" in the part number. Embeddable (shielded) sensors may be safely flush-mounted in ferrous metal. Nonembeddable (unshielded) sensors require a metal free area around the sensing face. Due to the possible interference of the electromagnetic fields generated by the oscillators, minimum spacing is required between adjacent or opposing sensors. See mounting characteristics at the front of each section.

It is good engineering practice to mount sensors horizontally or with the sensing face looking down. Avoid mounting sensors with the sensing face looking up wherever possible, especially if metal filings or chips are present.




Embeddable (Shielded Sensor)

Embeddable construction includes a metal band that surrounds the ferrite core and coil arrangement. This helps to "bundle" or direct the electromagnetic field to the front of the sensor, allowing the sensor to be mounted fully surrounded by metal (flush mounting).




Nonembeddable (Nonshielded Sensor)

Nonembeddable sensors do not have this metal band; therefore, they have a longer operating distance and are side sensitive.

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## Operating Distance (Sensing Range) Considerations

The operating distance (S) of inductive proximity sensors is basically a function of the diameter of the sensing coil. The maximum operating distance is achieved with the use of a standard or larger target. The rated operating distance (Sn) for each model is given in the manual. When using a proximity sensor the target should be within the assured range (Sa).

## Standard Target

A square piece of mild steel having a thickness of 1 mm (0.04 in) is used as a standard target to determine the following operating tolerances. The length and width of the square is equal to either the diameter of the circle inscribed on the active surface of the sensing face or three times the rated operating distance Sn, whichever is greater.

## Operating Distance = S

The operating distance is the distance at which the target approaching the sensing face along the reference axis causes the output signal to change.

## Rated Operating Distance = Sn

The rated operating distance is a conventional quantity used to designate the nominal operating distance. It does not take into account either manufacturing tolerances or variations due to external conditions such as voltage and temperature.

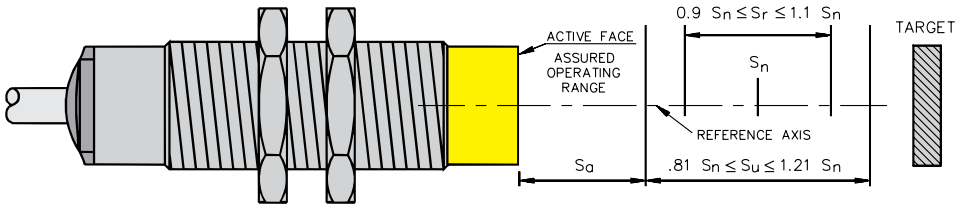
## Effective Operating Distance = Sr 0.9 Sn ≤ Sr ≤ 1.1 Sn

The effective operating distance is the operating distance of an individual proximity sensor at constant rated voltage and 23°C (73°F). It allows for manufacturing tolerances.

## Usable Operating Distance = Su 0.81 Sn ≤ Su ≤ 1.21 Sn

The usable operating distance is the operating distance of an individual proximity sensor measured over the operating temperature range at 85% to 110% of its rated voltage. It allows for external conditions and for manufacturing tolerances.

## Assured Operating Range = Sa 0 ≤ Sa ≤ 0.81 Sn




The assured operating range is between 0 and 81% of the rated operating distance. It is the range within which the correct operation of the proximity sensor under specified voltage and temperature ranges is guaranteed.

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# Technical Reference | Inductive

## Operating Distance (Sensing Range) Considerations

Turck standard inductive sensors use a single coil wound around a ferrite core. This coil induces eddy currents on the metal target, which results in energy loss in the oscillator circuit, enabling the detection of metal objects. The energy loss is greatly depended on the magnetic properties of the metal target. Ferrous and nonferrous metals affect the sensor differently, resulting in a different operating distance to different metals.

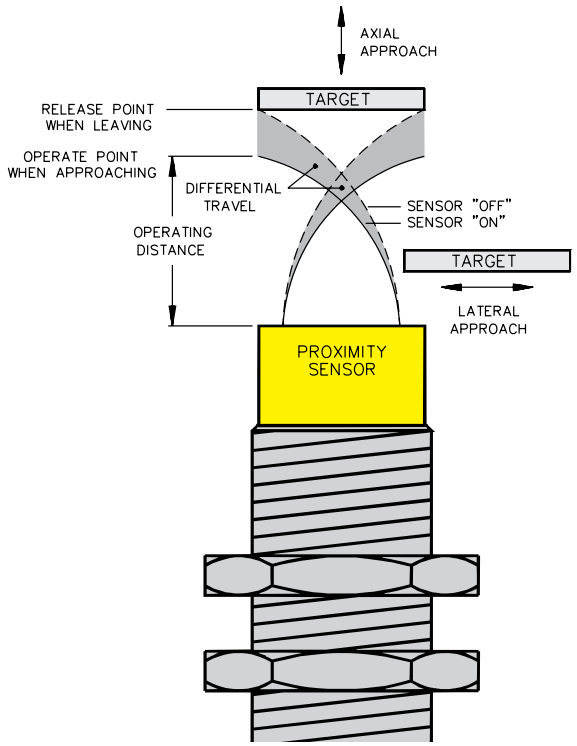
These correction factors apply to standard inductive sensors when a nonferrous target is being detected. The correction factors are nominal values. Deviations may be due to variations in oscillator frequency, alloy composition, purity and target geometry.

| | |
|---|---|
| Aluminum foil | 1.00 |
| Stainless steel | 0.60 to 1.00 |
| Mercury | 0.65 to 0.85 |
| Lead | 0.50 to 0.75 |
| Brass | 0.35 to 0.50 |
| Aluminum (massive) | 0.35 to 0.50 |
| Copper | 0.25 to 0.45 |

- Correction factors do not apply to Turck Uprox ® sensors. These sensors detect all metals at the same range.
- Turck also manufactures "nonferrous only" sensors. These sensors will selectively detect nonferrous targets at the rated operating distance. They will not detect ferrous targets; however, ferrous targets positioned between them and a nonferrous target may mask the nonferrous target. The rated operating distance of these sensors is not subject to the correction factors that apply to standard inductive sensors.

## Differential Travel (Hysteresis)

Figure 2




### Actuation Mode

Inductive sensors can be actuated in an axial or lateral approach (**Figure 2**). It is important to maintain an air gap between the target and the sensing face to prevent physically damaging the sensors.

The difference between the "operate" and "release" points is called differential travel (See shaded area in Figure 7). It is factory set at less than 15% of the effective operating distance.

Differential travel is needed to keep proximity sensors from "chattering" when subjected to shock and vibration, slow moving targets, or minor disturbances such as electrical noise and temperature drift.

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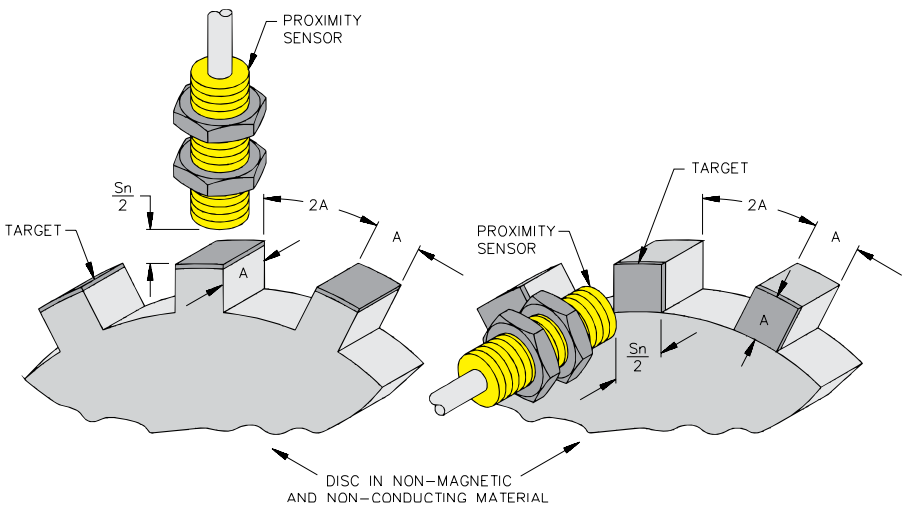
## Maximum Switching Frequency

Figure 3




When using inductive sensors in high speed application, the maximum rated switching frequency is only guaranteed when using optimal target dimensions and sensor spacing. The minimum recommended parameters to use are shown in **Figure 3**. Using smaller targets, target spacing or increasing the sensor to target air gap may result in a reduction of the actual achievable maximum switching frequency. See page J4 for determining dimension "A" of a standard target.

## Weld Field Immunity

Many critical applications for proximity sensors involve their use in welding environments. AC and DC resistance welders used in assembly equipment and other construction machines often require in excess of 20 kA to perform their weld function. Magnetic fields generated by these currents can cause false outputs in standard sensors.

Turck has pioneered the design and development of inductive proximity sensors that not only survive such environments, but remain fully operative in them.

The limit of the weld field immunity depends on the kind of field (AC or DC), the housing size of the sensor and its location in the field. For example, in an AC or DC weld field, the "/S34" inductive sensors can be positioned one inch from a 20 kA current carrying bus.

**Reference Values for Magnetic Induction:**

| I [kA] | 12.5 mm | 25 mm | 50 mm | 100 mm |
|---|---|---|---|---|
| **5** | 80 mT | 40 mT | 20 mT | 10 mT |
| **10** | 160 mT | 80 mT | 40 mT | 20 mT |
| **20** | 320 mT | 160 mT | 80 mT | 40 mT |
| **50** | 800 mT | 400 mT | 200 mT | 100 mT |
| **100** | 1600 mT | 800 mT | 400 mT | 200 mT |

Gauss = 10 x mT

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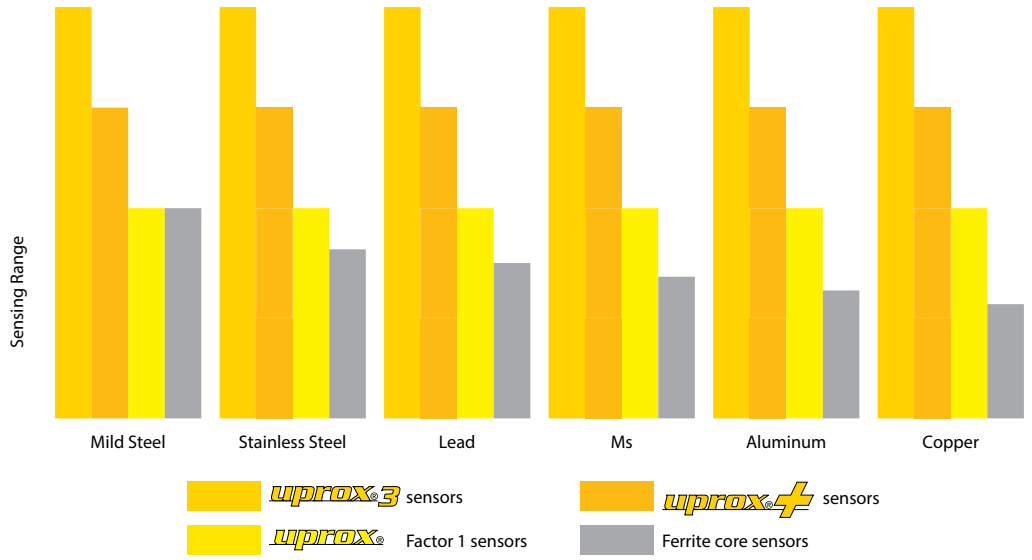
## Operating Principle Uprox®

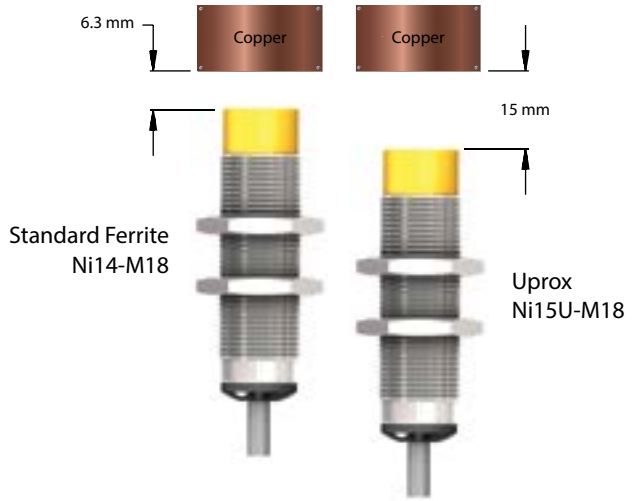



Operating distances comparison of Uprox sensors and standard inductive sensors.

Turck Uprox is a patented next generation development of inductive sensors that uses a multi-coil system. Active coil(s) induces eddy currents on the metal target and passive coil(s) are affected by these eddy currents. Ferrous and nonferrous metals have the same effect on the two coils. Therefore, all metals, including galvanized metals, have the same rated operating distance.

## Uprox Advantage

Figure 4



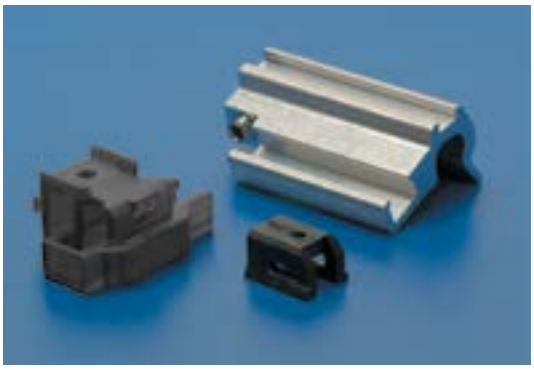

- No Correction Factor - Same rated operating distance for all metals.
- Extended Operating Distance - Up to 400% greater than standard inductive sensors when using non-ferrous targets (**Figure 4**).
- Weld Field Immunity - Uprox is unaffected by strong electromagnetic AC or DC fields because of its unique patented design.
- High Switching Frequencies - Up to 10 times faster than standard inductive sensors.
- Extended Temperature Range - Uprox+ can withstand temperatures up to 85 °C (+185 °F) with a ±15% temperature drift.
- Select Uprox3 sensors are IO-Link compatible.

We reserve the right to make technical alterations without prior notice.

## Cylinder Position Sensors – Magneto-Resistive

Turck Magneto-resistive cylinder position sensors are used for the detection of magnet equipped pistons on pneumatic and other types of cylinders. These non-contact sensors are able to determine the position of the cylinder piston without diminishing the integrity of the cylinder itself. This allows the sensors to operate without intruding upon the cylinder, keeping the system completely intact.

Turck has taken the approach of using only two sensor styles along with various adapter brackets to fit each individual cylinder's requirements. The "**UNT**" and "**UNR**" housings were designed to fit into specific grooves found in extruded profile type cylinders as stand alone devices without the need for any additional brackets. The UNT style was made to fit into a 5.2 mm "T" groove and the UNR was made for use in a 4.0 mm round groove, neither requiring additional hardware for mounting. Both of these designs allow the sensor to be dropped in from above anywhere along the span of the cylinder.



Cylinder brackets allow Turck sensors to mount on most cylinder styles including round, tie-rod, extruded profile groove, and dovetail versions.

**Where Can I Use a Magneto-Resistive Sensor?**

- Material handling
- Automated assembly
- Stamping
- Conveying
- Sorting
- Product positioning
- Industrial robots

We reserve the right to make technical alterations without prior notice.

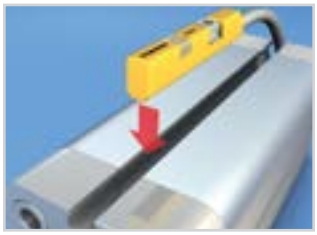
# Technical Reference | Magnetic

## Cylinder Position Sensors – Magneto-Resistive (continue)

Turck translated this "drop in from the top" approach when designing the adapter brackets as well. By eliminating the need to slide the sensor in from the end of the cylinder it reduces installation time, alleviates the need for the cylinder to be disassembled, and allows for installation right on the floor without interrupting the operation of the cylinder. These sensors are manufactured using a plastic overmolding technology, which allows us to completely seal sensors into smaller packages without compromising on durability. Smaller sensors that are compact with very low profiles also reduce the chance of damage when mounted to the outside of the cylinder.

## Turck Magneto-Resistive Sensor Advantage

**Reliable Mounting**
The sensor is mounted in the cylinder's groove and tightened with a screw. Located near the cable outlet, the screw helps make sure the sensor doesn't move during vibration or if the cable is pulled.



**Visible LED**
A bright LED indicates the current switching status, and is visible from any position.

**Compact Housing Style**
UNT models measure only 28 mm, while UNR models measure only 18 mm, making them the most compact sensors available on the market. Since the active sensing face is located at the end of the sensor, the piston can be detected up to the end, even on compact short stroke cylinders.

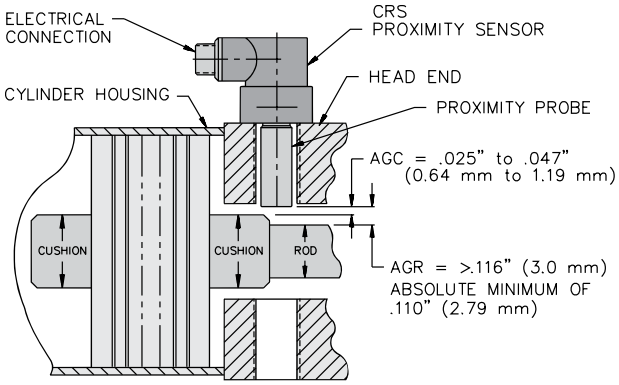
**Standards**
Magneto-resistive technology enables the sensor to detect the exact position of the magnet, while avoiding multiple switching points. It also exceeds IEC standards EN60947-5-2 and EN61000-4-6, making it immune to high levels of EMC.

## Cylinder Position Sensors – CRS Inductive

Turck's CRS sensors are designed to be mounted into the head end or cap end of hydraulic and pneumatic cylinders. They operate at 1,500 psi and mechanically withstand 3,000 psi of continuous pressure.

**AGC - Air Gap Cushion**
This dimension is recommended to allow for mechanical tolerances and wear.

**AGR - Air Gap Rod**
The rod-to-cushion step must be large enough to allow the sensor to turn off when the piston leaves. If the step is too small, the sensor will lock-on due to the hysteresis of the sensor.

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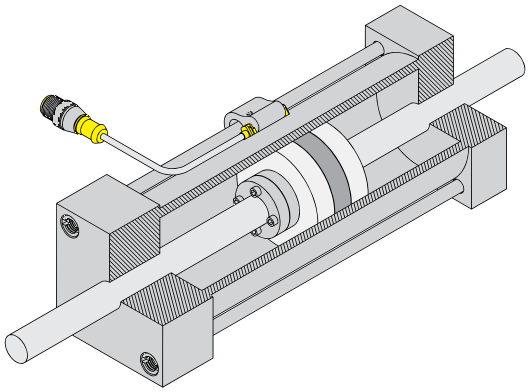
## Permaprox Inductive Magnet Operated Sensors

Turck's Permaprox cylinder sensors are used for detection of magnet equipped pistons on pneumatic cylinders through a non-magnetic cylinder wall. A patented electronic magnetic circuit involving new state-of-the-art materials forms the basis of operation for these sensors.

The characteristics of this innovative technology have distinct advantages over Hall effect switches and reed devices. Specific sensors no longer have to be matched to specific magnet strengths. Other features include extremely high repeatability and the elimination of multiple actuation points.



## Actuation Area/Differential Travel

Figure 5

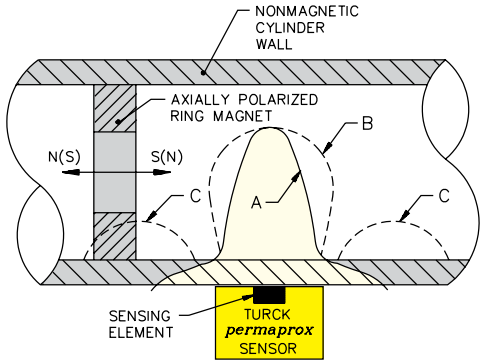



Figure 6

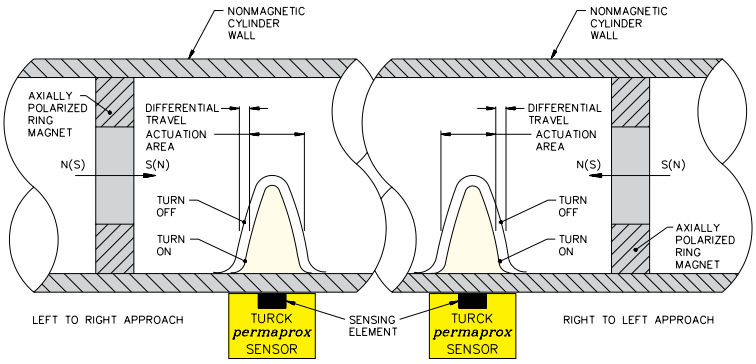



**Figure 5 curve definitions:**
A) Typical actuation area of Permaprox sensors
B) Typical primary actuation area for reed switches
C) Typical secondary actuation area for reed switches

The Permaprox sensors, unlike most magnet operated sensors, respond to only one component of magnetic induction, namely the component parallel to the cylinder. **Figure 5** shows the typical actuation area of a Permaprox sensor compared to that of reed switches. It is a common problem for reed switches to have more than one actuation area. Since these switches operate on a narrow range of magnetic field strengths, mismatching often causes multiple switching points. The Permaprox sensors, however, reliably operate over a range of 20-350 gauss (2-35 mT).

The actuation area will depend on the width and field strength of the magnet. As shown in **Figure 6**, the actuation point will differ depending on the direction of piston travel. These points are not the same, but are very repeatable.

## Permaprox Weld Field Immunity

All Turck Permaprox sensors with the "S34" suffix in the part number are resistant to AC weld fields. If the field is pulsing, as with AC resistance welders, the sensor locks the output in its last known stable state. When the pulsing field subsides, the sensor updates its output accordingly. The sensors are not immune to constant magnetic fields, such as permanent magnets or DC resistance welders, and will change state.

We reserve the right to make technical alterations without prior notice.

# Technical Reference | Capacitive

Capacitive sensors utilize a non-contact sensing technology that detects a wide variety of materials. When equipped with a sensitivity adjustment users can tune out certain materials such as glass or plastic, making this type of sensor a common choice for point level applications. Typical applications include but are not limited to:

- Liquid Level Control for both flammable and non-flammable materials.
- Package Inspection for product content and/or fill level.
- Wire-Break Detection for wire sizes down to .003".
- Plastic Pellet Detection in a hopper for injection molding processes.
- Grain or Food Products Level Detection; intrinsically safe models available.
- Small Metal Parts Detection; greater sensing range than comparable Inductive Sensors.

## Operating Principle

Figure 7

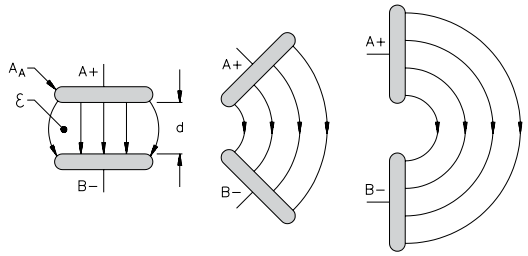
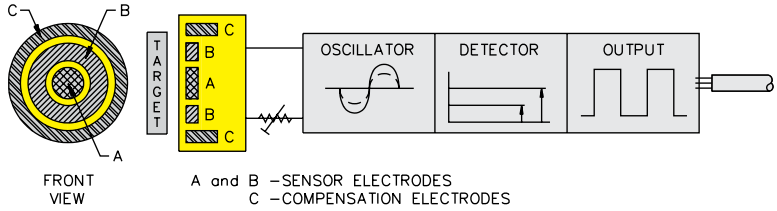



Figure 8




The active element is formed by two metallic electrodes positioned much like an "opened" capacitor (**Figure 7**).

Electrodes A and B are placed in a feedback loop of a high frequency oscillator. When no target is present, the sensor's capacitance is low, therefore the oscillation amplitude is small. When a target approaches the face of the sensor, it increases the capacitance. This increase in capacitance results in an increased amplitude of oscillation.

The amplitude of oscillation is measured by an evaluating circuit that generates a signal to turn on or off the output (**Figure 8**).

We reserve the right to make technical alterations without prior notice.

## Operating Principle

Capacitance is a function of the surface area of either electrodes (A or B), the distance between the electrodes (d), and the dielectric constant of the material (ε) between the electrodes.

$$C = \frac{\varepsilon \times A}{d}$$

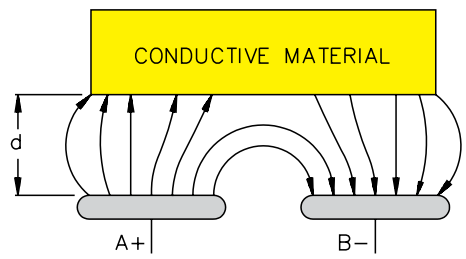
C = capacitance of sensor

A = surface area of either electrode

d = distance between two electrodes

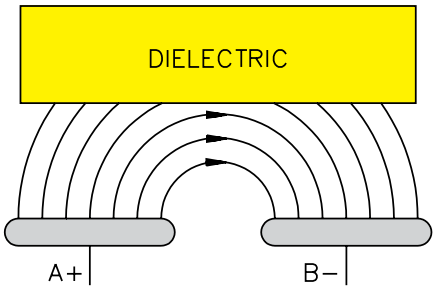
ε = dielectric constant of material between the electrodes

Figure 9




When a Conductive Target enters the sensor's field, it forms a counter electrode to the active face of the sensor, thus decreasing the distance between the electrodes (d) and increasing their average surface area (**Figure 9**). The capacitance with a metal target present is always greater than the capacitance of the circuit in the absence of the target. Reduction factors for different metals are not a consideration when using capacitive sensors.

Figure 10




When a Non-Conductive Target enters the sensor's field, it acts as an electrical insulator between electrodes A and B (**Figure 10**). The dielectric constant of the material (ε) is a measure of its insulation properties. All liquids and solids have a greater dielectric constant than air (εair = 1). Therefore, the capacitance with a non-metallic target present is always greater than the capacitance of the circuit in the absence of the target.

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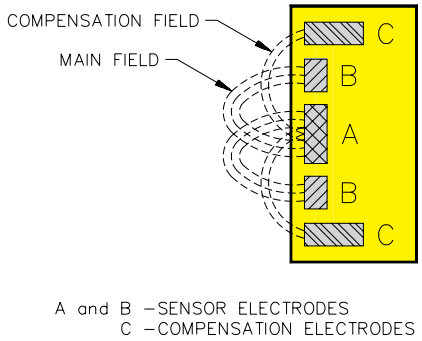
## Temperature and Environmental Conditions

Figure 11



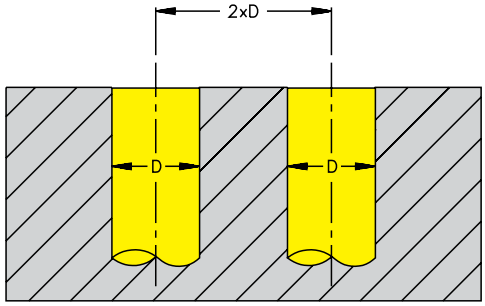

**Compensation Electrode**
In practice, sensors can be affected by water droplets, humidity, dust, etc., causing false outputs. To combat this effect each Turck sensor incorporates a compensating electrode (C) which forms part of a negative feedback circuit (**Figure 11**).

When contaminants are on the sensor face, they affect the sensor's main field, as well as its compensation field. The negative feedback circuit detects the increase in both fields, and can filter out the effects of the contaminants.

When a large target comes into the sensor's main field, the compensation field is not affected, thus the negative feedback circuit can distinguish a difference between the two fields, and the sensor generates an output.

## Mounting

Figure 12




**Compensation Electrode**
Most capacitive sensors manufactured by Turck are embeddable, which ensures that the electric field is only effective in front of the active face. They are suitable for flush mounting at the factory setting in any material (conductive and nonconductive).

When sensors are flush mounted, the effect on the operating distance is minimal and can be overcome by adjustment of the potentiometer. Minimum separation distances must be observed to avoid the possibility of interference between the two sensors' fields (**Figure 12**).

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## BCF Series – Noise Immunity

Capacitive sensors were originally designed for use in level detection applications in areas that were generally far away from other electrical equipment. As factory automation has become more prevalent throughout industrial markets, these capacitive sensors have gravitated into new environments where electrical noise levels are greatly increased. Electrical noise can be produced by various sources including variable frequency drives, electromechanical motors and standard walkie-talkie devices. These "noisy" environments can have adverse effects on sensing devices causing them to operate improperly and unreliably.

Turck recognizes this and has developed a new circuit for its capacitive sensors. These new "BCF" sensors incorporate a unique filter principle, making them immune to most industrial noise. This principle involves a fixed oscillator frequency combined with a rectifier filter providing superior noise immunity over the competition.

Turck's fixed oscillator allows the sensor to maintain a constant frequency regardless of sensitivity adjustment. This fixed frequency is high enough to ignore most of the "standard" noise levels seen on plant floors. Electrical noise is mostly symmetrical which makes it easier to identify and separate from the sensor's input signal. The Turck rectifier filter is able to block this noise allowing only the "useful" input signal, which is in phase with the oscillator frequency, to pass.

These two innovative electrical techniques give Turck the best defense against industrial noise. The list of specifications and test results below demonstrates how Turck meets or exceeds all of the rigid standards established by CE. In fact, the criteria set forth by CE is so stringent that most capacitive sensors offered on the market today cannot pass any or all of these testing requirements. If you have a capacitive sensor application located in a "noisy" environment choose the new "BCF" sensors from Turck to ensure your process operates smoothly.

We reserve the right to make technical alterations without prior notice.

| Test Type | | CE "Product" Standard | CE "Generic" Standard | Turck "BCF" Noise Immune Capacitive Sensors |
|---|---|---|---|---|
| **Immunity to Electrostatic Discharge (ESD)** | IEC 1000-4-2<br>EN 61000-4-2 | 4 kV Direct<br>Contact<br>8 kV Airborne | 4 kV Direct<br>Contact<br>8 kV Airborne | 8 kV Direct<br>Contact<br>30 kV Airborne |
| **Immunity to Radiated Electromagnetic Fields.<br>Radio Frequency Interference (RFI)** | IEC 1000-4-3<br>EN 61000-4-3 | 3 V/M<br>80-1000 MHz | 10 V/M<br>80-1000 MHz | 15 V/M<br>80-1000 MHz |
| **Immunity to Electrical Fast Transients<br>(Burst-High Voltage)** | IEC 1000-4-4<br>EN 61000-4-4 | 2000 V | 2000 V | 3000 V |
| **Immunity to Conducted R.F. Voltage<br>(Line Coupled Noise)** | IEC 1000-4-6<br>EN 61000-4-6 | Undefined | 10 V<br>150 kHZ-80 MHz | >10 V<br>150 kHZ-230 MHz |
| **Immunity to Surges<br>(Lightning Strike)** | IEC 255-5 | 1 kV, 500Ω DC | Undefined | 1 kV, 500Ω DC<br>5 kV, 500Ω AC |

## BCC Series-Plastic Pellets, ESD, and Metal Containers

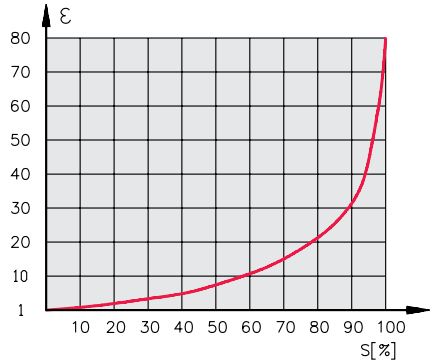
The BCC series capacitive sensor is specifically designed to provide accurate level detection in the plastic industry. Applications involving plastic pellets often generate high levels of static electricity which can discharge and lead to sensor failure. The BCC series of sensors feature excellent EMC and ESD immunity, allowing them to reliably detect the level of plastic pellets in a hopper while withstanding environmental interference.

These sensors can also be mounted directly into a metal tank without a reduction in range, a common side-effect for standard capacitive sensors. The BCC incorporates a unique laterally mounted shield that protects the sensors from being influenced by the metal tank. This allows the sensor to detect even low-dielectric materials when the sensor is flush mounted in metal.

## Sensing Range vs. Dielectric Constant

When sensing non-conductive targets, the larger the dielectric constant of a material, the greater the achievable operating distance (**Figure 13**). Adjusting the potentiometer affects the total curve; for example, if the potentiometer is adjusted for less sensitivity, it will have less operating distance to all materials. In general terms, the larger the dielectric constant of a material, the greater the achievable operating distance. When detecting organic materials the sensing distance will depend largely on the water content (**ε**water = 88).
It should be noted that a large increase in sensitivity will cause the sensor to become nonembeddable, and may result in an unstable switching point that can be influenced by environmental changes such as temperature, humidity, dust, etc. At adjustments of S > Sn, the differential travel (hysteresis) can also increase.

Figure 13




RELATION OF OPERATING DISTANCE TO DIELECTRIC CONSTANT

## Sensitivity Adjustment

**Capacitive sensors can be adjusted in order to sense a target consistently.**

- Physical adjustment - moving the sensor towards or away from the target is the preferred method of adjusting sensitivity when the sensor is not in direct contact with the target. This allows materials to be moved into or out of range while leaving the sensor at the factory setting or after re-calibration to the nominal operating distance Sn.
- Adjustment of the potentiometer - turning the potentiometer in a clockwise direction increases the sensitivity of the sensor. The potentiometer is factory-set for an operating distance of 0.7 to 0.8 Sn to a grounded standard target (Figure 14). It should be adjusted in increments of no greater than a quarter-turn (**Figure 15**). Increasing the sensitivity results in a greater operating distance to both conductive and non-conductive targets.
- Teachable sensors allow users to teach tank-full and tank-empty conditions using the built in buttons or a teach adapter. The programming process and built in logic ensure the sensor is optimized to reliably detect the desired object.
- IO-Link- sensors equipped with IO-Link feature advanced options including the ability to program the sensors with an IO-Link master. The flexibility provided by IO-Link allows users to adjust sensor settings as their processes change.

Figure 14

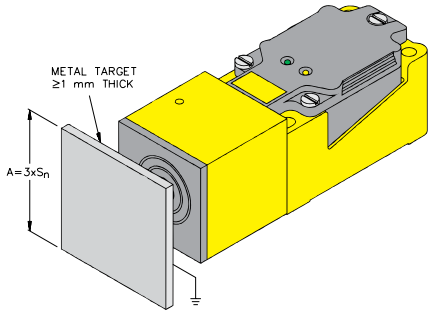
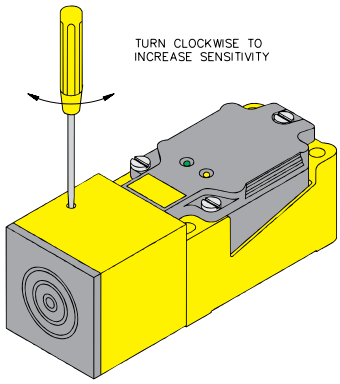



Figure 15




We reserve the right to make technical alterations without prior notice.

## Example Application 1 - Adjustment

**Problem:**
Can a BC20-K40SR-FZ3X2 be used to sense the presence of ammonia from behind a .125" glass panel?

**Solution:**
The dielectric constants for these materials can be found on pages 17 and 18.

Dielectric (εr) of ammonia: 20
Dielectric (εr) of glass: 10

From Figure 7, εr = 20 corresponds to 80% Sn; εr = 10 corresponds to 60% Sn.

| | | | |
|---|---|---|---|
| Since Sn = | 20 mm for a BC20: | S for ammonia = | 16 mm |
| | | S for glass = | 12 mm |

The difference is 4 mm. The glass thickness = .125", or 3.1 mm. This application will work with a 0.9 mm margin. This means that by adjusting the potentiometer there should be a reasonable distinction between the glass and the ammonia as seen by the sensor.

**To set up the sensor for this application, the sensing face of the sensor should be flush against the sight glass.**

- With no ammonia present (if possible) turn the potentiometer clockwise until the sensor turns on. If the sensor is already on, skip step one.
- Next, turn the potentiometer counter clockwise until the sensor turns off.
- Now add the ammonia so that it covers the glass panel.
- Once again, turn the potentiometer counter clockwise, counting the number of turns until the sensor turns off.*
- Divide the number of turns by two and turn the potentiometer back clockwise that amount. Using this process will allow for a margin of error in either direction. If this application had called for something other than ammonia, like molasses, that tends to leave buildup behind, step 1 above should be performed with the buildup present (if possible).

*If sensor does not turn off after 10 full turns, turn back the potentiometer clockwise between three to five turns. Minor adjustments may need to be made to achieve desired setting.

## Example Application 2 - Mounting

**Problem:**
A metal tank containing a water-based solution has a 1" outside diameter sight glass. What sensor and bracket could be used for monitoring the liquid level?

**Solution:**
The QF 5.5 flat style can used on non-conductive tubing up to 1.0 inch in diameter with the standard mounting straps provided with the sensor (**Figure 16**). Other mounting straps for larger diameters are available upon request (consult factory).

Figure 16

We reserve the right to make technical alterations without prior notice.

# Technical Reference | Capacitive

## Dielectric Constants of Industrial Products

| Material Dielectric | Constant |
|---|---|
| ABS resin, pellet | 1.5 - 2.5 |
| Acetic acid | 4.1 |
| Acetone | 19.5 |
| Acetyl bromide | 16.5 |
| Acrylic resin | 2.7 - 4.5 |
| Air | 1.0 |
| Alcohol, industrial | 16 - 31 |
| Alcohol, isopropyl | 18.3 |
| Ammonia | 15 - 25 |
| Aniline | 5.5 - 7.8 |
| Aqueous solutions | 50 - 80 |
| Asbestos | 3.0 |
| Ash (fly) | 1.7 |
| Bakelite | 3.6 |
| Barley powder | 3.0 - 4.0 |
| Benzene | 2.3 |
| Benzyl acetate | 5 |
| Butane | 1.4 |
| Cable sealing compound | 2.5 |
| Calcium carbonate | 9.1 |
| Carbon dioxide | 1.6 |
| Carbon tetrachloride | 2.2 |
| Celluloid | 3.0 |
| Cellulose | 3.2 - 7.5 |
| Cement | 1.5 - 2.1 |
| Cement powder | 5 - 10 |
| Cereal | 3 - 5 |
| Charcoal | 1.2 - 1.8 |
| Chlorine, liquid | 2.0 |
| Coke | 1.1 - 2.2 |
| Corn | 5 - 10 |
| Ebonite | 2.7 - 2.9 |

| Material Dielectric | Constant |
|---|---|
| Epoxy resin | 2.5 - 6 |
| Ethanol | 24 |
| Ethyl bromide | 4.9 |
| Ethylene chloride | 10.5 |
| Ethylene dichloride | 11.0 |
| Ethylene glycol | 38.7 |
| Ethylene oxide | 14.0 |
| Ferrous oxide | 14.2 |
| Fired ash | 1.5 |
| Flour | 2.5 - 3.0 |
| Formic acid | 59.0 |
| Freon® R22 & 502, liquid | 6.1 |
| Gasoline | 2.2 |
| Glass | 3.1 - 10 |
| Glass, raw material | 2.0 - 2.5 |
| Glycerine | 47 |
| Hexane | 1.9 |
| Hydrochloric acid | 4.6 |
| Hydrogen cyanide | 95.4 |
| Hydrogen peroxide | 84.2 |
| Ice, -5C | 2.85 |
| Ice, -18C | 3.16 |
| Isobutylamine | 4.5 |
| Lime, shell | 1.2 |
| Marble | 8.0 - 8.5 |
| Melamine resin | 4.7 - 10.2 |
| Methane, liquid | 1.7 |
| Methanol | 33.6 |
| Mica, white | 4.5 - 9.6 |
| Milk, powdered | 3.5 - 4 |
| Nitrobenzene | 36 |
| Neoprene | 6 - 9 |

We reserve the right to make technical alterations without prior notice.

## Dielectric Constants of Industrial Products

| Material | Dielectric Constant |
|---|---|
| Nylon | 4 - 5 |
| Oil, for transformer | 2.2 - 2.4 |
| Oil, paraffin | 2.2 - 4.8 |
| Oil, peanut | 3.0 |
| Oil, petroleum | 2.1 |
| Oil, soybean | 2.9 - 3.5 |
| Oil, turpentine | 2.2 |
| Paint | 5 - 8 |
| Paraffin | 1.9 - 2.5 |
| Paper | 1.6 - 2.6 |
| Paper, hard | 4.5 |
| Paper, oil saturated | 4.0 |
| Perspex | 3.2 - 3.5 |
| Petroleum | 2.0 - 2.2 |
| Phenol | 9.9 - 15 |
| Phenol resin | 4.9 |
| Polyacetal (Delrin®) | 3.6 |
| Polyamide (nylon) | 2.5 |
| Polycarbonate | 2.9 |
| Polyester resin | 2.8 - 8.1 |
| Polyethylene | 2.3 |
| Polypropylene | 2.0 - 2.3 |
| Polystyrene | 3.0 |
| Polyvinyl chloride resin | 2.8 - 3.1 |
| Porcelain | 4.4 - 7 |
| Press board | 2 - 5 |
| Propane, liquid | 1.6 |
| Propylene, liquid | 11.9 |
| Quartz glass | 3.7 |
| Rice, dry | 3.5 |

| Material | Dielectric Constant |
|---|---|
| Rubber | 2.5 - 35 |
| Salt | 6.0 |
| Sand | 3 - 5 |
| Shellac | 2.0 - 3.8 |
| Silicon dioxide | 4.5 |
| Silicone rubber | 3.2 - 9.8 |
| Silicone varnish | 2.8 - 3.3 |
| Soybean | 2.8 |
| Styrene resin | 2.3 - 3.4 |
| Sugar | 3.0 |
| Sugar, granulated | 1.5 - 2.2 |
| Sulfur | 3.4 |
| Sulfuric acid | 84 |
| PTFE®, PCTFE | 2.3 - 2.8 |
| PTFE | 2.0 |
| Toluene | 2.3 |
| Trichloroethylene | 3.4 |
| Urea resin | 6.2 - 9.5 |
| Urethane | 3.2 |
| Vaseline | 2.2 - 2.9 |
| Vinyl chloride | 2.8 |
| Water | 48 - 88 |
| Wax | 2.4 - 6.5 |
| Wood, dry | 2 - 7 |
| Wood, pressed board | 2.0 - 2.6 |
| Wood, wet | 10 - 30 |
| Xylene | 2.4 |
| Zinc oxide | 1.7 |
| Zirconium oxide | 12.5 |
| Zirconium silicate | 5.0 |

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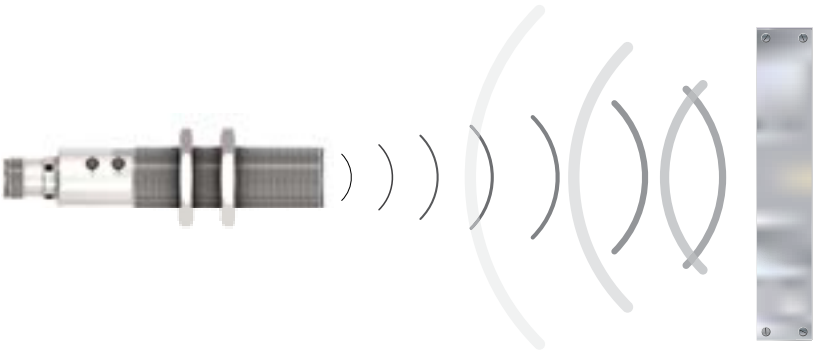
# Technical Reference | Ultrasonic

Ultrasonic sensors use reflected sound waves as a means to detect objects at a greater distance than traditional inductive and capacitive sensors. With ranges of several meters and wide sensing cones, these sensors provide a unique solution to challenging applications.

## Operating Principle



Ultrasonic sensors emit one or several ultrasonic pulses that are broadcasted in the air at the speed of sound. A part of the ultrasonic wave is reflected back to the sensor by the target. The sensor measures the total time of flight from the sensor to the object and back to the sensor. The distance to the object is then calculated with the following formula:

$$D = c \times t / 2$$

D = Distance from the sensor to the object
c = Speed of sound in air
t = Time of flight for the ultrasonic pulse

To improve accuracy and reliability, the ultrasonic sensor averages the measurement of several sound pulses before the output is updated.

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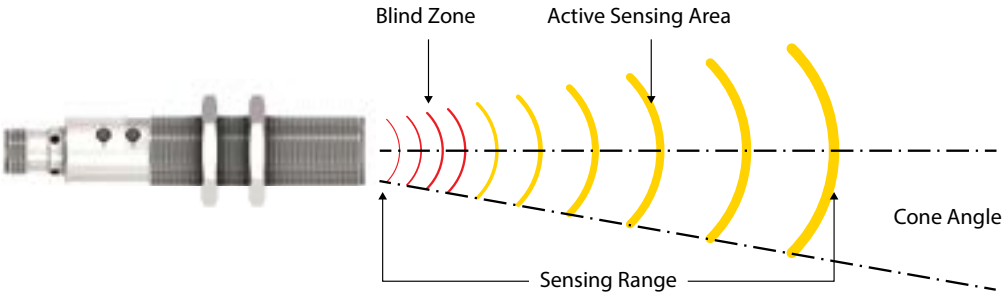
## Ultrasonic Terminology




**Some key terms to understand when looking for an ultrasonic sensor.**

- Blind zone: the blind zone is the area in front of the sensor where targets cannot be detected.
- Sensing range: the coverage of the device is the sensing range, or the maximum distance the sensor can read the sonic wave.
- Active sensing area: is the area where the set points or analog values can be established.
- Cone angle: the cone angle defines the coverage area of the sensor. This will have to be taken into account when placing the sensor in the application. If the cone is disrupted errors or miscommunication can occur.

## Changes in Temperature

The ultrasonic velocity depends on the composition and the temperature in which the sound is transmitted. In most ultrasonic-applications, the composition of the atmosphere is stable whereas the temperature may often fluctuate. Fluctuations in air temperature affect the speed of sound, which in turn has an effect on the total time for the echo measured by the sensors. Our sensor are temperature compensated and will adjust the range automatically to minimize errors.

The speed of sound in air varies with the temperature according to the following approximation formula:
$Cm/s = 20 \times \sqrt{273 + TC}$

Cm/s = Speed of sound in meters per second
TC = Temperature in °C

## Atmosphere Conditions

It is always recommended to set up the ultrasonic sensors desired switch points and/or analog range in the environment that it will be used. Ultrasonic sensors will work in dust, rain and snow but if the conditions are too substantial it may reduce the sensors range or inhibit the sensor to read the target.

Turck ultrasonic sensors feature a flush face that allows dirt and water to be wicked away with the vibrating motion of the sensing element.

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## Modes of Operation

- Diffused mode: standard operation mode were the sensor is emitting sound waves and listening for the reflection and sensing if it is within the selected output zone. This mode can also have an analog output to give a linear measurement.
- Retro: reflective mode-sensor is set up with a reflector and sensing anything that crosses between the sensor and reflector. This is also known as break-beam, which is good for objects with an irregular shape or poor sound-reflecting qualities.
- Opposed mode: enlarges the range of an ultrasonic application. This mode utilizes two sensors of the same type. One sensor sends the signal and the other receives the signal allowing for the sensing range to double.
- Enable mode: allows the sensor to be powered but the piezo element does not fire unless a voltage is applied to pin 5. This allows for the sensor to reduce startup time and only be sensing for a target during a known condition. Enable mode also allows the sensor to be active during predetermined times or under a known condition.

Diffused Mode

Retro-Reflective Mode

Opposed Mode

## Synchronization and Multiplexing Mode

- Synchronization mode: any number of ultrasonic sensors of the same type can be operated simultaneously without mutual feedback. The sensors will act as one.
- Multiplexing mode: enables up to nine ultrasonic sensors of the same type to be operated at fixed intervals one after the other without mutual feedback. In order to ensure proper functioning of the multiplexing mode, all connected sensors must have the same type code. In multiplexing mode the addresses must be assigned via PACTware.

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## Teaching the Ultrasonic Sensor

Ultrasonic sensors can be taught via a teach wire, programming button, or IO-Link, depending on the model.

**Programming changes that can be done through the teach wires/buttons are below**

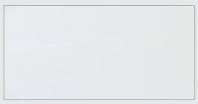
- Discrete output condition, normally open/ normally closed
- Window or hysteresis mode
- Sensing range
- Analog output type, current or voltage
- Retro-reflective mode

**Programming changes that can be done through IO-Link**

- Changing mode of operation
- Discrete output type and condition, NPN/PNP, normally open/ normally closed
- Analog output type, current or voltage
- Teach button/wire lock
- Window or hysteresis mode
- Sensing range
- Analog output type, current or voltage

## Targets

Good ultrasonic targets have a hard smooth surface such as metals, glass, stone, or wood, as well as liquids that are aligned appropriately to the sensor. These targets reliably reflect sonic waves regardless of color or transparency. Cloth, sand, foam or grains absorb some of the sonic energy resulting in limited range or unstable operation. It should be noted that some materials can be detected using retro-reflective mode.

| Material | ✓ |
|---|---|
| Cardboard | |
| Glass |  |
| Smooth Wood | |
| Metal | |

| Material | ✗ |
|---|---|
| Carpet | |
| Foam | |
| Textiles | |

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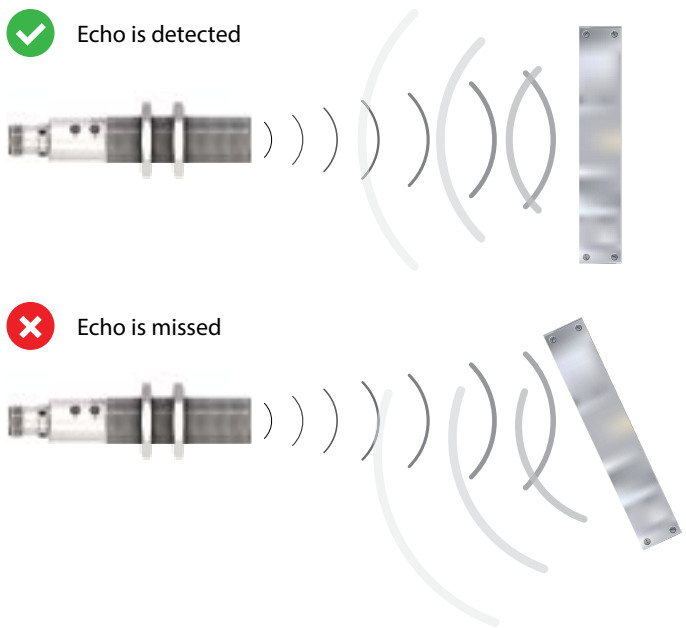
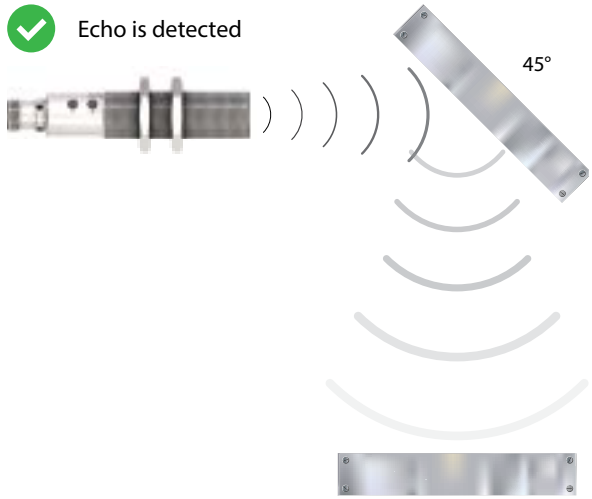
## Application Considerations

### Target Orientation



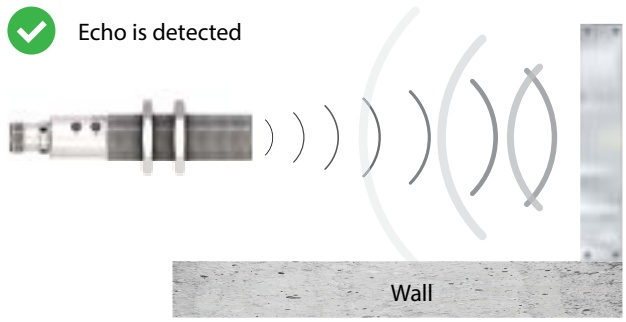

The orientation of a target is important. If the flat surface is at an angle the senor will not receive the reflected sound.

### Reflector




A reflector at a 45° angle can be used to redirect the signal or allow flexible mounting of the sensor.

### Obstructions




When mounting an ultrasonic sensor the cone angle has to be taken into consideration. Physical obstructions within the cone angle can cause unstable sensor operation. This is common when mounting the sensor too close to the side of a tank, inside of a tube/stilling well, or mounting close to a wall.

### Level Applications

Ultrasonic sensors can be used to monitor the level of both dry materials and liquids. By positioning the sensor above the materials, users can then program switch points or an analog output that corresponds to the actual level.

**Variables that negatively affect sensor performance**

- Foam: foaming media tends to absorb the acoustic signal
- Surface Turbulence: agitation, mixing, and other processes that cause excessive liquid turbulence can cause intermittent signal return problems
- Pressure: pressurized containers should be avoided as they change the sensor characteristics

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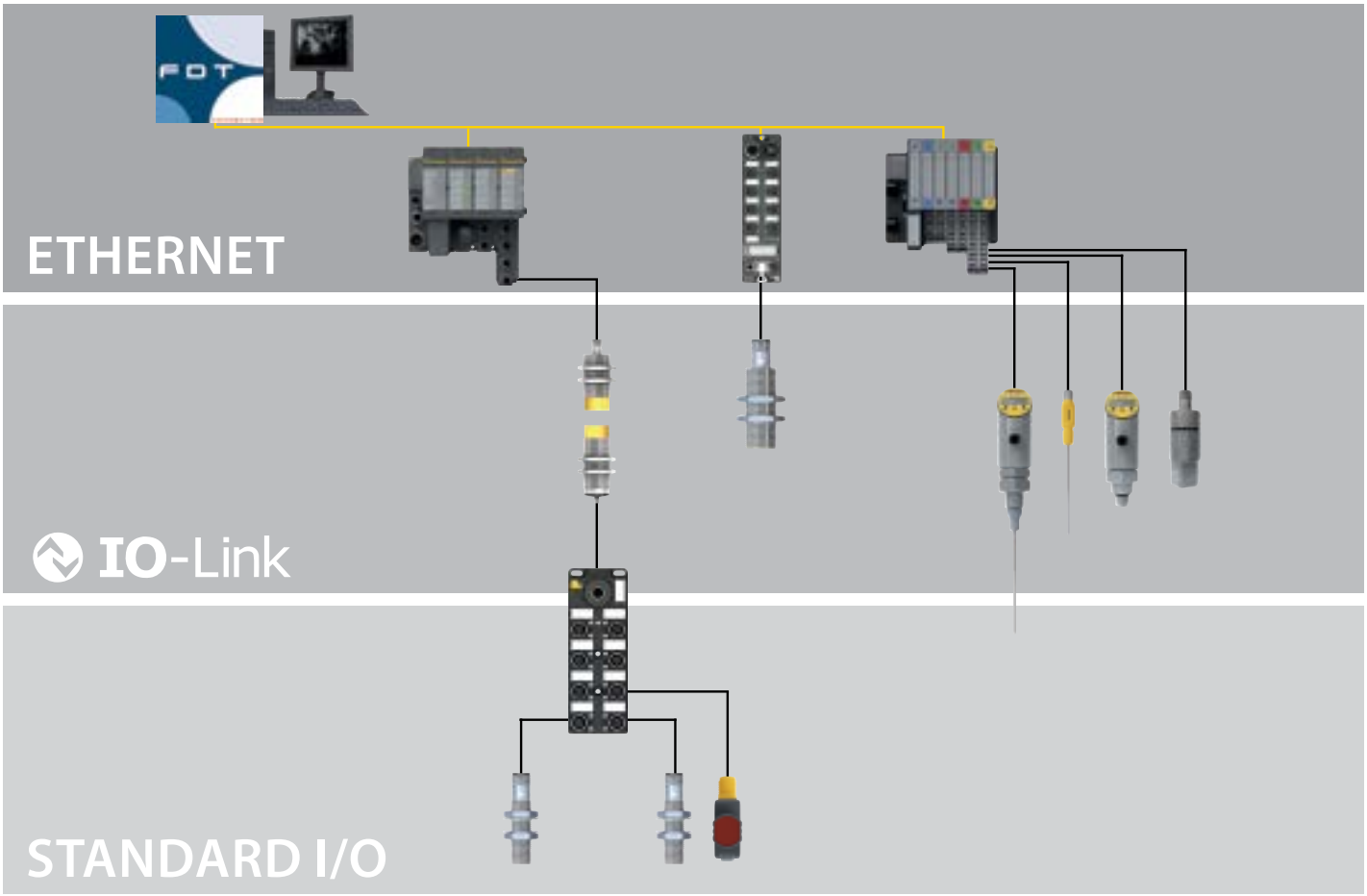
## IO-Link: Simple, Seamless, Efficient




Today, most sensors and actuators are already equipped with microprocessors that are used to control indication, parameterization, and store configuration data. The next step is to overcome the bottleneck of the binary standard interface and make additional functions centrally accessible for the automation system.

For this reason, many well known manufacturers from the field of automation have come together and developed a fieldbus-independent communication interface for sensors and actuators known as IO-Link. Compatibility with existing technologies was the primary objective during development in order to guarantee investment protection.

**What is IO-Link?**
IO-Link is based on a point-to-point connection between the sensor/actuator and an interface module. Previously, the binary connection was only designed for transferring switching information, but IO-Link now allows two bytes to be transferred normally in a 2 ms cycle via a combined switching status and data channel. Other information can be exchanged in addition to the process values, such as parameters or diagnostics messages. This enables communication with sensors and actuators down to the "last meter" to be established for universal communication.

**Standard Wiring**
IO-Link does not require any special wiring. The sensors and actuators can continue to be connected using the proven, unshielded and attractively priced industrial three core cables. The operating modes available for selection are the standard switch mode and the communication mode.

**Benefits**
IO-Link users benefit from reduced machine costs, efficient processes and improved machine availability. Turck provides one of the most comprehensive IO-Link portfolios worldwide, from a variety of sensors, cables and active IO-Link junction boxes to interfaces for various industrial fieldbus protocols, including Turck Multiprotocol Ethernet products.

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# Technical Reference | IO-Link

**Engineering Tool Integration**
Standardized interfaces (DTM/IODD) implement seamless integration into engineering tools. Furthermore, integration into standalone tools such as Asset management or configuration tools is also made available. Connection into enterprise level tools is accomplished using standard Ethernet mechanisms.

**Device Identification**
Integrated device identification ensures that the correct device has been installed in the case of component replacements. As each device contains detailed information regarding the manufacturer, component replacement can be safely handled automatically.

**Wiring**
IO-Link uses the same standard unshielded 3-core cables with standardized pinning as conventional I/O. This eliminates problems with complex devices which have no pinning standards and often multipole connectors.

**Ethernet/Fieldbus Connection**
IO-Link allows connection to most major fieldbuses, as well as Industrial Ethernet. Turck offers solutions for the full range, including master modules for its modular and block I/O systems featuring Multiprotocol Ethernet, which work seamlessly with PROFINET, EtherNet/IP and Modbus TCP in a single device.

**Sensor Mounting**
All IO-Link devices allow parameter changes and diagnostic evaluation within the engineering system or separate tools. Devices can now be mounted in the machine where they make sense for the application, not in inconvenient areas that disrupt work flow in order to allow access to display or switches.

**I/O Hubs**
Allow the integration of standard 24 VDC devices into automation systems via IO-Link with Turck I/O hubs. Variants for inputs, outputs and a version with configurable digital I/O are currently available.

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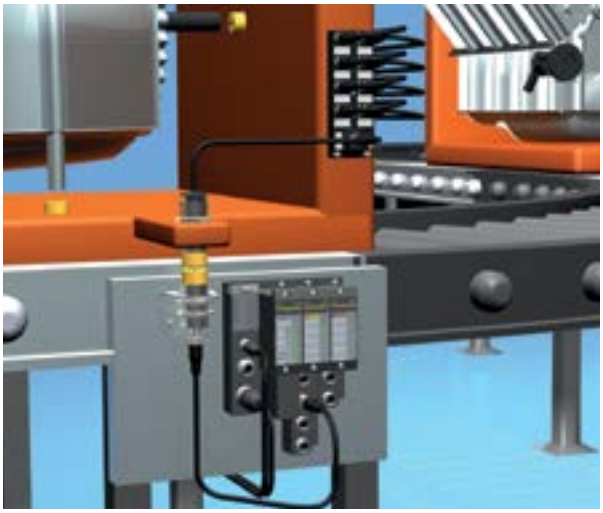
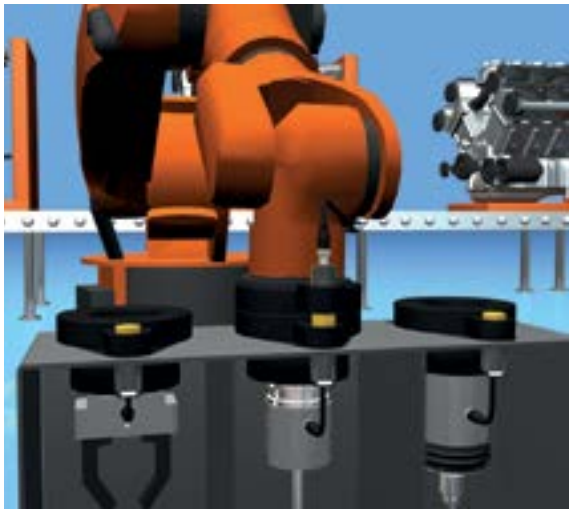
**Efficient Processes**
- Extensive parameterization options for just in time parameter changes to devices
- Efficient processes requiring different parameter sets for switching thresholds, gain, sensitivity and so forth due to differing production conditions
- Faster tool change operations

**Improved Machine Availability**
- Comprehensive status information and diagnostic capabilities in the plant lead to drastically reduced machine downtime
- Enhanced information enables cost saving mechanisms such as predictive maintenance or asset management to be easily implemented
- Device replacement without manual intervention to parameterize the new unit alleviates the need for qualified personnel

## Turck: Your Value Added IO-Link Solution Partner



Skid application in an automotive plant



Robotic tool changer application

Many manufacturers offer IO-Link products, which can make it difficult to find the most suitable partner for your needs. Turck offers a wide variety of IO-Link solutions – from sensors through programmable fieldbus and Ethernet gateways – but also provides a deep application knowledge, as the following example shows.

**Tool Changer**
Many applications require that parts of a machine are changed to accommodate different phases in the production cycle. This necessitates providing manifold connections between the main (fixed) part of a machine and the exchangeable part. The two elements of the machine must then be linked mechanically and electrically to provide power, pneumatics and I/O signals to enable data exchange within the machine.

The electrical connections require large multi-pin connectors and multicore cables to achieve this end. This complexity has a price: the connections regularly cause problems and are expensive to buy and maintain. The fact that the connections also require a high degree of accuracy regarding the mechanical alignment between machine components further increases machine costs. Another difficulty with this arrangement involves distinguishing between several variants of an exchangeable part. If this is necessary, further I/Os are required, both in the I/O system and on the machine. This not only increases costs, but also the complexity and sizing of the connectors between machine parts.

**Value Added IO-Link Solution**
Turck inductive couplers are capable of transferring both data and power over an air gap to resolve the previously mentioned problems. The contactless couplers eliminate the need for other mechanical connectors or costly slip rings, which are liable to wear. Additionally, all Turck IO-Link devices are capable of allocating a so-called "Application Specific Tag" (part of the IO-Link specification), which fulfills the requirement of identifying changeable parts without incurring additional costs. Furthermore, this built-in mechanism allows the use of alphanumeric information, making it likely that existing identification codes can be reused.

**Reduced Machine Costs**
- Reduced inventory due to intelligent multi-purpose devices
- Only one I/O module and one inexpensive standard cable required
- Reduced I/O footprint possible
- Displays and switches no longer required on devices
- Reduced engineering and assembly costs and automatic documentation of device parameters during the engineering phase

We reserve the right to make technical alterations without prior notice.

# Technical Reference | DC Wiring

## DC Outputs

Two-, three-, or four-wire proximity sensors contain a transistor oscillator and a snap-action amplifier. This provides exceedingly high accuracy to a set switching point, even with very slowly approaching targets. Switching characteristics are unaffected by supply voltage fluctuations within the specified limits.

The sensors can drive electromechanical relays, counters, solenoids, or electronic modules, and interface directly with logic systems or programmable controllers without additional interface circuitry. They are available with either NPN output transistors (current sinking) or PNP output transistors (current sourcing).

Load current ratings vary from 100 to 200 mA depending on physical size. Standard voltage range is 10-30 VDC with certain types available for 10-65 VDC. All models incorporate wire-break, transient and reverse polarity protection. Power-On false pulse suppression is also standard.

## Wire-Break Protection

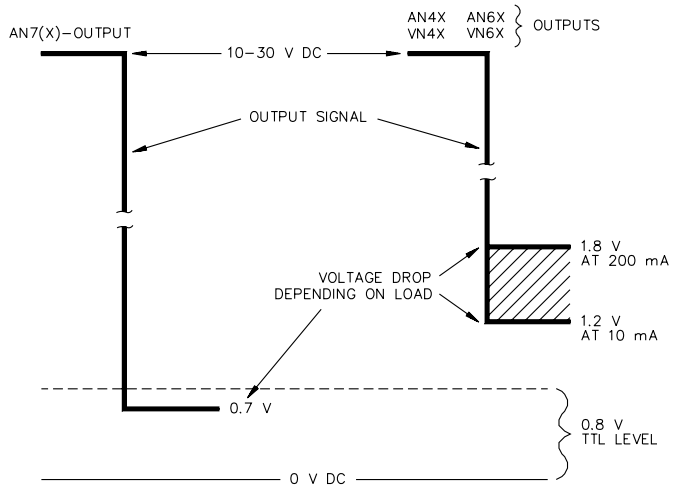
If the supply wire for a Turck DC sensor was damaged or broken the output will stay in the off state.

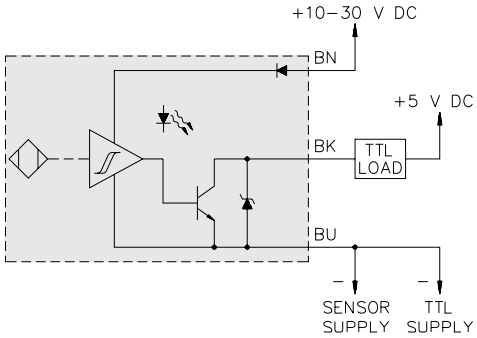
## Short-Circuit and Overload Protection

Turck DC sensors with a Voltage Range designation of "4", "6" or "8" in the part number are short-circuit and overload protected (automatic reset). These sensors incorporate a specially designed circuit which continuously monitors the ON state output current for a short-circuit or overload condition. If either of these fault conditions occurs, the output is turned OFF and pulse tested until the fault is removed. This added protection causes a ≤1.8 V drop across the output in the normal ON state. This may be a problem when interfacing with some logic low inputs (see TTL compatibility).

## TTL Compatibility

Certain inputs require a 5 VDC signal level to operate correctly. Typically, these types of inputs are described as TTL Level inputs and will only work correctly with a TTL compatible sensor. In order to meet TTL Signal requirements, the output of these sensors will have a voltage drop of ≤0.7 V (0.3 V typical). Do not use voltage ranges "4" and "6" when TTL compatibility is required. Contact the factory for a list of part numbers with this specification.



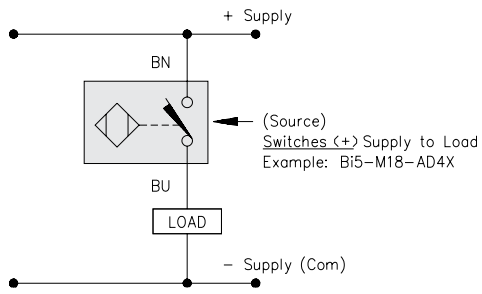

Wiring Diagram

Voltage drop is measured from output wire black (BK) to ground wire blue (BU).

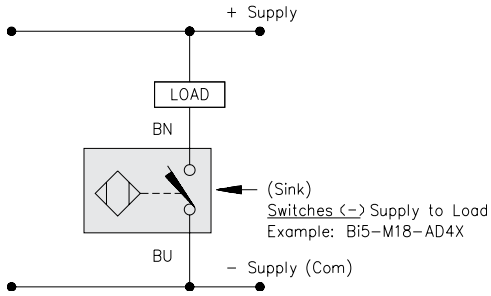
We reserve the right to make technical alterations without prior notice.

## DC Sourcing and Sinking

### 2-Wire DC



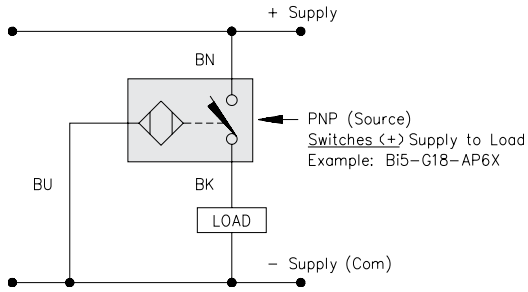

Source (PNP)



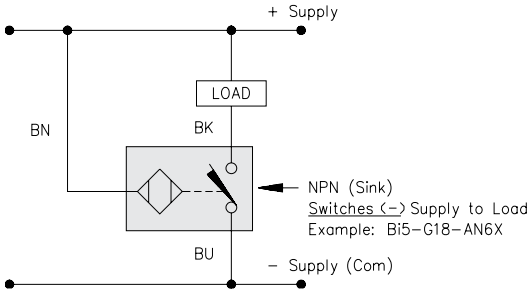

Sink (NPN)

**Note:**
Turck 2-wire DC sensors with an "AD" designation are not polarity sensitive and can be used to sink or source a load.

### 3-Wire DC



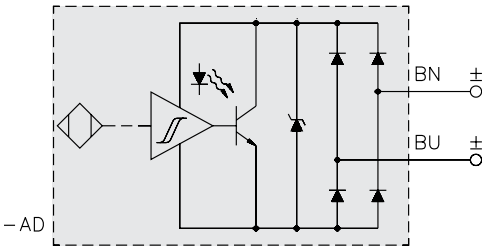

Source (PNP)

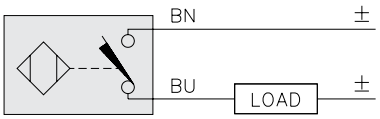



Sink (NPN)

## DC Outputs

### "AD" 2-Wire DC Output

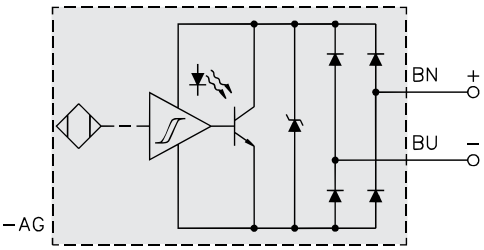


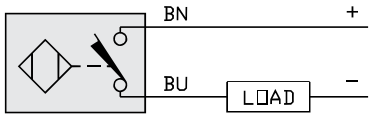




Wiring Diagram

**Note:**
Turck 2-wire DC sensors with an "AD" designation are not polarity sensitive and can be used to sink or source a load.

### "AG" 2-Wire DC Output



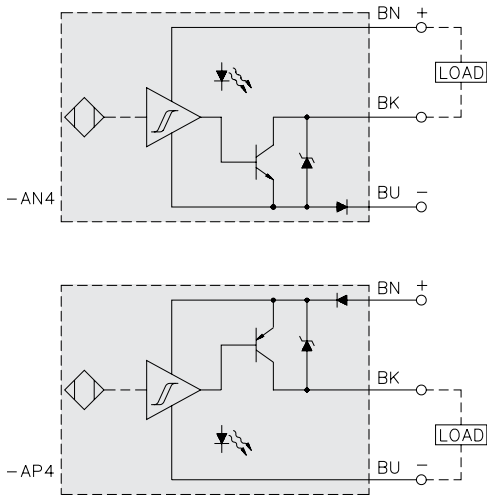

Wiring Diagram

We reserve the right to make technical alterations without prior notice.

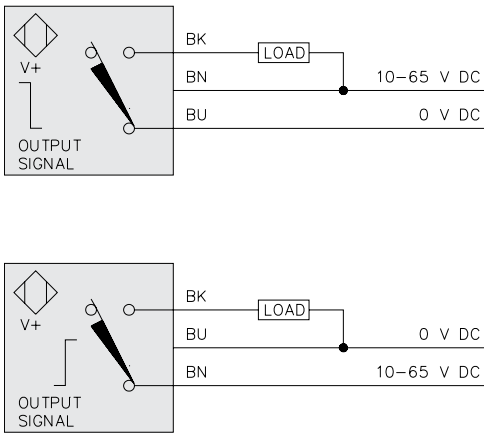
# Technical Reference | DC Wiring

## DC Outputs

### "AN4" and "AP4" 3-Wire DC Outputs




Electronic Output Circuit

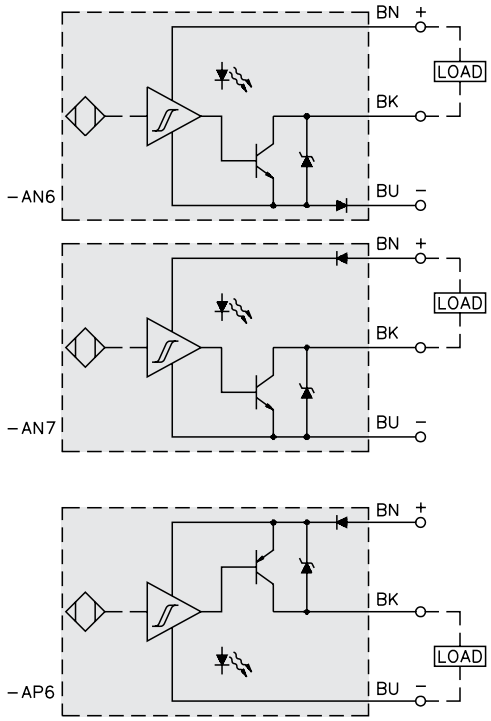



Wiring Diagram

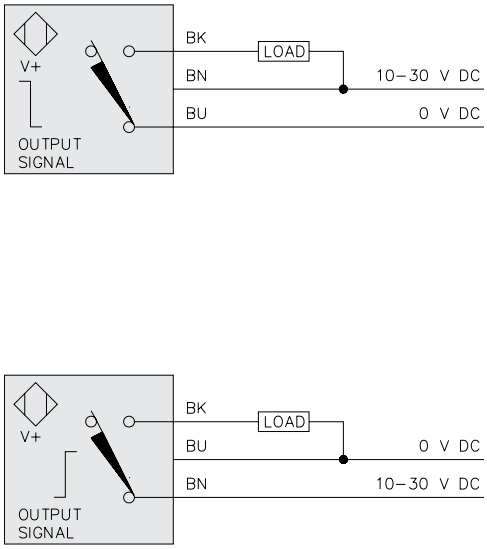
NPN transistor
(i.e. current sinking
negative switching)
N.O. output

PNP transistor
(i.e. current sourcing
positive switching)
N.O. output

### "AN6(7)" and "AP6" 3-Wire DC Outputs




Electronic Output Circuit




Wiring Diagram

NPN transistor
(i.e. current sinking
negative switching)
N.O. output

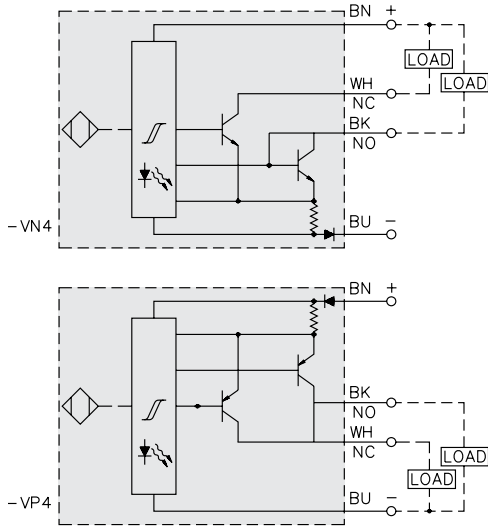
PNP transistor
(i.e. current sourcing
positive switching)
N.O. output

**Note:**
Order current sinking (NPN) sensors with the voltage range "7" only when low voltage drop for TTL gates is required. In all other cases, order sensors with voltage ranges "4" or "6".

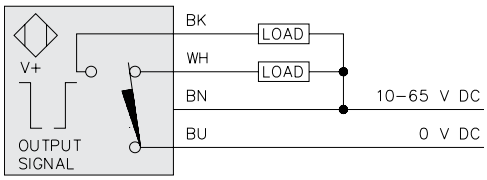
We reserve the right to make technical alterations without prior notice.

## DC Outputs

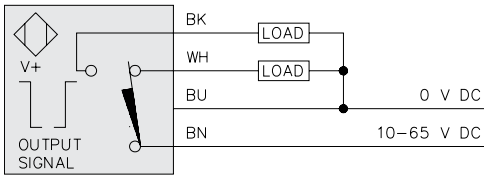
### "VN4" and "VP4" 4-Wire DC Outputs




Electronic Output Circuit



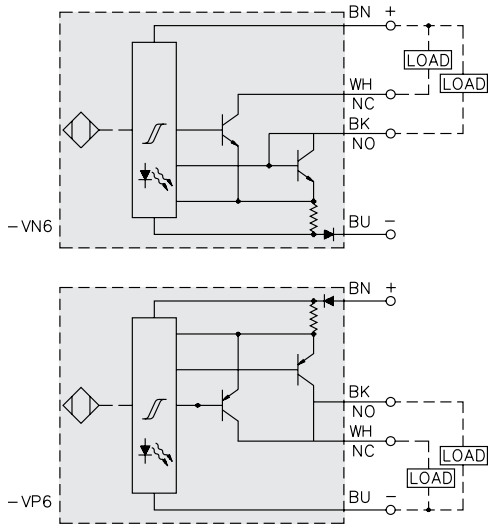

NPN transistor (i.e. current sinking negative switching) complementary output (SPDT)



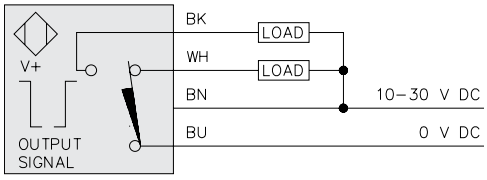

PNP transistor (i.e. current sourcing positive switching) complementary output (SPDT)

Wiring Diagram

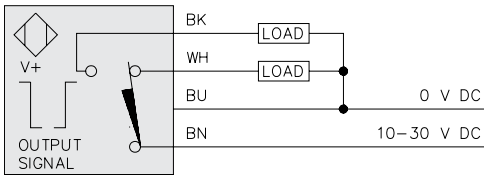
### "VN6" and "VP6" 4-Wire DC Outputs




Electronic Output Circuit




NPN transistor (i.e. current sinking negative switching) complementary output (SPDT)



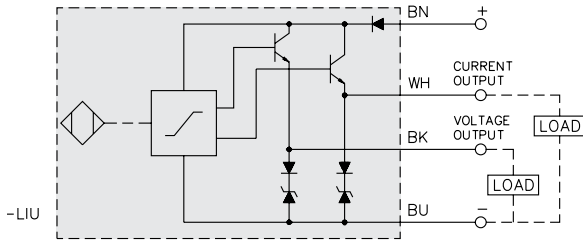

PNP transistor (i.e. current sourcing positive switching) complementary output (SPDT)

Wiring Diagram

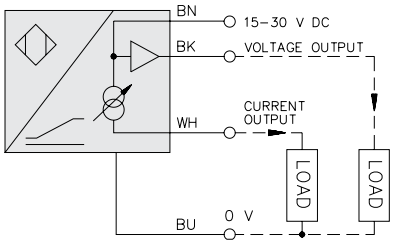
We reserve the right to make technical alterations without prior notice.

## DC Outputs

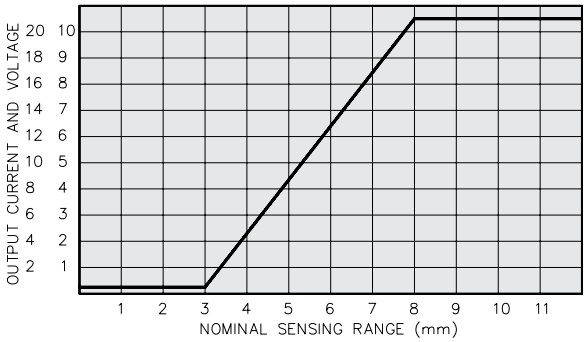
### "LIU" 4-Wire Linear Analog DC Output




Electronic Output Circuit




Wiring Diagram




Typical Response Curve

Linear Analog Output; Current and Voltage

## Series/Parallel Connection

**Logic functions with DC proximity sensors:**
Self-contained proximity sensors can be wired in series or parallel to perform such logic functions as AND, OR, NAND, NOR. The wiring diagrams show the hook-up of four sensors with NPN and PNP outputs. Take into account the accumulated no-load current and voltage drop per sensor added in the series string.

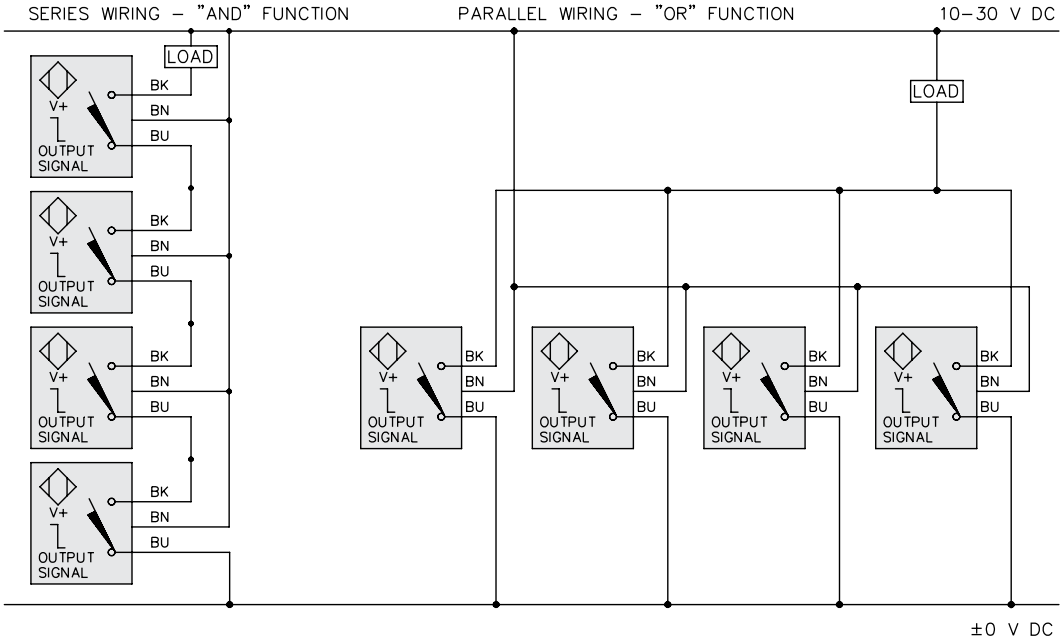
**Series-connection:**
N.O. sensors: AND Function
(target present, all sensors: load "on")
N.C. sensors: NOR Function
(target present, any sensor: load "off")

**Parallel-connection:**
N.O. sensors: OR Function
(target present, any sensor: load "on")
N.C. sensors: NAND Function
(target present, all sensors: load "off")

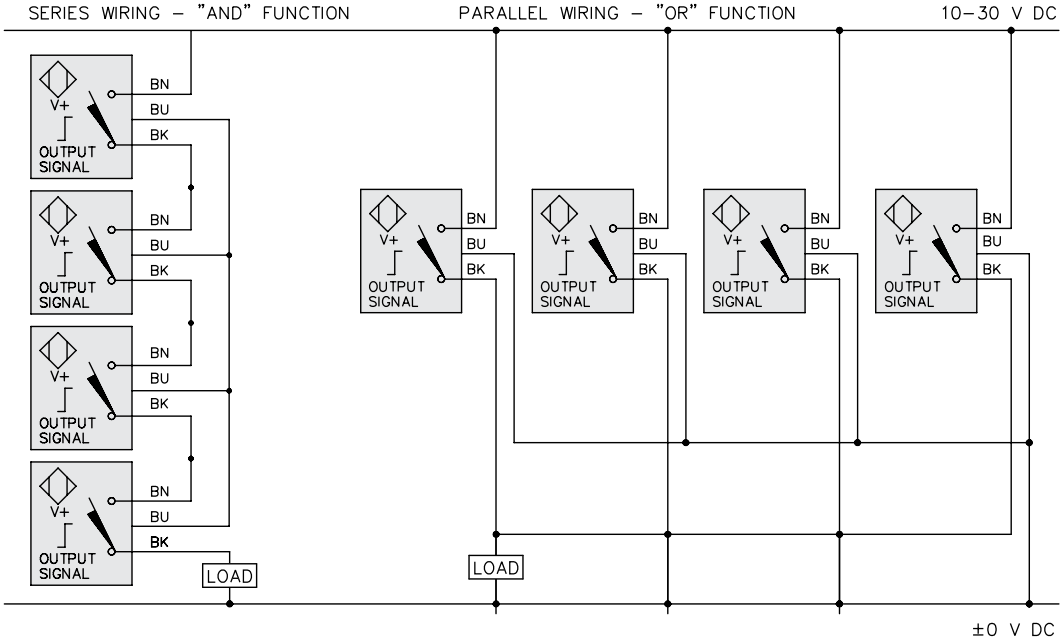
**Turck Tip**
To prevent the load from seeing the cumulative voltage drop of multiple 3-wire sensors in series, alternating polarity sensors can be used provided that the desired polarity is at the load. Wiring 3-wire sensors in series delays the load by the accumulated "time delay before availability" of all sensors in the string.

We reserve the right to make technical alterations without prior notice.

## Series/Parallel Connection




NPN Connection




PNP Connection

We reserve the right to make technical alterations without prior notice.

# Technical Reference | AC Wiring

## Short-Circuit and Overload Protection

Turck AC sensors with the Voltage Range designation "30" or "32" are short-circuit and overload protected (manual reset). These sensors incorporate a specially designed circuit which continuously monitors the ON state output current for a short-circuit or overload condition. If either of these fault conditions occurs, the output is latched OFF until the power has been cycled OFF and ON again.

Always select short-circuit and overload protected sensors whenever possible.

**CAUTION!**

**DO NOT**
operate an incandescent light bulb as a load. The extremely high cold current will cause an overload condition.

**DO NOT**
directly operate a motor with a proximity sensor. The inrush current can cause an overload condition. Always use a motor starter, relay or other appropriate device.

**DO NOT**
operate a proximity sensor from a wall outlet without a load. This is considered a "dead" short and can cause catastrophic damage to nonshort-circuit protected sensors.

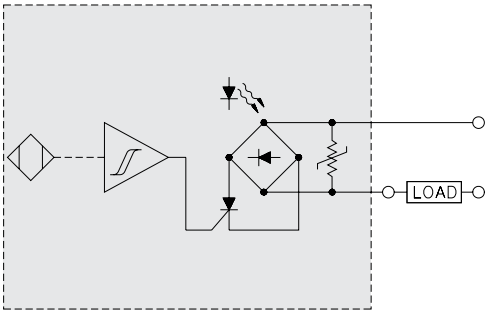
**DO NOT**
forget to ground. AC and AC/DC sensors must be grounded or there exists a potential of electrical shock.

## AC and AC/DC Outputs

These sensors are used as pilot devices for AC-operated loads such as relays, contactors, solenoids, etc. The solid-state output permits use of the sensors directly on the line in series with an appropriate load. They, therefore, replace mechanical limit switches without alteration of circuitry, where operating speed or environmental conditions require the application of solid-state sensors.

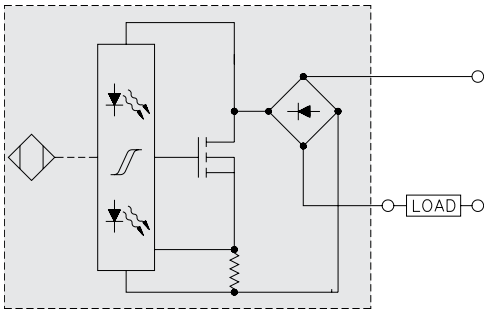
These sensors are typically available in a voltage range of 20-250 VAC. All models are available with either normally open (N.O.), normally closed (N.C.) or programmable outputs (from N.O. to N.C.). Careful consideration must be given to the voltage drop across AC/DC sensors when used at 24 VDC.

**AC/DC Outputs - "3", "31", "33", non-SCP**




Electronic Output Circuit

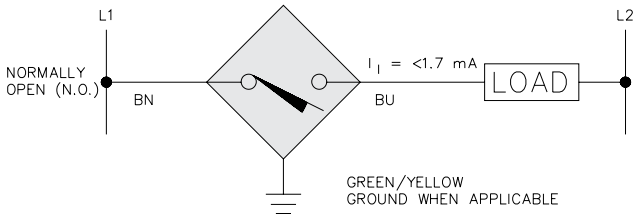
**AC/DC Outputs - "30", "32", SCP**

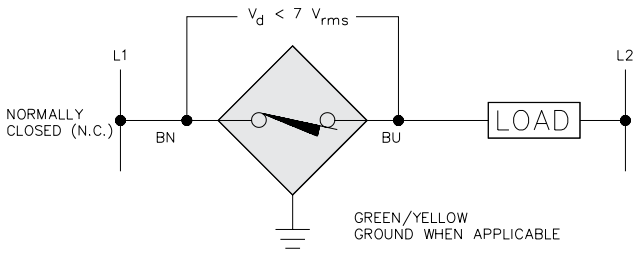



Electronic Output Circuit

We reserve the right to make technical alterations without prior notice.

## AC and AC/DC Outputs



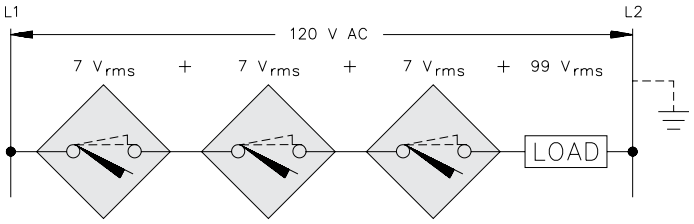

Electro-Mechanical Equivalents

Since the sensors are connected in series with the load by means of only two leads, an off-state current flows through the load in the magnitude of approximately 1.7 mA.

This, however, does not affect the proper and reliable performance of most AC loads. Another characteristic of solid state sensors is a 5 to 7 volt drop developed across the sensor in the ON state.

All models contain a snubber network to protect against transients from inductive loads, which can cause false triggering.

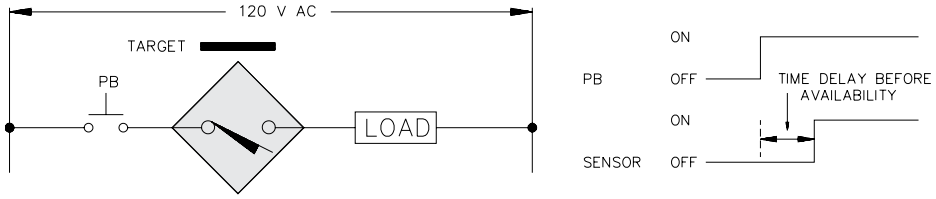
## Series Connection



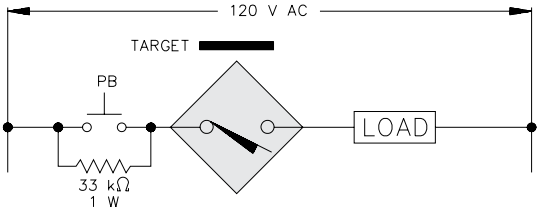

**Series-connection:**
N.O. sensors: AND Function
(target present, all sensors: load "ON")
N.C. sensors: NOR Function
(target present, any sensor: load "OFF")

The maximum number of sensors to be operated in series depends on the stability of the line voltage and the operating characteristics of the load in question. The supply voltage minus the accumulative on state voltage drop across the series connection (approximately 7 Vrms per sensor) must be ≥ the minimum required load voltage.

## Mechanical Switches in Series




**Problem:**
Mechanical switches in series with proximity sensors should always be avoided because they can create an open circuit, leaving the proximity sensor without power. In order to operate properly, a proximity sensor should be powered continuously. A typical problem encountered when the mechanical contact closes while the target is present is a short time delay that is experienced before the load energizes (time delay before availability).

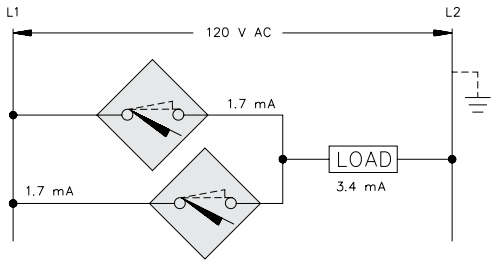



**Solution:**
A 33 kΩ, 1W by-pass resistor can be added across the mechanical contact to eliminate the time delay before availability. This will allow enough leakage current to keep the sensor ready for instantaneous operation.

We reserve the right to make technical alterations without prior notice.

# Technical Reference | AC Wiring

## Parallel Connection



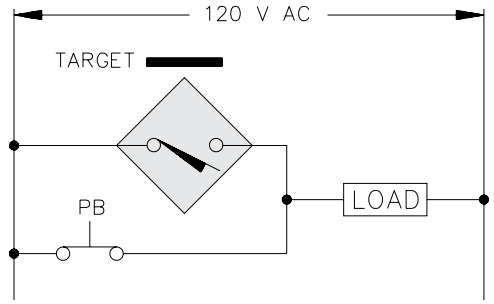

**Parallel Connection:**
N.O. sensors: OR Function
(target present, any sensor: load "ON")
N.C. sensors: NAND Function
(target present, all sensors: load "OFF")

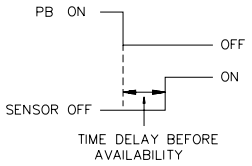
Wiring AC proximity sensors in parallel can result in inconsistent operation and should generally be avoided.

On-state voltage drop: With any sensor ON, the voltage across all other sensors is typically 7 Vrms. Since the minimum rated voltage for AC sensors is 20 Vrms, no other sensor with a target present can turn ON until the first sensor turns OFF. This transition is not instantaneous due to the time delay before availability, during which the load may drop out.

Leakage current through the load: This is equal to the total leakage of all sensors wired in parallel. Too much leakage into a solid state load can cause the input to turn ON and not turn OFF. Small relays may not drop out if the leakage current exceeds the relay's holding current.

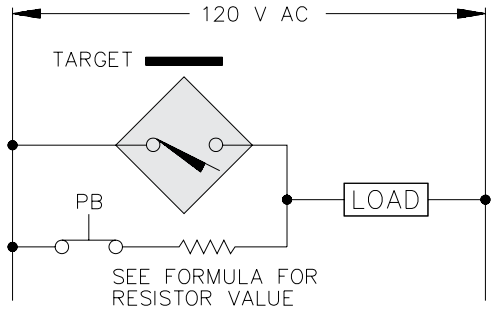
## Mechanical Switches in Parallel




**Problem:**
As previously discussed, proximity sensors should be powered continuously to avoid the time delay before availability during power-up.

With mechanical switches in parallel, the sensor is shorted out every time the contact is closed, leaving it without power. If the target is present when the mechanical contact is opened, a small delay will be experienced during which the load may drop out.




**Solution:**
This delay can be avoided by adding a resistor in series with the mechanical contact. The voltage drop developed across the resistor with the contact closed will be enough to keep the sensor active. Use the formula below to determine the value and wattage.

**Formula:**

$$R = \frac{\text{minimum operating voltage of proximity sensor}}{\text{load current at operating voltage}}$$

**Example:**

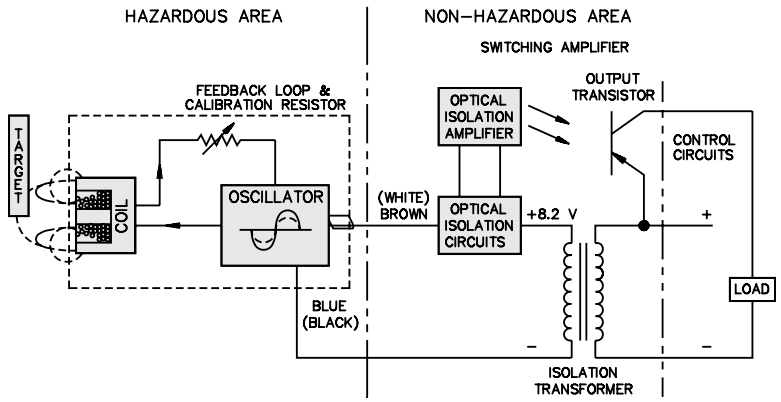
$$R = \frac{20\ \text{V}}{180\ \text{mA}}$$

$$R = 110\ \Omega$$

Minimum resistor wattage rating: E x I
Example: 20 V x 180 mA = 3.6 W≈ 5 watts recommended

We reserve the right to make technical alterations without prior notice.

## NAMUR (Y0 and Y1) Output




The NAMUR (Y0 and Y1) sensor behaves like a variable resistor when a target approaches. The impedance increases or decreases between 1 kΩ and 8 kΩ.

NAMUR sensors are 2-wire sensing devices used with switching amplifiers. Because of the small amount of energy needed to operate NAMUR sensors, they can be used in intrinsically safe applications.

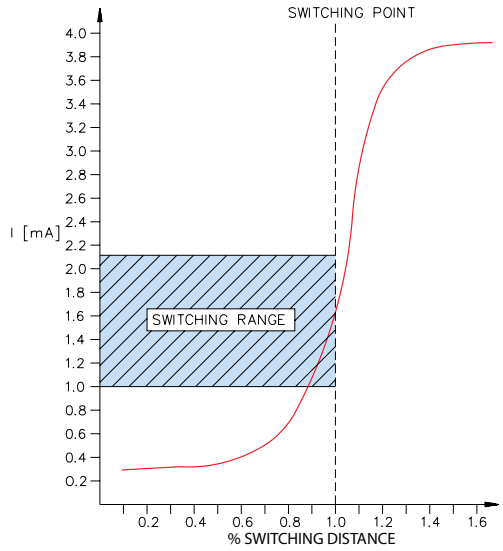
The operation of this sensor is similar to that of a variable resistor with a change in impedance as a target approaches the sensor. When no metal is being sensed, the inductive sensor is in a low impedance state and draws a current of more than 2.2 mA. When a metal target enters the high-frequency field radiated from the sensor head, the impedance increases as the target approaches. When fully damped, the sensor draws less than 1.0 mA.

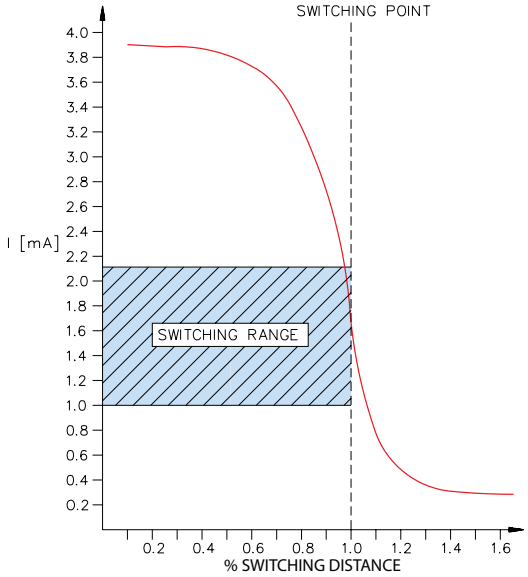
**Note: For capacitive and inductive magnet operated sensors, the current change characteristics are opposite.**

The current differential from the undamped to the damped (metal present) state is used to trigger an amplifier at a defined switching point. These sensors contain a relatively small number of components, which allows the construction of small devices and also assures a high degree of reliability.

In the undamped and damped state, the devices have fairly low impedance and are therefore, unaffected by most transients. NAMUR sensor circuits operate on direct current. Therefore, cable runs of several sensors may be run parallel to one another without mutual interference.

## Typical Output Curves



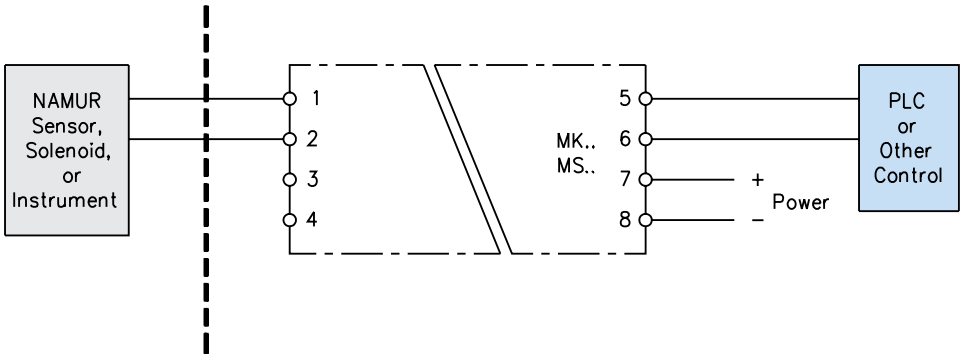




**Note:**
The typical curve of current versus sensing distance with 8.2 V DC supply and 1 kΩ source impedance. All NAMUR (Y0 and Y1) sensors are calibrated to pass through 1.55 mA at nominal sensing range ±10%.

We reserve the right to make technical alterations without prior notice.

# Technical Reference | Namur Wiring

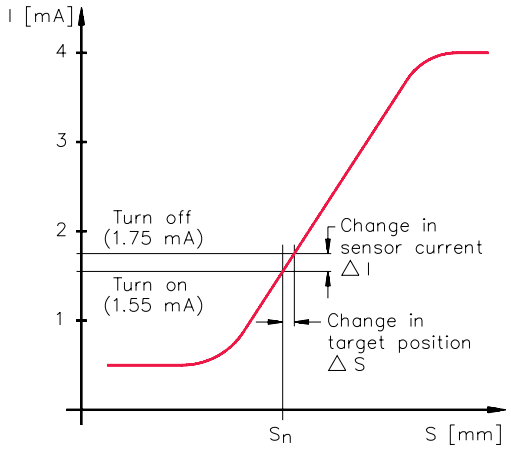
## Typical Intrinsically Safe Installation

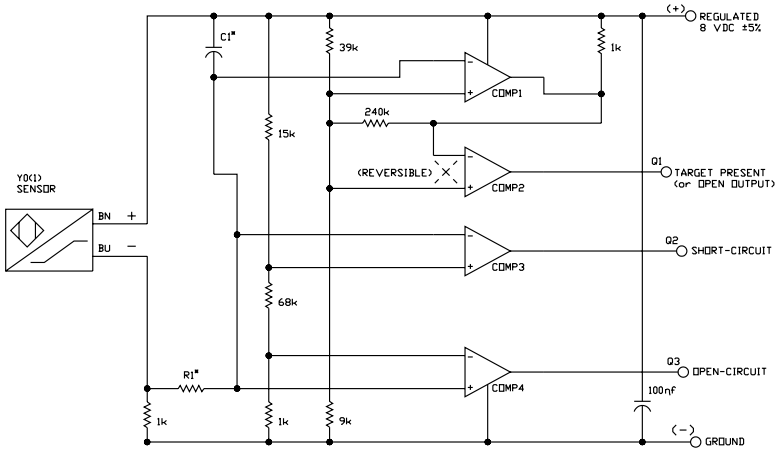



For guidance on installation of Turck intrinsically safe systems, refer to the Instrument Society of America publication ISA-RP12.6-1995, "Wiring Practices for Hazardous (Classified) Locations Instrumentation".

The complete line of Intrinsically Safe and Associated Apparatus can be found on Turck's website.

## Custom Interface Circuits




NAMUR sensors can operate outside the nominal operating values when the sensor is used in a nonhazardous area. The supply voltage limits are: $V_{min}$ = 5 VDC; $V_{max}$ = 30 VDC

Within this voltage range the load resistance $R_i$ must be adjusted for the supply voltage. The following table gives typical values:

| $V_{supply}$ (DC) | $R_i$ (kΩ ) | $I_{sn}$ (mA) | ΔI (mA) |
|---|---|---|---|
| 5 | 0.39 | ≈0.7 | ≈0.1 |
| 12 | 1.8 | ≈2.3 | ≈0.3 |
| 15 | 2.2 | ≈2.9 | ≈0.4 |
| 24 | 3.9 | ≈3.8 | ≈0.5 |

If these values are used, the current $I_{sn}$ corresponds to the rated operating distance (Sn) of the sensor. NAMUR sensors are short-circuit protected up to 15 VDC and reverse polarity protected up to 10 VDC.

We reserve the right to make technical alterations without prior notice.

| Third Party Approval and Certification Bodies | | |
|---|---|---|
| **Canadian Standards Association (CSA)** | CSA is a Canadian provider of product testing and certification services. CSA certifies products for use in hazardous (classified) locations as well as non-hazardous locations. CSA is accredited by the Standards Council of Canada and is also a US NRTL (Nationally Recognized Test Laboratory), an ATEX Notified Body, and an IECEx ExCB (IECEx Certification Body). | |
| **FM Approvals (FM)** | FM approves devices for use in hazardous (classified) locations as well as products in other loss prevention categories. FM is a US NRTL (Nationally Recognized Test Laboratory), an ATEX Notified Body, and an IECEx ExCB (IECEx Certification Body), and is SCC accredited for Canada. | |
| **Underwriters Laboratories (UL)** | UL is a US-based provider of product safety testing and certification services for a broad range of both industrial and consumer products. UL lists stand-alone devices, such as sensors, and recognizes system components, such as relays, PWAs, etc. UL is a US NRTL (Nationally Recognized Test Laboratory), an ATEX Notified Body, and an IECEx ExCB (IECEx Certification Body), and is SCC accredited for Canada. | |
| **ATEX** | ATEX is the name of the European Union Directive 2014/34/EU covering hazardous location equipment and environments. Product testing and certification is carried out by ATEX Notified Bodies, which are organizations that have been accredited by an EU member state to conduct such testing according to EN Standards. | |
| **IECEx** | The IECEx System is the International Electrotechnical Commission's (IEC) system for providing assurance that products meet specified IEC standards. The system aims to provide internationally accepted and standardized certifications. Product testing and certification are carried out by IECEx ExCBs (IECEx Certification Bodies). | |
| **CE** | CE marking is a certification mark that indicates conformity with health, safety, and environmental protection standards for products sold within the European Economic Area (EEA).[1] The CE marking is also found on products sold outside the EEA that are manufactured in, or designed to be sold in, the EEA. This makes the CE marking recognizable worldwide even to people who are not familiar with the European Economic Area. It is in that sense similar to the FCC Declaration of Conformity used on certain electronic devices sold in the United States. | |
| **CCC** | CCC stands for China Compulsory Certificate Mark and is required for products imported into China as well as products built in China. The CCC Mark was created in 2002 when China joined the World Trade Organization. The CCC applies to a wide range of products. As part of the approval process, product samples are subjected to conformity testing and once approved the manufacture will be subject to regular audits. The approval is required for sensors with operating voltages in excess of 36 volts. | |
| **RoHS** | RoHS stands for Restriction of Hazardous Substances. RoHS, also known as Directive 2002/95/EC, originated in the European Union and restricts the use of specific hazardous materials found in electrical and electronic products. All applicable products in the EU market after July 1, 2006 must pass RoHS compliance. | |

**Note:**
Turck products comply with many International standards. Consult factory for more information.

We reserve the right to make technical alterations without prior notice.

# Technical Reference | Compliances

## Hazardous Location Approvals

| The NAMUR sensors shown in this catalog are Intrinsically Safe per the following: | |
|---|---|
| **USA** | Class I, Division, Groups A, B, C, D; Class II, Division 1, Groups E, F, G; Class III, Division 1<br>Class I, Zone 0, AEx ia Group IIC T5<br>Intrinsically Safe when connected to an appropriately certified associated apparatus.<br>See Turck Control Drawing IS-1.118 for US installations. |
| **Canada** | Class I, Division, Groups A, B, C, D; Class II, Division 1, Groups E, F, G; Class III, Division 1<br>Ex ia Group IIC T4-T6<br>Intrinsically Safe when connected to an appropriately certified associated apparatus.<br>See Turck Control Drawing IS-1.203 for Canada installations. |
| **European Union** | II 1 G Exia IIC T4-T6 Ga<br>II 2 G Ex ia IIC T4-T6 Gb<br>II 1 D Ex ia T95°C or T115°C Da<br>Intrinsically Safe when connected to an appropriately ATEX-certified associated apparatus.<br>See ATEX certificate at Turck.com or contact factory for information on certified devices. |
| **IEC member countries per IECEx** | Zone 0 Ex ia IIC T4-T6<br>Ex ia IIC T4-T6<br>Ex ia D 20 T95°C or T115°C<br>Intrinsically Safe when connected to an appropriately IECEx-certified associated apparatus.<br>See IECEx certificate at Turck.com or contact factory for information on certified devices. |

| Many 3-wire DC sensors are approved for Class I, Division 2 hazardous locations: | |
|---|---|
| **USA and Canada** | Class I, Division 2, Groups A, B, C, D<br>Selected Sensors with –AN6X, -AP6X, -RN6X or -RP6X outputs.<br>Part numbers include /S1751 option code<br>Integral cables have ITC rating<br>See Control Drawing Ni-2.409 for US and Canada installations. |

| Standards for Intrinsically Safe systems may be found in the following publications: | |
|---|---|
| **USA** | National Electrical Code, ANSI/NFPA 70, Articles 504 and 505<br>Underwriters Laboratories Standard UL 913<br>Underwriters Laboratories Standard UL 60079-11<br>FM Approvals Standard Class 3610 |
| **Canada** | Canadian Electrical Code, C22.1 Section 18 and Appendix F<br>CSA C22.2 No. 157<br>CSA C22.2 No. 60079-11 |
| **Europe (EU)** | EN 60079-11 |
| **IECEx** | IEC 60079-11 |

We reserve the right to make technical alterations without prior notice.

## Hazardous Location Definitions

| Class/Division Classifications: | |
|---|---|
| **Class I** | Locations in which flammable gases or vapors exist or may be present in the air in quantities sufficient to produce explosive or ignitable mixtures. |
| **Class II** | Locations that are hazardous because of the presence of combustible dust. |
| **Class III** | Locations that are hazardous because of the presence of easily ignitable fibers or flyings, but in which such fibers or flyings are not likely to be suspended in the air in quantities sufficient to produce ignitable mixtures. |
| **Division 1** | Locations in which hazardous concentrations in the air exist continuously, intermittently, or periodically under normal operating conditions. |
| **Division 2** | Locations in which hazardous materials are handled, processed or used, but in which they are normally confined within closed containers or closed systems from which they can escape only in case of accidental rupture or breakdown. |
| **Group A** | Atmospheres containing acetylene. |
| **Group B** | Atmospheres containing hydrogen, fuel and combustible process gases containing more than 30% hydrogen by volume, or gases or vapors of equivalent hazard such as butadiene, ethylene oxide, propylene oxide and acrolein. |
| **Group C** | Atmospheres such as ethyl ether, ethylene, acetaldehyde, cyclopropane, or gases or vapors of equivalent hazard. |
| **Group D** | Atmospheres such as acetone, alcohol, ammonia, benzene, butane, cyclopropane, ethylene dichloride, gasoline, hexane, lacquer solvent vapors, methane, natural gas, naphtha, propane, xylene, or gases or vapors of equivalent hazard. |
| **Group E** | Atmospheres containing combustible metal dusts, including aluminum, magnesium, and their commercial alloys, and other combustible dusts with similarly hazardous characteristics. |
| **Group F** | Atmospheres containing combustible carbonaceous dusts, including carbon black, charcoal and coal. |
| **Group G** | Atmospheres containing other combustible dusts, such as chemical, agricultural or plastic dusts. |

| Class I Zone Classifications: | |
|---|---|
| **Zone 0** | Locations in which ignitable mixtures exist continuously or for long periods of time. |
| **Zone 1** | Locations in which ignitable mixtures are likely to occur during normal operation. |
| **Zone 2** | Locations in which ignitable mixtures are not likely to occur during normal operation. |
| **Gas Group IIC** | Atmospheres containing acetylene or hydrogen, or gases and vapors of equivalent hazard. |
| **Gas Group IIB** | Atmospheres containing ethylene, or gases and vapors of equivalent hazard. |
| **Gas Group IIA** | Atmospheres containing propane, or gases and vapors of equivalent hazard. |

We reserve the right to make technical alterations without prior notice.

# Technical Reference | Protection

## Enclosure Ratings

| NEMA 250-1991 | |
|---|---|
| **NEMA 1** | Enclosures are intended for indoor use primarily to provide a degree of protection against limited amounts of falling dirt. |
| **NEMA 3** | Enclosures are intended for outdoor use primarily to provide a degree of protection against rain, sleet, windblown dust, and damage from external ice formation. |
| **NEMA 4** | Enclosures are intended for indoor or outdoor use primarily to provide a degree of protection against windblown dust and rain, splashing water, hose-directed water, and damage from external ice formation. |
| **NEMA 4X** | Enclosures are intended for indoor or outdoor use primarily to provide a degree of protection against corrosion, windblown dust and rain, splashing water, hose-directed water and damage from external ice formation. |
| **NEMA 6** | Enclosures are intended for indoor or outdoor use primarily to provide a degree of protection against hose-directed water, the entry of water during occasional temporary submersion at a limited depth, and damage from external ice formation. |

| IEC 529 | |
|---|---|
| **IP 40** | Protection against solid bodies larger than 1 mm. No protection against liquids. |
| **IP 65** | Dust tight. Protection against water spray from all directions at 14.2 PSI through a 12.5 mm nozzle. |
| **IP 67** | Dust tight. Protection against the effects of immersion in water for 30 minutes at 1 meter. |
| **IP 68** | Dust tight. Protection against the effects of indefinite immersion in water at a pressure specified by the manufacturer.<br>Ex. Turck's IP 68 definitions is IP 67 plus.<br>■ 24 hours at 70 °C<br>■ 24 hours at -25 °C<br>■ 7 days at 1 meter under water at a constant temperature<br>■ 10 cycles +70 °C and -25 °C, minimum of 1 hour at each temperature |
| **IP 69K** | Hot steam jet cleaning per EN 60529 (IP enclosure ratings) and DIN 40050-9. |

**Turck Tip**

**For oily environments**

Use plastic sensors with quick disconnects and Turck TPU "/S90" cordsets.

**For washdown environments**

Use Turck's Uprox+ Washdown Sensors and appropriate mating cordsets.

We reserve the right to make technical alterations without prior notice.

## Material Descriptions

| Plastics | |
|---|---|
| **ABS - Acrylonitrile-Butadiene-Styrene** | Impact resistant, rigid. Resistant to aqueous acids, alkalis, salts, alcohols, oils, concentrated hydrochloric acid; disintegrated by concentrated sulfuric or nitric acids, esters, ketones |
| **CPE, Thermoset (rubber cables)** | Excellent resistance to oils, acids, chemicals, ozone, extreme temperatures, cuts, abrasions; flame retardant in welding applications |
| **PA - Polyamide (nylon)** | Good mechanical strength, temperature resistant |
| **PA, Amorphous (Trogamid T)** | Similar properties to nylon, but transparent. Hard, rigid, good chemical resistance |
| **PA 12-GF30** | Nylon 12, 30% glass filled |
| **PA 66-GF25-V0** | Nylon 66, 25% glass filled, self-extinguishing |
| **PBT - Polybutylene Terephthalate (when glass reinforced, Crastin®)** | Good mechanical strength; resistant to abrasion; resistant to alcohols, oils, some acids, trichloroethylene |
| **PBT-GF30-V0** | PBT, 30% glass filled, self-extinguishing |
| **PEI - Polyetherimide (Ultem®)** | Excellent resistance to most commercial automotive fluids, fully hydrogenated hydrocarbons, alcohols, weak aqueous solutions. Withstands higher temperatures. |
| **POM - Polyoxymethylene / Polyacetal (Delrin®)** | High impact resistance; good mechanical strength; good resistance to oils, alcohols, alkalis, gasoline, xylene, toluene. Dielectric constant 3.7 |
| **PP - Polypropylene** | Excellent resistance against chemicals including acids, solvents and solutions. High temperature resistance and good mechanical strength |
| **PTFE - Polytetrafluoroethylene** | Optimum resistance against high temperature and chemicals; low dielectric constant (2.0) |
| **TPU, Thermoplastic Polyurethane** | Elastic, resistant to abrasion, impact-resistant, oil- and grease-tolerant |
| **PVC - Polyvinylchloride** | Good mechanical strength, viscosity to impact; resistant to acids, alkalis |
| **PVC, irradiated** | Heat and chemical resistant, withstands short-term temperatures to 482° F |
| **PVDF - Polyvinylideneflouride (Kynar®)** | Resistant to high and low temperatures, good resistance to chemicals (similar to PTFE), high mechanical strength |
| **Silicon** | For use at high or low ambient temperatures (-50 to +180 °C), moderate mechanical strength, average resistance against alkalis, acids, oils, and solvents |
| **IRPA12 - Irradiated Polyamide (nylon)** | Good mechanical strength, temp. resistant |
| **EPTR - Elastomer, Polymer Thermal Plastic** | Good fluid resistance |
| **TROG - Trogamid T** | Hard, rigid, good chemical resistance |

| Metals | |
|---|---|
| **AG** | Armorguard® |
| **SS** | Stainless Steel |
| **CPB** | Chrome Plated Brass |
| **CuZn - Brass** | Generally good resistance to industrial atmospheres |
| **GD - AlSi12 - Aluminum, die-cast** | Low specific weight, long-life characteristics |
| **GD - ZnAl4Cu1 (Z410) - Zinc, die-cast** | Long-life characteristics |
| **TC** | PTFE Coated |
| **WG** | Weldguard® |
| **AL** | Anodized Aluminum |
| **SF - Stoneface®** | High abrasion resistance, excellent for MIG welding applications, high heat and weld flow immunity |
| **TS - Tool Steel** | Excellent durability |

We reserve the right to make technical alterations without prior notice.

# Technical Reference | General Specifications

## Chemical Compatibility

The information in this chart is derived from reputable industry sources and is to be used only as a guide in selecting materials suitable for your application. Turck does not warrant in any fashion that the information in this chart is accurate or complete, or that any material is suitable for any purpose.

Most ratings listed here apply to a 48-hour exposure period.

Ratings: A - No effect
B - Minor effect
C - Moderate effect
D - Severe effect
φ - No specific data, but probable rating.

| Housing Style | ABS | Trog. T | PA 12 | PBT | PEI | POM | PP | PTFE | PUR | PVC | PVDF | 306 SS | Al | Brass | Zinc |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ammonia, liquid** | B | B | A | B | D | C/D | A | A | C | A | A | B | A | D | A |
| **Chlorine anhydrous liquid** | nd | nd | D | D | nd | C | D | A | C | D | A | C | D | D | nd |
| **De-ionized water** | nd | nd | A | nd | A | nd | A | A | nd | A | A | A | A | A | nd |
| **Formic acid** | D | D | D | A | nd | C | A | A | C | A | A | A/B | A | D | D |
| **Gasoline** | D | A | A | A | A | A | C | A | A | C | A | A | A | A | nd |
| **Hydrochloric acid <40%** | A | A/B | D | A | A | C | C | A | D | B | A | D | D | D | D |
| **Hydrofluoric acid <50%** | C | D | D | B | A | D | A | A | C | B | A | D | D | D | nd |
| **Methanol** | D | D | B | A | A | A | A | A | B | A | A | A | A | A | A |
| **Phosphoric acid <40%** | B(C) | D | B | A | A | D | A | A | Dφ | B | B | D | C | D | D |
| **Potassium hydroxide <15%** | A | A | C | B | A | B | A | A | C | A | A | B | D | D | nd |
| **Sodium hydroxide <55%** | A | A | C | B | A | B | A | A | B | A | D | B | D | D | D |
| **Sodium hypochlorite ≤13%** | B | nd | B | A | nd | C | A | A | B | A | A | C | D | D | A |
| **Sulfuric acid <75%** | B | A | D | A | A | D | A | A | C | A | A | D | D | D | D |
| **Toluene** | D | A | A | A | A | A | C | A | C | D | A | A | A | A | nd |
| **Trichloroethylene** | D | A | C | A | nd | B | | A | D | D | B | A/B | D | A | A |

We reserve the right to make technical alterations without prior notice.

## Maximum Tightening Torque Specifications

The tightening torque should be considered for all threaded sensors to prevent premature failures of sensors due to stresses on the barrel and/or internal electronics. The values below are the absolute maximum ratings and apply only to the mounting hardware provided with each sensor. It is recommended to always allow for tolerances when specifying a tightening torque to prevent accidental over-tightening of the sensor. Liquid thread sealants of an anaerobic base, such as Loctite, are recommended if strong vibrations are likely.

Caution: Sensor barrels are typically brass. Consider break torque when selecting grade of thread sealant.

| Barrel Size | Metal Barrel | Plastic Barrel |
|---|---|---|
| **5 mm** | 5 Nm (3.7 ft-lb) | - - - - |
| **8 mm** | 5 Nm (3.7 ft-lb) | - - - - |
| **8 mm (M08 Ferrite)** | 7 Nm (5.2 ft-lb) | - - - - |
| **12 mm** | 10 Nm (7.4 ft-lb) | 1 Nm (0.7 ft-lb) |
| **18 mm** | 25 Nm (18 ft-lb) | 2 Nm (1.4 ft-lb) |
| **30 mm** | 75 Nm (55 ft-lb) | 5 Nm (3.7 ft-lb) |
| **47 mm** | 90 Nm (66 ft-lb) | - - - - |

## Fahrenheit to Celsius Temperature

* Water Freezing Point
** Water Boiling Point
For temperature conversions not given use the following formulas:
°Celsius = (°Fahrenheit - 32) x .556
°Fahrenheit = (°Celsius x 1.8) + 32

| Degrees Fahrenheit | Degrees Celsius |
|---|---|
| -70 | -56.7 |
| -65 | -53.9 |
| -60 | -51.2 |
| -55 | -48.4 |
| -50 | -45.6 |
| -45 | -42.8 |
| -40 | -40.0 |
| -35 | -37.3 |
| -30 | -34.5 |
| -25 | -31.7 |
| -20 | -28.9 |
| -15 | -26.1 |
| -10 | -23.4 |
| 0 | -17.8 |
| 5 | -15.0 |
| 10 | -12.2 |
| 15 | -9.5 |
| 20 | -6.7 |
| 25 | -3.9 |
| 30 | -1.1 |
| *32 | *0.0 |
| 35 | 1.7 |
| 40 | 4.4 |
| 45 | 7.2 |
| 50 | 10.0 |
| 55 | 12.8 |
| 60 | 15.6 |
| 65 | 18.3 |
| 70 | 21.1 |

| Degrees Fahrenheit | Degrees Celsius |
|---|---|
| 75 | 23.9 |
| 80 | 26.7 |
| 85 | 29.2 |
| 90 | 32.2 |
| 95 | 35.0 |
| 100 | 37.8 |
| 105 | 40.6 |
| 110 | 43.4 |
| 115 | 46.1 |
| 120 | 48.9 |
| 125 | 51.7 |
| 130 | 54.5 |
| 135 | 57.3 |
| 140 | 60.0 |
| 145 | 62.8 |
| 150 | 65.6 |
| 155 | 68.4 |
| 160 | 71.2 |
| 165 | 73.9 |
| 170 | 76.7 |
| 175 | 79.5 |
| 180 | 82.3 |
| 185 | 85.1 |
| 190 | 87.8 |
| 195 | 90.6 |
| 200 | 93.4 |
| 205 | 96.2 |
| 210 | 99.0 |
| **212 | **100.0 |

## Drill Hole Sizes for Metric Threads

| Thread Size | Pitch | Thru Hole (mm) | Tap Hole Dia. (mm) | Thru Hole (in) | Tap Hole Dia. (in) |
|---|---|---|---|---|---|
| **M5 x 0.5** | 0.5 | 5.0 | 4.5 | 13/64 | 5/32 |
| **M8 x 1** | 1.0 | 8.0 | 7 | 21/64 | 1/4 |
| **M12 x 1** | 1.0 | 12.0 | 11 | 31/64 | 13/32 |
| **M18 x 1** | 1.0 | 18.0 | 17 | 23/32 | 41/64 |
| **M30 x 1.5** | 1.5 | 30.0 | 28 | 1-3/16 | 1-5/64 |
| **PG 13.5** | 1.41 | 20.4 | 19 | 13/16 | 23/32 |
| **PG 36** | 1.59 | 47.0 | 45.5 | 1-7/8 | 1-47/64 |

We reserve the right to make technical alterations without prior notice.

# Technical Reference | Conversions

## Millimeters Equivalents of Decimals and Fractions

Notes:
1M = 100 cm = 1000 mm

For conversions not given use the following formulas:
Millimeters = Inches x 25.4
Inches = Millimeters ÷ 25.4

| Millimeters | Inches | Fraction |
|---|---|---|
| 0.10 | 0.0039 | |
| 0.20 | 0.0079 | |
| 0.30 | 0.0118 | |
| 0.40 | 0.0157 | |
| 0.50 | 0.0197 | |
| 0.60 | 0.0236 | |
| 0.70 | 0.0276 | |
| 0.80 | 0.0315 | |
| 0.90 | 0.0354 | |
| 1.00 | 0.0394 | |
| 1.59 | 0.0625 | 1/16 |
| 2.00 | 0.0787 | |
| 3.00 | 0.1181 | |
| 3.18 | 0.1250 | 1/8 |
| 4.00 | 0.1575 | |
| 4.76 | 0.1875 | 3/16 |
| 5.00 | 0.1969 | |
| 6.00 | 0.2362 | |
| 6.35 | 0.2500 | 1/4 |
| 7.00 | 0.2756 | |
| 7.94 | 0.3125 | 5/16 |
| 8.00 | 0.3150 | |
| 9.00 | 0.3543 | |
| 9.53 | 0.3750 | 3/8 |
| 10.00 | 0.3937 | |
| 11.00 | 0.4331 | |
| 11.11 | 0.4375 | 7/16 |
| 12.00 | 0.4724 | |
| 12.70 | 0.5000 | 1/2 |
| 13.00 | 0.5512 | |
| 14.00 | 0.5512 | |
| 14.29 | 0.5625 | 9/16 |
| 15.00 | 0.5906 | |
| 15.88 | 0.6250 | 5/8 |
| 16.00 | 0.6299 | |
| 17.00 | 0.6693 | |
| 17.46 | 0.6875 | 11/16 |
| 18.00 | 0.7087 | |
| 19.00 | 0.7480 | |
| 19.05 | 0.7500 | 3/4 |
| 20.00 | 0.7874 | |

| Millimeters | Inches | Fraction |
|---|---|---|
| 20.64 | 0.8125 | 13/16 |
| 21.00 | 0.8268 | |
| 22.00 | 0.8661 | |
| 22.23 | 0.8750 | 7/8 |
| 23.00 | 0.9055 | |
| 23.81 | 0.9375 | 15/16 |
| 24.00 | 0.9449 | |
| 25.40 | 1.000 | 1 |
| 26.00 | 1.024 | |
| 27.00 | 1.063 | |
| 28.00 | 1.102 | |
| 29.00 | 1.142 | |
| 30.00 | 1.181 | |
| 31.00 | 1.220 | |
| 32.00 | 1.260 | |
| 33.00 | 1.299 | |
| 34.00 | 1.339 | |
| 35.00 | 1.378 | |
| 36.00 | 1.417 | |
| 37.00 | 1.457 | |
| 38.00 | 1.496 | |
| 39.00 | 1.535 | |
| 40.00 | 1.575 | |
| 41.00 | 1.614 | |
| 42.00 | 1.654 | |
| 43.00 | 1.693 | |
| 44.00 | 1.732 | |
| 45.00 | 1.772 | |
| 46.00 | 1.811 | |
| 47.00 | 1.850 | |
| 48.00 | 1.890 | |
| 49.00 | 1.929 | |
| 50.00 | 1.969 | |
| 51.00 | 2.008 | |
| 52.00 | 2.047 | |
| 53.00 | 2.087 | |
| 54.00 | 2.126 | |
| 55.00 | 2.165 | |
| 56.00 | 2.205 | |
| 57.00 | 2.244 | |
| 58.00 | 2.283 | |

| Millimeters | Inches | Fraction |
|---|---|---|
| 59.00 | 2.323 | |
| 60.00 | 2.362 | |
| 61.00 | 2.402 | |
| 62.00 | 2.441 | |
| 63.00 | 2.480 | |
| 64.00 | 2.520 | |
| 65.00 | 2.559 | |
| 66.00 | 2.598 | |
| 67.00 | 2.638 | |
| 68.00 | 2.677 | |
| 69.00 | 2.717 | |
| 70.00 | 2.756 | |
| 71.00 | 2.795 | |
| 72.00 | 2.835 | |
| 73.00 | 2.874 | |
| 74.00 | 2.913 | |
| 75.00 | 2.953 | |
| 76.00 | 2.992 | |
| 77.00 | 3.031 | |
| 78.00 | 3.071 | |
| 79.00 | 3.110 | |
| 80.00 | 3.150 | |
| 81.00 | 3.189 | |
| 82.00 | 3.228 | |
| 83.00 | 3.268 | |
| 84.00 | 3.307 | |
| 85.00 | 3.346 | |
| 86.00 | 3.386 | |
| 87.00 | 3.425 | |
| 88.00 | 3.465 | |
| 89.00 | 3.504 | |
| 90.00 | 3.543 | |
| 91.00 | 3.583 | |
| 92.00 | 3.622 | |
| 93.00 | 3.661 | |
| 94.00 | 3.701 | |
| 95.00 | 3.740 | |
| 96.00 | 3.780 | |
| 97.00 | 3.819 | |
| 98.00 | 3.858 | |
| 99.00 | 3.898 | |
| 100.00 | 3.937 | |

We reserve the right to make technical alterations without prior notice.

**Axial Approach**
The approach of the target with its center maintained on the sensor reference axis.

**Axially Polarized Ring Magnet**
A ring magnet whose poles are the two flat sides of the disk. Mounted on pistons for permaprox® cylinder position sensing through nonmagnetic cylinder walls.

**Capacitive Proximity Sensor**
A proximity sensor producing an electrostatic field that senses conductive targets and nonconductive materials having a dielectric constant of >1 within its sensing zone.

**Complementary Output**
Two outputs, one normally open and one normally closed, that can be used simultaneously.

**Continuous Load Current**
The maximum current allowed to continuously flow through the sensor output in the ON state.

**Correction Factors**
Percentage of the rated operating distance (Sn) that represents the operating distance for targets constructed from materials other than mild steel (mild steel's correction factor is 1.0).

**Differential Travel (Hysteresis)**
The difference between the operating point as the target approaches the sensor face, and the release point as the target moves away. Given as a percentage of the operating distance (Sn).

**Dynamic Output**
A sensor output that stays energized for a set duration of time, independent of the time the target is present (one-shot).

**Embeddable (Shielded) Proximity Sensor**
A sensor that can be flush-mounted in any material without that material influencing the sensing characteristics.

**Free Zone**
The space around a proximity sensor that must be kept free of any material capable of affecting the sensing characteristics.

**Inductive Proximity Sensor**
A proximity sensor producing an electromagnetic field that senses only metal targets within its sensing zone.

**Inductive Magnet Operated Sensor (Permaprox®)**
A solid-state proximity sensor using inductive technology to detect magnetic fields, giving a switch point output similar to that of a inductive proximity sensor.

**Inrush Current**
The maximum instantaneous load current that a sensor can tolerate when switching the output. Commonly seen with capacitive loads.

**IP Rating**
Ingress Protection rating per IEC 529.

**Lateral Approach**
The approach of a target perpendicular to the sensor reference axis.

**Load**
A device or circuit that is operated by the energy output of another device such as a proximity sensor.

**M Threading**
ISO 68 Metric straight threading, designated as "Nominal Size" X "Pitch", in mm. (Ex. M5X0.5)

**Minimum Load Current**
For 2-Wire sensors, the minimum load current defines the smallest specified current that a sensor requires for reliable operation.

**NAMUR**
The acronym for a European standards organization.

**NAMUR Sensor**
A 2-wire variable-resistance DC sensor whose operating characteristics conform to DIN 19 234. Requires a remote amplifier for operation. Typically used for intrinsically safe applications.

**NEMA Rating**
An enclosure rating per NEMA Standard 250.

**No-Load Current**
The current drawn by a DC proximity sensor from the power supply when the outputs are not connected to a load.

**Nonembeddable (Nonshielded) Proximity Sensor**
A sensor is nonembeddable when a specified free zone must be maintained around its sensing face in order not to influence the sensing characteristics.

**Normally Closed (N.C.)**
The output is OFF when the target is detected by the sensor.

**Normally Open (N.O.)**
The output is ON when the target is detected by the sensor.

**NPN Output (Current Sinking)**
A transistor output that switches the common or negative voltage to the load. Load is between sensor and positive supply voltage.

**NPSM Threading**
American National Standard Straight Pipe Thread for Free-Fitting Mechanical Parts.

**NPT Threading**
American National Standard Taper Pipe Thread.

We reserve the right to make technical alterations without prior notice.

# Technical Reference | Glossary

**Off-State (Leakage) Current**
The current that flows through the load circuit when the sensor is in the OFF-state. Also known as leakage or residual current.

**Operating Distance**
A distance at which the target approaching the sensing face along the reference axis causes the output signal to change.

**PG Threading**
Steel conduit threading per German standard DIN 40 430.

**PNP Output (Current Sourcing)**
Transistor output that switches the positive voltage to the load. Load is between sensor and common.

**Programmable Output**
Sensor output whose N.O. or N.C. function can be selected by means of a jumper or specific terminal connection.

**Radially Polarized Ring Magnet**
A ring magnet whose poles are the inner and outer diameter rings.

**Rated Operating Distance (Sn)**
A conventional quantity used to designate the operating distance. It does not take into account either manufacturing tolerances or variations due to external conditions such as operating voltage and temperature.

**Reference Axis**
An axis perpendicular to the sensing face and passing through its center.

**Repeatability**
The deviation in the actual operating distance measured at a constant temperature and voltage over an 8-hour period. It is expressed as a percentage (%) of the rated operating distance (Sn).

**Response frequency**
The maximum rate that the output can change in response to the input and still maintain linearity.

**Response Time**
The time required for the device switching element to respond after the target enters or exits the sensing zone.

**Reverse Polarity Protection**
Internal components that prevent damage to the sensor due to the incorrect connection of the power supply.

**Ripple**
The alternating component remaining on a DC signal after rectifying, expressed in percentage of rated voltage.

**Sensing Face**
The surface of the proximity sensor through which the electromagnetic (or electrostatic) field emerges.

**Short-Circuit Protection**
The ability of a sensor to withstand a shorted condition (no current-limiting load connected) without damage.

**Slew Rate**
The rate of change of the output voltage with respect to a step change in input. A change in output of 0 to 10 volts at a slew rate of 1.25 V/ms would take 8 ms to slew to the new value.

**Solid State**
Pertains to devices using semiconductors instead of mechanical parts.

**Static Output**
A sensor output that stays energized as long as the target is present.

**Switching Frequency**
The maximum number of times per second that the sensor can change state (ON and OFF) under ideal conditions, usually expressed in Hertz (Hz).

**Time-Delay Before Availability**
The length of time after power is applied to the sensor before it is ready to operate correctly, expressed in milliseconds (ms).

**Uprox Sensor®**
An inductive proximity sensor that detects all metals at the same range. Uprox sensors are inherently weld-field immune, operate over a wider temperature range and have a higher switching frequency than standard inductive sensors.

**Uprox+ Sensor®**
Same basic characteristics as the Uprox Sensor, but with a redesigned multi coil system which provides increased sensing capabilities. Uprox+ also carries an IP68 environmental rating

**Weld-Field Immunity (WFI)**
The ability of a sensor not to false-trigger in the presence of strong magnetic fields typically produced by resistance welders.

**Wire-Break Protection**
Results in the output being OFF on a DC sensor if either supply wire is broken.

We reserve the right to make technical alterations without prior notice.

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# Warranty Terms and Conditions

## RISK OF LOSS

Delivery of the equipment to a common carrier shall constitute delivery to the Purchaser and the risk of loss shall transfer at that time to Purchaser. Should delivery be delayed due to an act or omission on the part of the Purchaser, risk of loss shall transfer to the Purchaser upon notification by Turck Inc. that the order is complete and ready for shipment.

## WARRANTIES

Turck Inc. (hereinafter "Turck") offers five (5) WARRANTIES to cover all products sold. They are as follows:

1) The **12-MONTH WARRANTY** is available for the products listed - generally those not covered by **LIFETIME**, **5-YEAR**, **24-MONTH** or **18-MONTH** warranty. No registration required.
2) The **18-MONTH WARRANTY** is available for the products listed - generally those not covered by **LIFETIME** or **5-YEAR WARRANTY**. No registration is required.
3) The **24-MONTH WARRANTY** is available for the products listed - generally those not covered by **LIFETIME**, **5-YEAR** or **18-MONTH**. No registration is required.
4) The **5-YEAR WARRANTY** is available generally for the products listed. No registration is required.
5) A **LIFETIME WARRANTY** is available for the products listed. It becomes effective when the accompanying TURCK **LIFETIME WARRANTY REGISTRATION** is completed and returned to Turck.

## GENERAL TERMS AND CONDITIONS FOR ALL WARRANTIES

- **12-MONTH STANDARD WARRANTY**
- **18-MONTH STANDARD WARRANTY**
- **24-MONTH STANDARD WARRANTY**
- **5-YEAR WARRANTY**
- **LIFETIME WARRANTY**

Turck warrants the Products covered by the respective WARRANTY AGREEMENTS to be free from defects in material and workmanship under normal and proper usage for the respective time periods listed above from the date of shipment from Turck. In addition, certain specific terms apply to the various WARRANTIES.

**THESE EXPRESS WARRANTIES ARE IN LIEU OF AND EXCLUDE ALL OTHER REPRESENTATIONS MADE - BOTH EXPRESSED AND IMPLIED. THERE ARE NO WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE FOR PRODUCTS COVERED BY THESE TERMS AND CONDITIONS.**

Turck warrants that the goods sold are as described, but no promise, description, affirmation of fact, sample model or representation, oral or written shall be part of an order, unless set forth in these terms and conditions, or are in writing and signed by an authorized representative of Turck. These WARRANTIES do not apply to any Product which has been subject to misuse, negligence, or accident - or to any Product which has been modified or repaired, improperly installed, altered, or disassembled - except according to Turck's written instructions.

These WARRANTIES are subject to the following conditions:

1) These WARRANTIES are limited to the electronic and mechanical performance only, as expressly detailed in the Product specifications and NOT to cosmetic performance.
2) These WARRANTIES shall not apply to any cables attached to, or integrated with the Product. However, the **18-MONTH WARRANTY** shall apply to cables sold separately by Turck.
3) These WARRANTIES shall not apply to any Products which are stored, or utilized, in harsh environmental or electrical conditions outside Turck's written specifications.
4) The WARRANTIES are applicable only to Products shipped from Turck subsequent to January 1, 1988.

## ADDITIONAL SPECIFIC TERMS FOR:

**(12-MONTH STANDARD WARRANTY) for Linear Displacement Transducers, EZ Track, RFID Products, Draw Wire Assemblies and Slip Rings.**

**(18-MONTH STANDARD WARRANTY) FOR Q-TRACK INDUCTIVE SENSORS, ULTRASONIC SENSORS, FLOW SENSORS, PRESSURE SENSORS, TEMPERATURE SENSORS, INCLINOMETERS, CABLES AND ALL NON-SENSING PRODUCTS SOLD BY TURCK INC. INCLUDING MULTI-SAFE, MULTI-MODUL, MULTI-CART AND RELATED AMPLIFIER PRODUCTS, RELAYS AND TIMERS.**

**(24-MONTH STANDARD WARRANTY) FOR ENCODERS excluding Draw Wire Assemblies.**

**5-YEAR WARRANTY FOR INDUCTIVE AND CAPACITIVE PROXIMITY SENSORS: The periods covered for the above WARRANTIES and Products shall be 12 MONTHS, 18-MONTHS, 24-MONTHS and 5-YEARS, respectively, from the date of shipment from Turck.**

**LIFETIME WARRANTY (OPTIONAL - REGISTRATION REQUIRED) FOR INDUCTIVE, INDUCTIVE MAGNET OPERATED AND CAPACITIVE PROXIMITY SENSORS SOLD TO THE ORIGINAL PURCHASER FOR THE LIFETIME OF THE ORIGINAL APPLICATION.**

# Warranty Terms and Conditions

**THE FOLLOWING TERMS APPLY TO THE LIFETIME WARRANTY IN ADDITION TO THE GENERAL TERMS:**

1) This WARRANTY shall be effective only when the LIFETIME WARRANTY REGISTRATION has been completed, signed by the End User and an authorized Turck Representative or Distributor and has been received by Turck no later than six (6) months after installation in the End User's Plant, or two (2) years from the date product was shipped from Turck, whichever is sooner.
2) This warranty is available only to Turck's authorized Representatives, Distributors and to the Original User. (The term "Original User" means that person, firm, or corporation which first uses the Product on a continuous basis in connection with the operation of a production line, piece of machinery, equipment, or similar device.) In the event the ownership of the product is transferred to a person, firm or corporation other than the Original User, this WARRANTY shall terminate.
3) This WARRANTY is applicable only to the Original Application. In the event the machinery, equipment, or production line to which the Product is connected, or on which it is installed, is substituted, changed, moved or replaced, the WARRANTY shall terminate.
4) This WARRANTY shall be valid only if the Product was purchased by the Original User from Turck, or from an authorized Turck Distributor, or was an integral part of a piece of machinery and equipment obtained by the Original user from an Original Equipment Manufacturer, which itself, was purchased directly from Turck or from an authorized Distributor.

**PURCHASER'S REMEDIES**

This Remedy shall apply to all WARRANTIES. If a Turck Distributor desires to make a WARRANTY Claim, the Distributor shall, if requested by Turck, ship the Product to Turck's factory in Minneapolis, Minnesota, postage or freight prepaid. If the User desires to make a WARRANTY Claim, they shall notify the authorized Turck Distributor from whom it was purchased or, if such Distributor is unknown, shall notify Turck. Turck shall, at its option, take any of the following two courses of action for any products which Turck determines are defective in materials or workmanship.

1) Repair or replace the Product and ship the Product to the Original Purchaser or to the authorized Turck Distributor, postage or freight prepaid; or
2) Repay to the Original Purchaser that price paid by the Original Purchaser; provided that if the claim is made under the LIFETIME WARRANTY, and such Product is not then being manufactured by Turck, then the amount to be repaid by Turck to the Original Purchaser shall be reduced according to the following schedule:

| Number of Years Since Date of Purchase by Original Purchaser | Percent of Original Purchase Price To Be Paid by Turck |
|---|---|
| 10 | 50% |
| 15 | 25% |
| 20 | 10% |
| More than 20 | 5% |

**PURCHASER'S REMEDIES SHALL BE LIMITED EXCLUSIVELY TO THE RIGHT OF REPLACEMENT, REPAIR OR REPAYMENT AS PROVIDED AND DOES NOT INCLUDE ANY LABOR COST OR REPLACEMENT AT ORIGINAL PURCHASER'S SITE. TURCK SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL DAMAGES RESULTING FROM ANY BREACH OF ANY WARRANTY, EXPRESSED OR IMPLIED, APPLICABLE TO THE PRODUCT, INCLUDING WITHOUT LIMITATION, ANY DAMAGES RESULTING FROM PROPERTY DAMAGE, PERSONAL INJURY OR BUSINESS INTERRUPTION.**

**CONSIDER SAFETY AND PROTECTION PRECAUTIONS**

Turck takes great care to design and build reliable and dependable products, however, some products can fail eventually. You must take precautions to design your equipment to prevent property damage and personal injury in the unlikely event of failure. As a matter of policy, Turck does NOT recommend the installation of electronic controls as the sole device FOR THE PROTECTION OF PERSONNEL in connection with power driven presses, brakes, shears and similar equipment and, therefore, the customer should build in redundancy or dual control using approved safety devices for these applications.