

# AF12-30-10-.. / AF12Z-30-10-.. 3-pole Contactors AC / DC Operated - with Screw Terminals

AF12(Z) contactors are used for controlling power circuits up to 690 V AC and 220 V DC. They are mainly used for controlling 3-phase motors, non-inductive or slightly inductive loads.

- AF..(Z) contactors include an electronic coil interface providing reduced pull-in and holding consumption, particularly for AC control circuits
- Only four coils are needed to cover control voltages between 24...500 V 50/60 Hz or 20...500 V DC.
- AF..(Z) offer extended operating limits and are suitable worldwide for different control voltages. e.g.: the coil 100...250 V 50/60 Hz - DC is suitable for Europe (230 V 50 Hz) and for North America (120 V 60 Hz and 208 V 60 Hz).
- AF..(Z) contactors can manage large control voltage variations
- AF.Z contactors equipped with a 24...60 V 50/60 Hz - 20...60 V DC coil allow direct control by 24 V DC 500 mA PLC-output
- AF.Z contactors withstand short voltage dips and voltage sags (SEMI F47-0706 compliance)
- AF..(Z) contactors have built-in surge protection and do not require additional surge suppressors.



|  |  |        |  |
|--|--|--------|--|
|  |  | 5.5 kW |  |
|  |  | 7.5 hp |  |

3D CAD outline drawings available on «Control Product 3D» portal

### Ordering Details

| IEC         | UL/CSA               | Control voltage     |      | Main contacts | Auxiliary contacts fitted | Type | Order code | EAN | Weight                |
|-------------|----------------------|---------------------|------|---------------|---------------------------|------|------------|-----|-----------------------|
| Rated power | 3-phase motor rating | Uc min. ... Uc max. |      |               |                           |      |            |     | Pack <sup>(ing)</sup> |
| 400 V       | 480 V                | V 50/60 Hz          | V DC |               |                           |      |            |     | 1 piece               |
| kW          | hp                   |                     |      |               |                           |      |            |     | kg                    |

### 3-pole Contactors

|     |     |           |           |     |     |                      |                           |               |       |
|-----|-----|-----------|-----------|-----|-----|----------------------|---------------------------|---------------|-------|
| 5.5 | 7.5 | 24...60   | 20...60   | 3 0 | 1 0 | <b>AF12-30-10-11</b> | <b>1SBL 157 001 R1110</b> | 3471523110311 | 0.270 |
|     |     | 48...130  | 48...130  | 3 0 | 1 0 | <b>AF12-30-10-12</b> | <b>1SBL 157 001 R1210</b> | 3471523110328 | 0.270 |
|     |     | 100...250 | 100...250 | 3 0 | 1 0 | <b>AF12-30-10-13</b> | <b>1SBL 157 001 R1310</b> | 3471523110335 | 0.270 |
|     |     | 250...500 | 250...500 | 3 0 | 1 0 | <b>AF12-30-10-14</b> | <b>1SBL 157 001 R1410</b> | 3471523110342 | 0.310 |

Note: AF12-30-10-11 not suitable for a direct control by PLC-output. AF12-30-10-11 available in some countries: please consult your ABB representative.

### 3-pole Contactors - Low Consumption



|     |     |           |           |     |     |                       |                           |               |       |
|-----|-----|-----------|-----------|-----|-----|-----------------------|---------------------------|---------------|-------|
| 5.5 | 7.5 | -         | 12...20   | 3 0 | 1 0 | <b>AF12Z-30-10-20</b> | <b>1SBL 156 001 R2010</b> | 3471523113503 | 0.310 |
|     |     | 24...60   | 20...60   | 3 0 | 1 0 | <b>AF12Z-30-10-21</b> | <b>1SBL 156 001 R2110</b> | 3471523113510 | 0.310 |
|     |     | 48...130  | 48...130  | 3 0 | 1 0 | <b>AF12Z-30-10-22</b> | <b>1SBL 156 001 R2210</b> | 3471523113527 | 0.310 |
|     |     | 100...250 | 100...250 | 3 0 | 1 0 | <b>AF12Z-30-10-23</b> | <b>1SBL 156 001 R2310</b> | 3471523113534 | 0.310 |

Note: Only AF.Z contactors with DC control voltage 12...20 V DC need to respect the connection polarities indicated close to the coil terminals: A1+ for the positive pole and A2- for the negative pole

### Certifications and Approvals

|    |       |     |    |        |  |  |  |  |  |
|----|-------|-----|----|--------|--|--|--|--|--|
|    |       |     |    |        |  |  |  |  |  |
| CE | cULus | CCC | PG | C-Tick |  |  |  |  |  |

## Main Pole - Utilization Characteristics according to IEC

|   |  |               |
|---|--|---------------|
| <b>Standards</b>  | IEC 60947-1 / 60947-4-1 and EN 60947-1 / 60947-4-1 |               |
| <b>Rated operational voltage <math>U_e</math> max.</b>  | 690 V  |               |
| <b>Rated frequency limits</b>   | 25 ... 400 Hz                                      |               |
| <b>Conventional free-air thermal current <math>I_{th}</math></b><br>acc. to IEC 60947-4-1, open contactors, $\theta \leq 40^\circ\text{C}$                                  | 35 A   |               |
| with conductor cross-sectional area   | 6 mm <sup>2</sup>                                  |               |
| <b>AC-1 Utilization category</b><br>for air temperature close to contactor  |  |               |
| <b><math>I_e</math> / AC-1 rated operational current</b>  | $\theta \leq 40^\circ\text{C}$                     | 28 A          |
| $U_e$ max. $\leq 690\text{ V}$ , 50/60 Hz   | $\theta \leq 60^\circ\text{C}$                     | 28 A          |
|   | $\theta \leq 70^\circ\text{C}$                     | 24 A          |
| with conductor cross-sectional area   | 6 mm <sup>2</sup>                                  |               |
| <b>AC-3 Utilization category</b><br>for air temperature close to contactor $\theta \leq 60^\circ\text{C}$<br>(for 1500 r.p.m., 50 Hz or 1800 r.p.m., 60 Hz, 3-phase motors) |  |               |
| <b><math>I_e</math> / AC-3 max. rated operational current</b>   | <b>220-230-240 V</b>                               | 12 A          |
|    | <b>380-400 V</b>                                   | 12 A          |
|   | <b>415 V</b>                                       | 12 A          |
|   | <b>440 V</b>                                       | 12 A          |
|   | <b>500 V</b>                                       | 12.5 A        |
|   | <b>690 V</b>                                       | 9 A           |
|   |  |               |
| <b>AC-3 rated operational power</b>   | <b>220-230-240 V</b>                               | 3 kW          |
|    | <b>380-400 V</b>                                   | 5.5 kW        |
|   | <b>415 V</b>                                       | 5.5 kW        |
|   | <b>440 V</b>                                       | 5.5 kW        |
|   | <b>500 V</b>                                       | 7.5 kW        |
|   | <b>690 V</b>                                       | 7.5 kW        |
|   |  |               |
| <b>Rated making capacity AC-3</b>   | 10 x $I_e$ AC-3 acc. to IEC 60947-4-1              |               |
| <b>Rated breaking capacity AC-3</b>   | 8 x $I_e$ AC-3 acc. to IEC 60947-4-1               |               |
| <b>AC-8a Utilization category</b><br>(without thermal overload relay - $U_e 400\text{ V}$ - $\theta \leq 40^\circ\text{C}$ )  |  |               |
| <b><math>I_e</math> / AC-8a rated operational current</b>   | 16 A   |               |
| <b>AC-8a rated operational power</b>  | 7.5 kW   |               |
| <b>Short-circuit protection for contactors</b><br>without thermal O/L relay - Motor protection excluded<br>$U_e \leq 500\text{ V AC}$ - gG type fuse                        | 32 A   |               |
| <b>Rated short-time withstand current <math>I_{cw}</math></b><br>at $40^\circ\text{C}$ ambient temperature, in free air from a cold state                                   | <b>1 s</b>   | 300 A         |
|   | <b>10 s</b>  | 150 A         |
|   | <b>30 s</b>  | 80 A          |
|   | <b>1 min</b>                                       | 60 A          |
|   | <b>15 min</b>                                      | 35 A          |
| <b>Maximum breaking capacity</b><br>$\cos \phi = 0.45$  | <b>at 440 V</b>                                    | 250 A         |
|   | <b>at 690 V</b>                                    | 106 A         |
| <b>Heat dissipation per pole</b>  | <b><math>I_e</math> / AC-1</b>                     | 1 W           |
|   | <b><math>I_e</math> / AC-3</b>                     | 0.2 W         |
| <b>Max. electrical switching frequency</b>  | <b>AC-1</b>  | 600 cycles/h  |
|   | <b>AC-3</b>  | 1200 cycles/h |
|   | <b>AC-2, AC-4</b>                                  | 300 cycles/h  |

## Built-in Auxiliary Contacts according to IEC

|   |                    |   |
|---|--------------------|---|
| Rated operational voltage U <sub>e</sub> max.                     |                    | 690 V   |
| Conventional free air thermal current I <sub>th</sub> - θ ≤ 40 °C |                    | 16 A  |
| Rated frequency limits  |                    | 25 ... 400 Hz                                   |
| Rated operational current I <sub>e</sub> / AC-15                  |                    |   |
| acc. to IEC 60947-5-1   | 24-127 V 50/60 Hz  | 6 A   |
|   | 220-240 V 50/60 Hz | 4 A   |
|   | 400-440 V 50/60 Hz | 3 A   |
|   | 500 V 50/60 Hz     | 2 A   |
|   | 690 V 50/60 Hz     | 2 A   |
| Making capacity AC-15   |                    | 10 x I <sub>e</sub> AC-15 acc. to IEC 60947-5-1 |
| Breaking capacity AC-15   |                    | 10 x I <sub>e</sub> AC-15 acc. to IEC 60947-5-1 |
| Rated operational current I <sub>e</sub> / DC-13                  |                    |   |
| acc. to IEC 60947-5-1   | 24 V DC            | 16 A / 144 W                                    |
|   | 48 V DC            | 2.8 A / 134 W                                   |
|   | 72 V DC            | 1 A / 72 W                                      |
|   | 110 V DC           | 0.55 A / 60 W                                   |
|   | 125 V DC           | 0.55 A / 69 W                                   |
|   | 220 V DC           | 0.27 A / 60 W                                   |
|   | 250 V DC           | 0.27 A / 68 W                                   |
|   | 400 V DC           | 0.15 A / 60 W                                   |
|   | 500 V DC           | 0.13 A / 65 W                                   |
|   | 600 V DC           | 0.1 A / 60 W                                    |
| Short-circuit protection gG type fuse                             |                    | 10 A  |
| Rated short-time withstand current I <sub>cw</sub>                | for 1.0 s          | 100 A   |
|   | for 0.1 s          | 140 A   |
| Minimum switching capacity  |                    | 12 V / 3 mA                                     |
| with failure rate acc. to IEC 60947-5-4                           |                    | 10 <sup>-7</sup>                                |
| Non-overlapping time between N.O. and N.C. contacts               |                    | ≥ 2 ms  |
| Heat dissipation per pole at 6 A                                  |                    | 0.1 W   |
| Max. electrical switching frequency                               | AC-15              | 1200 cycles/h                                   |
|   | DC-13              | 900 cycles/h                                    |

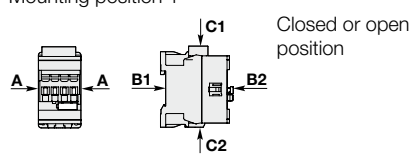
## Main Pole - Utilization Characteristics according to UL / NEMA / CSA

|  |                 |                        |
|--|-----------------|------------------------|
| Standards  |                 | UL 508, CSA C22.2 N°14 |
| Rated operational voltage U <sub>e</sub> max.                        |                 | 600 V                  |
| NEMA size  |                 | 0                      |
| NEMA continuous amp rating   | thermal current | 18 A                   |
| NEMA maximum H.P. ratings 1-phase, 60 Hz                             | 115 V AC        | 1 hp                   |
|  | 230 V AC        | 2 hp                   |
| NEMA maximum H.P. ratings 3-phase, 60 Hz                             | 200 V AC        | 3 hp                   |
|  | 230 V AC        | 3 hp                   |
|  | 460 V AC        | 5 hp                   |
|  | 575 V AC        | 5 hp                   |
| UL General use rating  |                 |                        |
| 600 V AC   |                 | 28 A                   |
| With conductor cross-sectional area                                  |                 | AWG 10                 |
| 80 V DC - 1-pole   |                 | 28 A                   |
| With conductor cross-sectional area                                  |                 | AWG 10                 |
| UL maximum 1-phase motor rating                                      |                 |                        |
| Amp-rating   | 120 V AC        | 16 A                   |
|  | 240 V AC        | 12 A                   |
| Motor power  | 120 V AC        | 1 hp                   |
|  | 240 V AC        | 2 hp                   |
| UL maximum 3-phase motor rating                                      |                 |                        |
| Amp-rating   | 200-208 V AC    | 11 A                   |
|  | 220-240 V AC    | 9.6 A                  |
|  | 440-480 V AC    | 11 A                   |
|  | 550-600 V AC    | 11 A                   |
| Motor power  | 200-208 V AC    | 3 hp                   |
| (for 1500 r.p.m., 50 Hz or 1800 r.p.m., 60 Hz 3-phase motors)        | 220-240 V AC    | 3 hp                   |
|  | 440-480 V AC    | 7.5 hp                 |
|  | 550-600 V AC    | 10 hp                  |
| Short-circuit protection   |                 |                        |
| for contactors without thermal O/L relay - Motor protection excluded |                 |                        |
| Fuse rating  |                 | 60 A                   |
| Fuse type, 600 V   |                 | NTD                    |
| Max. electrical switching frequency                                  |                 |                        |
| for general use  |                 | 600 cycles/h           |
| for motor use  |                 | 1200 cycles/h          |

## Built-in Auxiliary Contacts according to UL / CSA

|   |                    |
|---|--------------------|
| <b>Max. rated operational voltage Ue max.</b> | 600 V AC, 600 V DC |
| <b>Pilot duty</b>                             | A600, Q600         |
| AC thermal rated current                      | 10 A               |
| AC maximum volt-ampere making                 | 7200 VA            |
| AC maximum volt-ampere breaking               | 720 VA             |
| DC thermal rated current                      | 2.5 A              |
| DC maximum volt-ampere making-breaking        | 69 VA              |

## General Technical Data

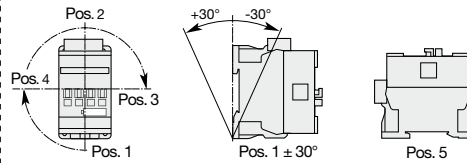
|  |   |
|--|---|
| <b>Rated insulation voltage Ui</b><br>acc. to IEC 60947-4-1                        | 690 V   |
| acc. to UL /CSA  | 600 V   |
| <b>Rated impulse withstand voltage Uimp.</b>                                       | 6 kV  |
| <b>Electromagnetic compatibility</b>   | Devices complying with IEC 60947-1 / EN 60947-1 - Environment A |
| <b>Ambient air temperature</b> close to contactor                                  |   |
| Operation fitted with thermal overload relay                                       | -25 ... +60 °C  |
| without thermal overload relay   | -40 ... +70 °C  |
| Storage  | -60 ... +80 °C  |
| <b>Climatic withstand</b>  | Category B according to IEC 60947-1 Annex Q                     |
| <b>Operating altitude</b>  | ≤ 3000 m  |
| <b>Mechanical durability</b>   |   |
| Number of operating cycles   | 10 millions operating cycles                                    |
| Max. switching frequency   | 3600 cycles/h   |
| <b>Shock withstand</b><br>acc. IEC 60068-2-27 and EN 60068-2-27                    |   |
| Mounting position 1  |   |
|  |   |
| <b>Shock direction</b>   | 1/2 sinusoidal shock for 11 ms: no change in contact position   |
| <b>A</b>   | 30 g  |
| <b>B1</b>  | 25 g Closed position / 5 g Open position                        |
| <b>B2</b>  | 15 g  |
| <b>C1</b>  | 25 g  |
| <b>C2</b>  | 25 g  |
| <b>Vibration withstand</b><br>acc. to IEC 60068-2-6                                |   |
|  | 5 ... 300 Hz  |
|  | 4 g Closed position / 2 g Open position                         |

## Magnet System Characteristics

|  |                                  |   |
|--|----------------------------------|---|
| <b>Coil operating limits</b><br>acc. to IEC 60947-4-1                                      | <b>AC supply</b>                 | at $\theta \leq 60$ °C 0.85 x Uc min ... 1.1 x Uc max<br>at $\theta \leq 70$ °C 0.85 x Uc min ... Uc max  |
|  | <b>DC supply</b>                 | at $\theta \leq 60$ °C 0.85 x Uc min ... 1.1 x Uc max<br>at $\theta \leq 70$ °C (AF) 0.85 x Uc min ... Uc max - (AF.Z) 0.85 x Uc min ... 1.1 x Uc max |
| <b>AC control voltage</b><br>50/60 Hz  | Rated control circuit voltage Uc | 24 ... 500 V AC   |
|  | Coil consumption                 | <b>Average pull-in value</b> (AF) 50 VA - (AF.Z) 16 VA  |
|  |                                  | <b>Average holding value</b> (AF) 2.2 VA / 2 W - (AF.Z) 1.7 VA / 1.5 W  |
| <b>DC control voltage</b>  | Rated control circuit voltage Uc | 12 ... 500 V DC   |
|  | Coil consumption                 | <b>Average pull-in value</b> (AF) 50 W - (AF.Z) 12 ... 16 W   |
|  |                                  | <b>Average holding value</b> (AF) 2 W - (AF.Z) 1.7 W  |
| <b>PLC-Output control</b>  |                                  | (AF.Z) $\geq 500$ mA 24 V DC  |
| <b>Drop-out voltage in % of Uc min.</b>  |                                  | ≤ 60 % Uc min   |
| <b>Voltage sag immunity</b> according to SEMI F47-0706                                     |                                  | (AF.Z) conditions of use on request   |
| <b>Dips withstand</b> (level 0% according to IEC 61000-4-11)<br>-20 °C ≤ $\theta$ ≤ +60 °C |                                  | (AF.Z) 22 ms average for Uc = 24 ... 250 V 50/60Hz  |
| <b>Operating time</b>  |                                  |   |
| between coil energization and:   | <b>N.O. contact closing</b>      | 40 ... 95 ms  |
|  | <b>N.C. contact opening</b>      | 38 ... 90 ms  |
| between coil de-energization and:  | <b>N.O. contact opening</b>      | 11 ... 95 ms  |
|  | <b>N.C. contact closing</b>      | 13 ... 98 ms  |

## Mounting Characteristics

### Mounting positions



Max. N.C. built-in and add-on N.C. auxiliary contacts: see accessory fitting details for a 3-pole contactor AF09 ... AF38

### Mounting distances

The contactors can be assembled side by side.

### Fixing

on rail according to IEC 60715, EN 60715  
by screws (not supplied)

35 x 7.5 mm or 35 x 15 mm  
2 x M4 screws placed diagonally

## Connecting Characteristics

### Main terminals



Screw terminals with cable clamp

### Connecting capacity (min. ... max.)

#### Main conductors (poles)

|  |                                     |                                    |     |                              |
|--|-------------------------------------|------------------------------------|-----|------------------------------|
|  | Rigid                               | solid ( $\leq 4 \text{ mm}^2$ )    | 1 x | 1 ... 6 mm <sup>2</sup>      |
|  |                                     | stranded ( $\geq 6 \text{ mm}^2$ ) | 2 x | 1 ... 6 mm <sup>2</sup>      |
|  | Flexible with non insulated ferrule |                                    | 1 x | 0.75 ... 6 mm <sup>2</sup>   |
|  |                                     |                                    | 2 x | 0.75 ... 6 mm <sup>2</sup>   |
|  | Flexible with insulated ferrule     |                                    | 1 x | 0.75 ... 4 mm <sup>2</sup>   |
|  |                                     |                                    | 2 x | 0.75 ... 2.5 mm <sup>2</sup> |
|  | Bars or lugs                        |                                    | L < | 9.6 mm                       |

Capacity according to UL/CSA 1 or 2 x AWG 16 ... 10

Stripping length 10 mm

#### Auxiliary conductors

(built-in auxiliary terminals + coil terminals)

|  |                                     |  |     |                              |
|--|-------------------------------------|--|-----|------------------------------|
|  | Rigid solid                         |  | 1 x | 1 ... 2.5 mm <sup>2</sup>    |
|  |                                     |  | 2 x | 1 ... 2.5 mm <sup>2</sup>    |
|  | Flexible with non insulated ferrule |  | 1 x | 0.75 ... 2.5 mm <sup>2</sup> |
|  |                                     |  | 2 x | 0.75 ... 2.5 mm <sup>2</sup> |
|  | Flexible with insulated ferrule     |  | 1 x | 0.75 ... 2.5 mm <sup>2</sup> |
|  |                                     |  | 2 x | 0.75 ... 1.5 mm <sup>2</sup> |
|  | Bars or lugs                        |  | L < | 8 mm                         |

Capacity according to UL/CSA 1 or 2 x AWG 18 ... 14

Stripping length 10 mm

### Degree of protection

acc. to IEC 60947-1 / EN 60947-1 and IEC 60529 / EN 60529

|                              |      |
|------------------------------|------|
| Main terminals               | IP20 |
| Coil terminals               | IP20 |
| Built-in auxiliary terminals | IP20 |

### Screw terminals

(delivered in open position, screws of unused terminals must be tightened)

|                              |      |
|------------------------------|------|
| Main terminals               | M3.5 |
| Coil terminals               | M3.5 |
| Built-in auxiliary terminals | M3.5 |

### Screwdriver type



Flat  $\varnothing$  5.5 / Pozidriv 2

### Tightening torque

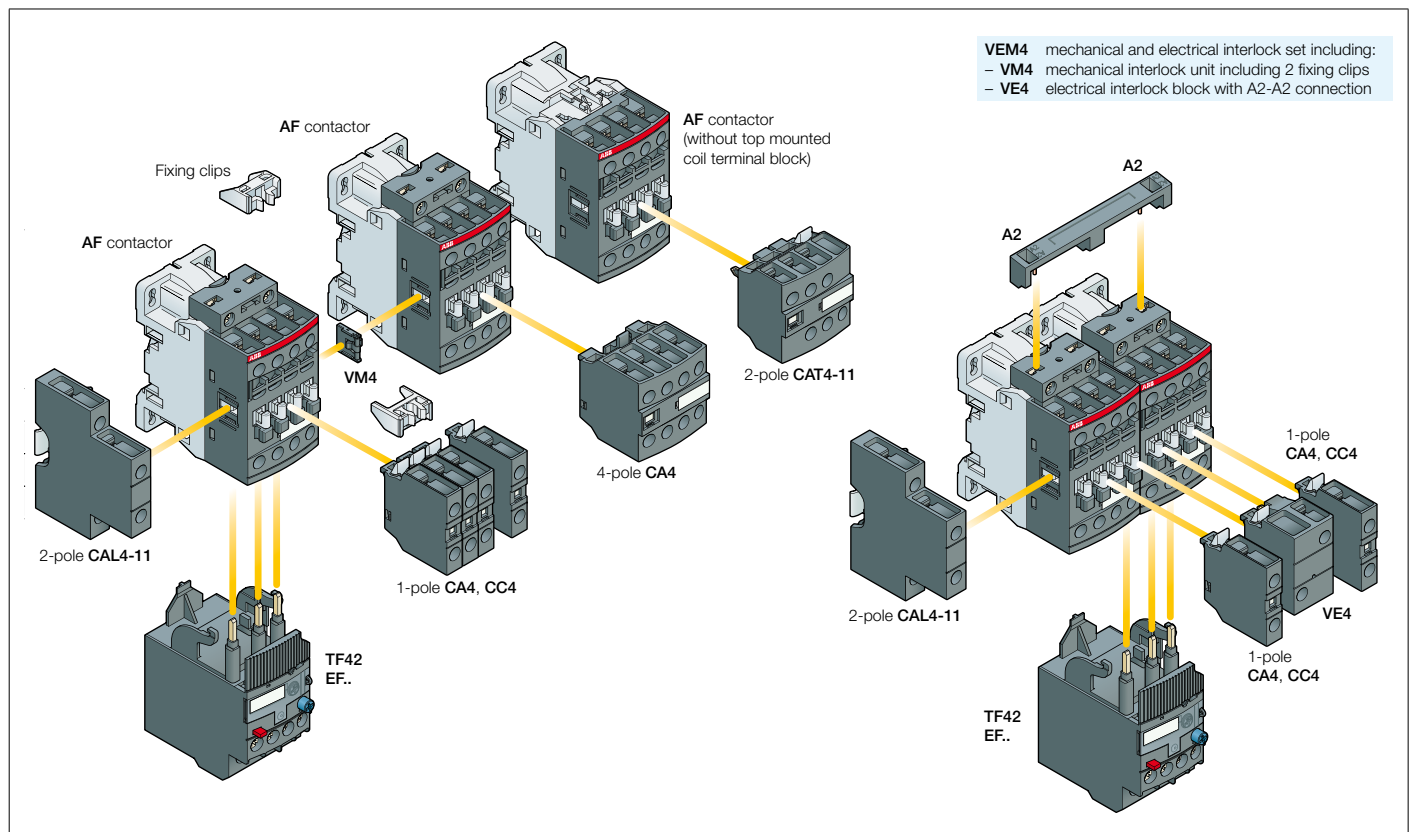
|                              |                   |
|------------------------------|-------------------|
| Main pole terminals          | 1.5 Nm / 13 lb.in |
| Coil terminals               | 1.2 Nm / 11 lb.in |
| Built-in auxiliary terminals | 1.2 Nm / 11 lb.in |

## Accessory Fitting Details for a 3-pole Contactor

Many configurations of accessories are possible depending on whether these are front-mounted or side-mounted.


| Main poles  | Built-in auxiliary contacts   | Front-mounted accessories |      |   |  | Side-mounted accessories |            |
|---|---|---------------------------|------|---|--|--------------------------|------------|
|   |   | Auxiliary contact blocks  |      |   | Electrical and mechanical interlock set (between 2 contactors) | Auxiliary contact blocks |            |
|    |  | 1-pole CA4                |      |   | VEM4   | Left side                | Right side |
|   |   | 1-pole CC4                |      |   |  | 2-pole CAT4-11           | 4-pole CA4 |
| Max. N.C. built-in and add-on N.C. auxiliary contacts: 4 N.C. max. on positions 1, 2, 3, 4 and 3 N.C. max. on positions 1 ±30°, 5 |   |                           |      |   |  |                          |            |
| 3 0 1 0   | 4 max.  | or 1                      | or 1 | – | –  | +                        | –          |
|   | 2 max.  | or 1                      | –    | – | –  | +                        | + 1        |
|   | 3 max.  | –                         | –    | – | + 1  | +                        | or 1       |

### Overview of main accessories (other accessories available)



## Main Accessories

### Ordering Details

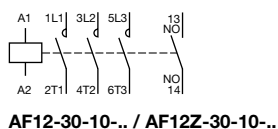
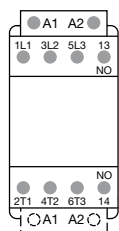
| Description                                | Auxiliary contacts<br> | Type    | Order code         | EAN                | Pack <sup>(ing)</sup> piece | Weight     |       |
|--|---|---------|--------------------|--------------------|-----------------------------|------------|-------|
|  |   |         |                    |                    |                             | kg (1 pce) |       |
| <b>Additional auxiliary contact blocks</b> | Front-mounted instantaneous auxiliary contact blocks  | 0 1 - - | CA4-01             | 1SBN 010 110 R1001 | 3471523130029               | 1          | 0.014 |
|  |   | 1 0 - - | CA4-10             | 1SBN 010 110 R1010 | 3471523130005               | 1          | 0.014 |
|  |   | 0 1 - - | CA4-01-T           | 1SBN 010 110 T1001 | 3471523130395               | 10         | 0.014 |
|  |   | 1 0 - - | CA4-10-T           | 1SBN 010 110 T1010 | 3471523130371               | 10         | 0.014 |
|  | Front-mounted auxiliary contact blocks with N.O. leading contact and N.C. lagging contact               | - - 0 1 | CC4-01             | 1SBN 010 111 R1001 | 3471523130432               | 1          | 0.014 |
|  |   | - - 1 0 | CC4-10             | 1SBN 010 111 R1010 | 3471523130425               | 1          | 0.014 |
|  | Side-mounted instantaneous auxiliary contact blocks   | 1 1 - - | CAL4-11            | 1SBN 010 120 R1011 | 3471523130043               | 1          | 0.040 |
|  |   | 1 1 - - | CAL4-11-T          | 1SBN 010 120 T1011 | 3471523130418               | 10         | 0.040 |
|  | Front-mounted instantaneous auxiliary contact blocks  | 0 4 - - | CA4-04M            | 1SBN 010 140 R1104 | 3471523130197               | 1          | 0.055 |
|  |   | 1 3 - - | CA4-13M            | 1SBN 010 140 R1113 | 3471523130180               | 1          | 0.055 |
|  | 2 2 - -   | CA4-22M | 1SBN 010 140 R1122 | 3471523130166      | 1                           | 0.055      |       |
|  | 3 1 - -   | CA4-31M | 1SBN 010 140 R1131 | 3471523130173      | 1                           | 0.055      |       |
|  | Front-mounted instantaneous auxiliary contact and A1/A2 coil terminal blocks                            | 1 1 - - | CAT4-11M           | 1SBN 010 151 R1111 | 3471523130074               | 1          | 0.040 |
| <b>Interlocks</b>                          | Mechanical interlock unit   |         | VM4                | 1SBN 030 105 T1000 | 3471523130609               | 10         | 0.005 |
|  | Mechanical and electrical interlock set   | 1 1 - - | VEM4               | 1SBN 030 111 R1000 | 3471523130616               | 1          | 0.035 |
|  | Fixing clips  |         | BB4                | 1SBN 110 120 W1000 | 3471523130722               | 50         | 0.002 |
| <b>Connection accessories for starting</b> | Connecting links with manual motor starters   |         | BEA16-4            | 1SBN 081 306 T1000 | 3471523130739               | 10         | 0.025 |
|  | Connection sets for reversing contactors  |         | BER16-4            | 1SBN 081 311 R1000 | 3471523130777               | 1          | 0.045 |
| <b>Additional coil terminal block</b>      | Additional coil terminal block  |         | LDC4               | 1SBN 070 156 T1000 | 3471523130678               | 10         | 0.010 |
| <b>Protective covers</b>                   | Protective covers   |         | BX4                | 1SBN 110 108 T1000 | 3471523130708               | 10         | 0.006 |
|  |   |         | BX4-CA             | 1SBN 110 109 W1000 | 3471523130715               | 50         | 0.001 |
| <b>Function markers</b>                    | Function markers  |         | BA4                | 1SNA 235 156 R2700 | 3472592351568               | 16         | 0.011 |
|  |   |         | HTP500-BA4         | 1SNA 235 712 R2400 | 3472592357126               | 1          | 0.220 |
|  |   |         | SPRC 1             | 1SNA 360 010 R1500 | 3472593600108               | 1          | 0.290 |

Note:

- CAT4: not fittable on AF.Z contactors with DC control voltage 12...20VDC.
- VM4: includes 2 fixing clips (BB4) to maintain together both contactors.
- VEM4: includes a VM4 mechanical interlock unit with 2 fixing clips (BB4), a VE4 electrical interlock block and A2-A2 connection. VE4 block must be used with its A2-A2 connection to respect the electrical connection diagram.
- VE4 not fittable on AF.Z contactors with DC control voltage 12...20 V DC.

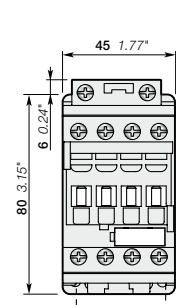
## Terminal Marking and Positioning

Standard devices without addition of auxiliary contacts

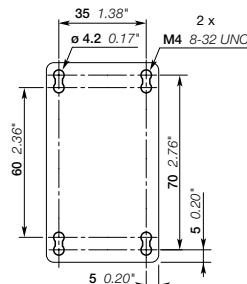
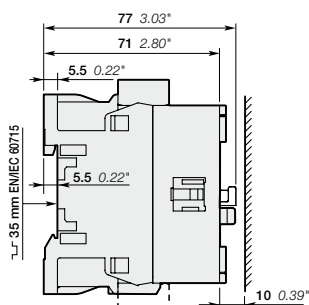


AF12-30-10.. / AF12Z-30-10..

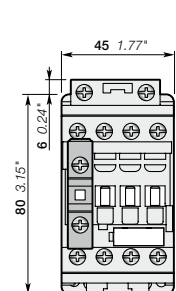
## Dimensions mm, inches



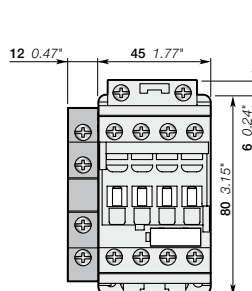
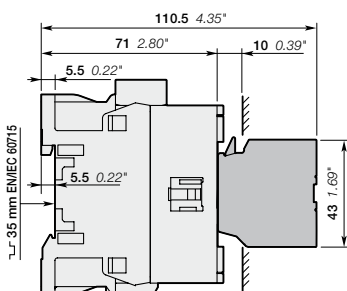
AF12



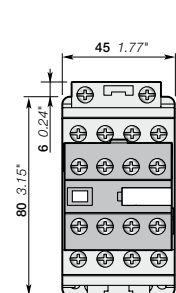
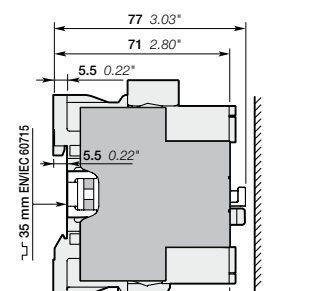
AF12



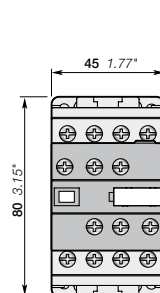
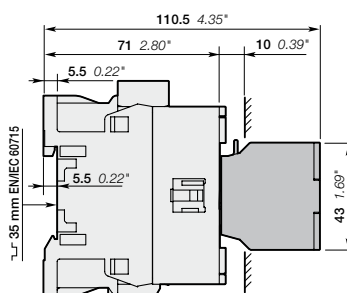
AF12  
+ CA4, CC4 1-pole auxiliary contact block



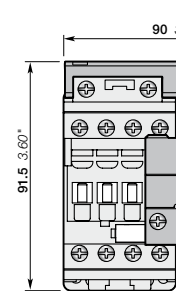
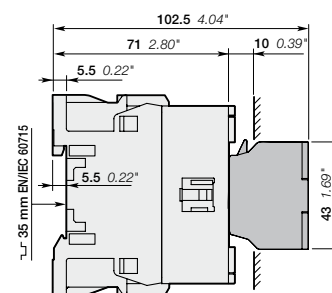
AF12  
+ CAL4-11 2-pole auxiliary contact block



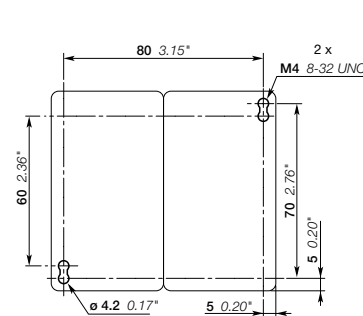
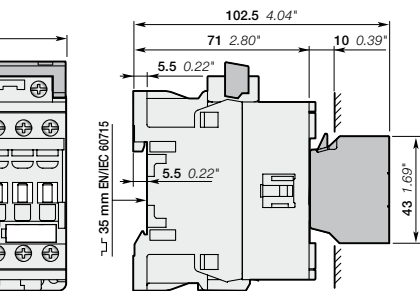
AF12  
+ CA4 4-pole auxiliary contact block



AF12  
+ CAT4 2-pole auxiliary contact and coil terminal block



AF12  
+ VEM4 mechanical and electrical interlock set



AF12  
+ VEM4 mechanical and electrical interlock set

Note: contactor lateral distance to grounded component 2 mm 0.08" min.



# Contact us

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<http://www.abb.com/contacts> -> Low Voltage products

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# AF12-30-10-.. / AF12Z-30-10-.. 3-pole Contactors AC / DC Operated - with Screw Terminals

AF12(Z) contactors are used for controlling power circuits up to 690 V AC and 220 V DC. They are mainly used for controlling 3-phase motors, non-inductive or slightly inductive loads.

- AF..(Z) contactors include an electronic coil interface providing reduced pull-in and holding consumption, particularly for AC control circuits
- Only four coils are needed to cover control voltages between 24...500 V 50/60 Hz or 20...500 V DC.
- AF..(Z) offer extended operating limits and are suitable worldwide for different control voltages. e.g.: the coil 100...250 V 50/60 Hz - DC is suitable for Europe (230 V 50 Hz) and for North America (120 V 60 Hz and 208 V 60 Hz).
- AF..(Z) contactors can manage large control voltage variations
- AF.Z contactors equipped with a 24...60 V 50/60 Hz - 20...60 V DC coil allow direct control by 24 V DC 500 mA PLC-output
- AF.Z contactors withstand short voltage dips and voltage sags (SEMI F47-0706 compliance)
- AF..(Z) contactors have built-in surge protection and do not require additional surge suppressors.



|  |  |        |  |
|--|--|--------|--|
|  |  | 5.5 kW |  |
|  |  | 7.5 hp |  |

3D CAD outline drawings available on «Control Product 3D» portal

### Ordering Details

| IEC         | UL/CSA               | Control voltage     |      | Main contacts | Auxiliary contacts fitted | Type | Order code | EAN | Weight                |
|-------------|----------------------|---------------------|------|---------------|---------------------------|------|------------|-----|-----------------------|
| Rated power | 3-phase motor rating | Uc min. ... Uc max. |      |               |                           |      |            |     | Pack <sup>(ing)</sup> |
| 400 V       | 480 V                | V 50/60 Hz          | V DC |               |                           |      |            |     | 1 piece               |
| AC-3        | hp                   |                     |      |               |                           |      |            |     | kg                    |
| kW          |                      |                     |      |               |                           |      |            |     |                       |

### 3-pole Contactors

| Rated power | 3-phase motor rating | Uc min. ... Uc max. | Uc min. ... Uc max. | Main contacts | Auxiliary contacts fitted | Type          | Order code         | EAN           | Weight |
|-------------|----------------------|---------------------|---------------------|---------------|---------------------------|---------------|--------------------|---------------|--------|
| 5.5         | 7.5                  | 24...60             | 20...60             | 3 0           | 1 0                       | AF12-30-10-11 | 1SBL 157 001 R1110 | 3471523110311 | 0.270  |
|             |                      | 48...130            | 48...130            | 3 0           | 1 0                       | AF12-30-10-12 | 1SBL 157 001 R1210 | 3471523110328 | 0.270  |
|             |                      | 100...250           | 100...250           | 3 0           | 1 0                       | AF12-30-10-13 | 1SBL 157 001 R1310 | 3471523110335 | 0.270  |
|             |                      | 250...500           | 250...500           | 3 0           | 1 0                       | AF12-30-10-14 | 1SBL 157 001 R1410 | 3471523110342 | 0.310  |

Note: AF12-30-10-11 not suitable for a direct control by PLC-output. AF12-30-10-11 available in some countries: please consult your ABB representative.

### 3-pole Contactors - Low Consumption



| Rated power | 3-phase motor rating | Uc min. ... Uc max. | Uc min. ... Uc max. | Main contacts | Auxiliary contacts fitted | Type           | Order code         | EAN           | Weight |
|-------------|----------------------|---------------------|---------------------|---------------|---------------------------|----------------|--------------------|---------------|--------|
| 5.5         | 7.5                  | -                   | 12...20             | 3 0           | 1 0                       | AF12Z-30-10-20 | 1SBL 156 001 R2010 | 3471523113503 | 0.310  |
|             |                      | 24...60             | 20...60             | 3 0           | 1 0                       | AF12Z-30-10-21 | 1SBL 156 001 R2110 | 3471523113510 | 0.310  |
|             |                      | 48...130            | 48...130            | 3 0           | 1 0                       | AF12Z-30-10-22 | 1SBL 156 001 R2210 | 3471523113527 | 0.310  |
|             |                      | 100...250           | 100...250           | 3 0           | 1 0                       | AF12Z-30-10-23 | 1SBL 156 001 R2310 | 3471523113534 | 0.310  |

Note: Only AF.Z contactors with DC control voltage 12...20 V DC need to respect the connection polarities indicated close to the coil terminals: A1+ for the positive pole and A2- for the negative pole

### Certifications and Approvals

|    |       |     |    |        |  |  |  |  |  |
|----|-------|-----|----|--------|--|--|--|--|--|
|    |       |     |    |        |  |  |  |  |  |
| CE | cULus | CCC | PG | C-Tick |  |  |  |  |  |

## Main Pole - Utilization Characteristics according to IEC

|   |  |                                       |
|---|--|---------------------------------------|
| <b>Standards</b>  | IEC 60947-1 / 60947-4-1 and EN 60947-1 / 60947-4-1 |                                       |
| <b>Rated operational voltage <math>U_e</math> max.</b>  | 690 V  |                                       |
| <b>Rated frequency limits</b>   | 25 ... 400 Hz                                      |                                       |
| <b>Conventional free-air thermal current <math>I_{th}</math></b><br>acc. to IEC 60947-4-1, open contactors, $\theta \leq 40^\circ\text{C}$                                  | 35 A   |                                       |
| with conductor cross-sectional area   | 6 mm <sup>2</sup>                                  |                                       |
| <b>AC-1 Utilization category</b><br>for air temperature close to contactor  |  |                                       |
| <b><math>I_e</math> / AC-1 rated operational current</b>  | $\theta \leq 40^\circ\text{C}$                     | 28 A                                  |
| $U_e$ max. $\leq 690\text{ V}$ , 50/60 Hz   | $\theta \leq 60^\circ\text{C}$                     | 28 A                                  |
|   | $\theta \leq 70^\circ\text{C}$                     | 24 A                                  |
| with conductor cross-sectional area   | 6 mm <sup>2</sup>                                  |                                       |
| <b>AC-3 Utilization category</b><br>for air temperature close to contactor $\theta \leq 60^\circ\text{C}$<br>(for 1500 r.p.m., 50 Hz or 1800 r.p.m., 60 Hz, 3-phase motors) |  |                                       |
| <b><math>I_e</math> / AC-3 max. rated operational current</b>   | <b>220-230-240 V</b>                               | 12 A                                  |
|  3-phase motors  | <b>380-400 V</b>                                   | 12 A                                  |
|   | <b>415 V</b>                                       | 12 A                                  |
|   | <b>440 V</b>                                       | 12 A                                  |
|   | <b>500 V</b>                                       | 12.5 A                                |
|   | <b>690 V</b>                                       | 9 A                                   |
|   | <b>AC-3 rated operational power</b>                | <b>220-230-240 V</b>                  |
|  1500 r.p.m. 50 Hz<br>1800 r.p.m. 60 Hz<br>3-phase motors                                  | <b>380-400 V</b>                                   | 5.5 kW                                |
|   | <b>415 V</b>                                       | 5.5 kW                                |
|   | <b>440 V</b>                                       | 5.5 kW                                |
|   | <b>500 V</b>                                       | 7.5 kW                                |
|   | <b>690 V</b>                                       | 7.5 kW                                |
|   | <b>Rated making capacity AC-3</b>                  | 10 x $I_e$ AC-3 acc. to IEC 60947-4-1 |
| <b>Rated breaking capacity AC-3</b>   | 8 x $I_e$ AC-3 acc. to IEC 60947-4-1               |                                       |
| <b>AC-8a Utilization category</b><br>(without thermal overload relay - $U_e 400\text{ V}$ - $\theta \leq 40^\circ\text{C}$ )  |  |                                       |
| <b><math>I_e</math> / AC-8a rated operational current</b>   | 16 A   |                                       |
| <b>AC-8a rated operational power</b>  | 7.5 kW   |                                       |
| <b>Short-circuit protection for contactors</b><br>without thermal O/L relay - Motor protection excluded<br>$U_e \leq 500\text{ V AC}$ - gG type fuse                        | 32 A   |                                       |
| <b>Rated short-time withstand current <math>I_{cw}</math></b><br>at $40^\circ\text{C}$ ambient temperature, in free air from a cold state                                   | <b>1 s</b>   | 300 A                                 |
|   | <b>10 s</b>  | 150 A                                 |
|   | <b>30 s</b>  | 80 A                                  |
|   | <b>1 min</b>                                       | 60 A                                  |
|   | <b>15 min</b>                                      | 35 A                                  |
| <b>Maximum breaking capacity</b><br>$\cos \phi = 0.45$  | <b>at 440 V</b>                                    | 250 A                                 |
|   | <b>at 690 V</b>                                    | 106 A                                 |
| <b>Heat dissipation per pole</b>  | <b><math>I_e</math> / AC-1</b>                     | 1 W                                   |
|   | <b><math>I_e</math> / AC-3</b>                     | 0.2 W                                 |
| <b>Max. electrical switching frequency</b>  | <b>AC-1</b>  | 600 cycles/h                          |
|   | <b>AC-3</b>  | 1200 cycles/h                         |
|   | <b>AC-2, AC-4</b>                                  | 300 cycles/h                          |

## Built-in Auxiliary Contacts according to IEC

|   |                    |   |
|---|--------------------|---|
| Rated operational voltage U <sub>e</sub> max.                     |                    | 690 V   |
| Conventional free air thermal current I <sub>th</sub> - θ ≤ 40 °C |                    | 16 A  |
| Rated frequency limits  |                    | 25 ... 400 Hz                                   |
| Rated operational current I <sub>e</sub> / AC-15                  |                    |   |
| acc. to IEC 60947-5-1   | 24-127 V 50/60 Hz  | 6 A   |
|   | 220-240 V 50/60 Hz | 4 A   |
|   | 400-440 V 50/60 Hz | 3 A   |
|   | 500 V 50/60 Hz     | 2 A   |
|   | 690 V 50/60 Hz     | 2 A   |
| Making capacity AC-15   |                    | 10 x I <sub>e</sub> AC-15 acc. to IEC 60947-5-1 |
| Breaking capacity AC-15   |                    | 10 x I <sub>e</sub> AC-15 acc. to IEC 60947-5-1 |
| Rated operational current I <sub>e</sub> / DC-13                  |                    |   |
| acc. to IEC 60947-5-1   | 24 V DC            | 16 A / 144 W                                    |
|   | 48 V DC            | 2.8 A / 134 W                                   |
|   | 72 V DC            | 1 A / 72 W                                      |
|   | 110 V DC           | 0.55 A / 60 W                                   |
|   | 125 V DC           | 0.55 A / 69 W                                   |
|   | 220 V DC           | 0.27 A / 60 W                                   |
|   | 250 V DC           | 0.27 A / 68 W                                   |
|   | 400 V DC           | 0.15 A / 60 W                                   |
|   | 500 V DC           | 0.13 A / 65 W                                   |
|   | 600 V DC           | 0.1 A / 60 W                                    |
| Short-circuit protection gG type fuse                             |                    | 10 A  |
| Rated short-time withstand current I <sub>cw</sub>                | for 1.0 s          | 100 A   |
|   | for 0.1 s          | 140 A   |
| Minimum switching capacity  |                    | 12 V / 3 mA                                     |
| with failure rate acc. to IEC 60947-5-4                           |                    | 10 <sup>-7</sup>                                |
| Non-overlapping time between N.O. and N.C. contacts               |                    | ≥ 2 ms  |
| Heat dissipation per pole at 6 A                                  |                    | 0.1 W   |
| Max. electrical switching frequency                               | AC-15              | 1200 cycles/h                                   |
|   | DC-13              | 900 cycles/h                                    |

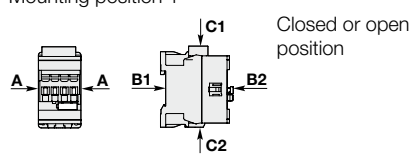
## Main Pole - Utilization Characteristics according to UL / NEMA / CSA

|  |                 |                        |
|--|-----------------|------------------------|
| Standards  |                 | UL 508, CSA C22.2 N°14 |
| Rated operational voltage U <sub>e</sub> max.                        |                 | 600 V                  |
| NEMA size  |                 | 0                      |
| NEMA continuous amp rating   | thermal current | 18 A                   |
| NEMA maximum H.P. ratings 1-phase, 60 Hz                             | 115 V AC        | 1 hp                   |
|  | 230 V AC        | 2 hp                   |
| NEMA maximum H.P. ratings 3-phase, 60 Hz                             | 200 V AC        | 3 hp                   |
|  | 230 V AC        | 3 hp                   |
|  | 460 V AC        | 5 hp                   |
|  | 575 V AC        | 5 hp                   |
| UL General use rating  |                 |                        |
| 600 V AC   |                 | 28 A                   |
| With conductor cross-sectional area                                  |                 | AWG 10                 |
| 80 V DC - 1-pole   |                 | 28 A                   |
| With conductor cross-sectional area                                  |                 | AWG 10                 |
| UL maximum 1-phase motor rating                                      |                 |                        |
| Amp-rating   | 120 V AC        | 16 A                   |
|  | 240 V AC        | 12 A                   |
| Motor power  | 120 V AC        | 1 hp                   |
|  | 240 V AC        | 2 hp                   |
| UL maximum 3-phase motor rating                                      |                 |                        |
| Amp-rating   | 200-208 V AC    | 11 A                   |
|  | 220-240 V AC    | 9.6 A                  |
|  | 440-480 V AC    | 11 A                   |
|  | 550-600 V AC    | 11 A                   |
| Motor power  | 200-208 V AC    | 3 hp                   |
| (for 1500 r.p.m., 50 Hz or 1800 r.p.m., 60 Hz 3-phase motors)        | 220-240 V AC    | 3 hp                   |
|  | 440-480 V AC    | 7.5 hp                 |
|  | 550-600 V AC    | 10 hp                  |
| Short-circuit protection   |                 |                        |
| for contactors without thermal O/L relay - Motor protection excluded |                 |                        |
| Fuse rating  |                 | 60 A                   |
| Fuse type, 600 V   |                 | NTD                    |
| Max. electrical switching frequency                                  |                 |                        |
| for general use  |                 | 600 cycles/h           |
| for motor use  |                 | 1200 cycles/h          |

## Built-in Auxiliary Contacts according to UL / CSA

|   |                    |
|---|--------------------|
| <b>Max. rated operational voltage <math>U_e</math> max.</b> | 600 V AC, 600 V DC |
| <b>Pilot duty</b>   | A600, Q600         |
| AC thermal rated current                                    | 10 A               |
| AC maximum volt-ampere making                               | 7200 VA            |
| AC maximum volt-ampere breaking                             | 720 VA             |
| DC thermal rated current                                    | 2.5 A              |
| DC maximum volt-ampere making-breaking                      | 69 VA              |

## General Technical Data

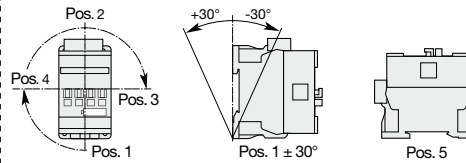
|  |   |
|--|---|
| <b>Rated insulation voltage <math>U_i</math></b>                                   | 690 V   |
| acc. to IEC 60947-4-1  | 600 V   |
| acc. to UL /CSA  | 600 V   |
| <b>Rated impulse withstand voltage <math>U_{imp}</math>.</b>                       | 6 kV  |
| <b>Electromagnetic compatibility</b>   | Devices complying with IEC 60947-1 / EN 60947-1 - Environment A |
| <b>Ambient air temperature</b> close to contactor                                  |   |
| Operation fitted with thermal overload relay                                       | -25 ... +60 °C  |
| without thermal overload relay   | -40 ... +70 °C  |
| Storage  | -60 ... +80 °C  |
| <b>Climatic withstand</b>  | Category B according to IEC 60947-1 Annex Q                     |
| <b>Operating altitude</b>  | ≤ 3000 m  |
| <b>Mechanical durability</b>   |   |
| Number of operating cycles   | 10 millions operating cycles                                    |
| Max. switching frequency   | 3600 cycles/h   |
| <b>Shock withstand</b>   |   |
| acc. IEC 60068-2-27 and EN 60068-2-27  |   |
| Mounting position 1  |   |
|  |   |
| <b>Shock direction</b>   | 1/2 sinusoidal shock for 11 ms: no change in contact position   |
| <b>A</b>   | 30 g  |
| <b>B1</b>  | 25 g Closed position / 5 g Open position                        |
| <b>B2</b>  | 15 g  |
| <b>C1</b>  | 25 g  |
| <b>C2</b>  | 25 g  |
| <b>Vibration withstand</b>   |   |
| acc. to IEC 60068-2-6  | 5 ... 300 Hz  |
|  | 4 g Closed position / 2 g Open position                         |

## Magnet System Characteristics

|  |                                     |  |
|--|-------------------------------------|--|
| <b>Coil operating limits</b>                                 | <b>AC supply</b>                    | at $\theta \leq 60$ °C 0.85 x $U_c$ min ... 1.1 x $U_c$ max  |
| acc. to IEC 60947-4-1  |                                     | at $\theta \leq 70$ °C 0.85 x $U_c$ min ... $U_c$ max  |
|  | <b>DC supply</b>                    | at $\theta \leq 60$ °C 0.85 x $U_c$ min ... 1.1 x $U_c$ max  |
|  |                                     | at $\theta \leq 70$ °C (AF) 0.85 x $U_c$ min ... $U_c$ max - (AF.Z) 0.85 x $U_c$ min ... 1.1 x $U_c$ max |
| <b>AC control voltage</b>                                    | Rated control circuit voltage $U_c$ | 24 ... 500 V AC  |
| 50/60 Hz   | Coil consumption                    | <b>Average pull-in value</b> (AF) 50 VA - (AF.Z) 16 VA   |
|  |                                     | <b>Average holding value</b> (AF) 2.2 VA / 2 W - (AF.Z) 1.7 VA / 1.5 W                                   |
| <b>DC control voltage</b>                                    | Rated control circuit voltage $U_c$ | 12 ... 500 V DC  |
|  | Coil consumption                    | <b>Average pull-in value</b> (AF) 50 W - (AF.Z) 12 ... 16 W  |
|  |                                     | <b>Average holding value</b> (AF) 2 W - (AF.Z) 1.7 W   |
| <b>PLC-Output control</b>                                    |                                     | (AF.Z) ≥ 500 mA 24 V DC  |
| <b>Drop-out voltage in % of <math>U_c</math> min.</b>        |                                     | ≤ 60 % $U_c$ min   |
| <b>Voltage sag immunity</b> according to SEMI F47-0706       |                                     | (AF.Z) conditions of use on request  |
| <b>Dips withstand</b> (level 0% according to IEC 61000-4-11) |                                     | (AF.Z) 22 ms average for $U_c = 24$ ... 250 V 50/60Hz  |
| -20 °C ≤ $\theta$ ≤ +60 °C                                   |                                     |  |
| <b>Operating time</b>  |                                     |  |
| between coil energization and:                               | <b>N.O. contact closing</b>         | 40 ... 95 ms   |
|  | <b>N.C. contact opening</b>         | 38 ... 90 ms   |
| between coil de-energization and:                            | <b>N.O. contact opening</b>         | 11 ... 95 ms   |
|  | <b>N.C. contact closing</b>         | 13 ... 98 ms   |

## Mounting Characteristics

### Mounting positions



Max. N.C. built-in and add-on N.C. auxiliary contacts: see accessory fitting details for a 3-pole contactor AF09 ... AF38

### Mounting distances

The contactors can be assembled side by side.

### Fixing

on rail according to IEC 60715, EN 60715  
by screws (not supplied)

35 x 7.5 mm or 35 x 15 mm  
2 x M4 screws placed diagonally

## Connecting Characteristics

### Main terminals



Screw terminals with cable clamp

### Connecting capacity (min. ... max.)

#### Main conductors (poles)

|  |                                     |                                    |     |                              |
|--|-------------------------------------|------------------------------------|-----|------------------------------|
|  | Rigid                               | solid ( $\leq 4 \text{ mm}^2$ )    | 1 x | 1 ... 6 mm <sup>2</sup>      |
|  |                                     | stranded ( $\geq 6 \text{ mm}^2$ ) | 2 x | 1 ... 6 mm <sup>2</sup>      |
|  | Flexible with non insulated ferrule |                                    | 1 x | 0.75 ... 6 mm <sup>2</sup>   |
|  |                                     |                                    | 2 x | 0.75 ... 6 mm <sup>2</sup>   |
|  | Flexible with insulated ferrule     |                                    | 1 x | 0.75 ... 4 mm <sup>2</sup>   |
|  |                                     |                                    | 2 x | 0.75 ... 2.5 mm <sup>2</sup> |
|  | Bars or lugs                        |                                    | L < | 9.6 mm                       |

Capacity according to UL/CSA 1 or 2 x AWG 16 ... 10

Stripping length 10 mm

#### Auxiliary conductors

(built-in auxiliary terminals + coil terminals)

|  |                                     |  |     |                              |
|--|-------------------------------------|--|-----|------------------------------|
|  | Rigid solid                         |  | 1 x | 1 ... 2.5 mm <sup>2</sup>    |
|  |                                     |  | 2 x | 1 ... 2.5 mm <sup>2</sup>    |
|  | Flexible with non insulated ferrule |  | 1 x | 0.75 ... 2.5 mm <sup>2</sup> |
|  |                                     |  | 2 x | 0.75 ... 2.5 mm <sup>2</sup> |
|  | Flexible with insulated ferrule     |  | 1 x | 0.75 ... 2.5 mm <sup>2</sup> |
|  |                                     |  | 2 x | 0.75 ... 1.5 mm <sup>2</sup> |
|  | Bars or lugs                        |  | L < | 8 mm                         |

Capacity according to UL/CSA 1 or 2 x AWG 18 ... 14

Stripping length 10 mm

### Degree of protection

acc. to IEC 60947-1 / EN 60947-1 and IEC 60529 / EN 60529

Main terminals IP20

Coil terminals IP20

Built-in auxiliary terminals IP20

### Screw terminals

(delivered in open position, screws of unused terminals must be tightened)

Main terminals M3.5

Coil terminals M3.5

Built-in auxiliary terminals M3.5

### Screwdriver type

Flat  $\varnothing 5.5$  / Pozidriv 2

### Tightening torque




Main pole terminals 1.5 Nm / 13 lb.in

Coil terminals 1.2 Nm / 11 lb.in

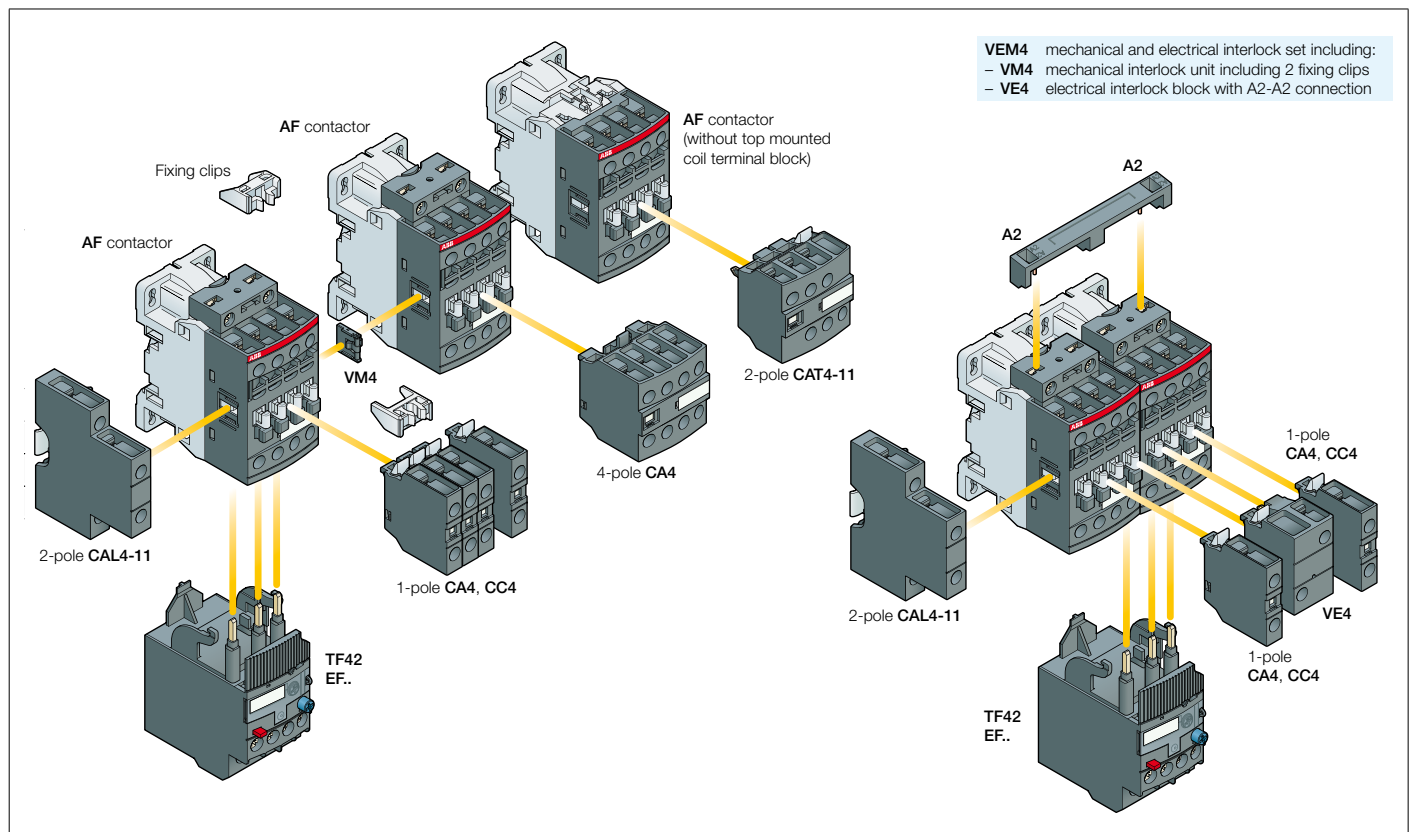
Built-in auxiliary terminals 1.2 Nm / 11 lb.in

## Accessory Fitting Details for a 3-pole Contactor

Many configurations of accessories are possible depending on whether these are front-mounted or side-mounted.


| Main poles  | Built-in auxiliary contacts   | Front-mounted accessories |                |            |      | Side-mounted accessories                                       |                          |            |
|---|---|---------------------------|----------------|------------|------|--|--------------------------|------------|
|   |   | Auxiliary contact blocks  |                |            |      | Electrical and mechanical interlock set (between 2 contactors) | Auxiliary contact blocks |            |
|    |  | 1-pole CA4                |                |            |      |  | Left side                | Right side |
|   |   | 1-pole CC4                | 2-pole CAT4-11 | 4-pole CA4 | VEM4 | 2-pole CAL4-11   |                          |            |
| Max. N.C. built-in and add-on N.C. auxiliary contacts: 4 N.C. max. on positions 1, 2, 3, 4 and 3 N.C. max. on positions 1 ±30°, 5 |   |                           |                |            |      |  |                          |            |
| 3 0 1 0   |  | 4 max.                    | or 1           |            | or 1 | –  | + 1                      | –          |
|   |   | 2 max.                    | or 1           |            | –    | –  | + 1                      | + 1        |
|   |   | 3 max.                    | –              |            | –    | + 1  | + 1                      | or 1       |

### Overview of main accessories (other accessories available)



## Main Accessories

### Ordering Details

| Description                                | Auxiliary contacts<br> | Type    | Order code         | EAN                | Pack <sup>(ing)</sup> piece | Weight     |       |
|--|---|---------|--------------------|--------------------|-----------------------------|------------|-------|
|  |   |         |                    |                    |                             | kg (1 pce) |       |
| <b>Additional auxiliary contact blocks</b> | Front-mounted instantaneous auxiliary contact blocks  | 0 1 - - | CA4-01             | 1SBN 010 110 R1001 | 3471523130029               | 1          | 0.014 |
|  |   | 1 0 - - | CA4-10             | 1SBN 010 110 R1010 | 3471523130005               | 1          | 0.014 |
|  |   | 0 1 - - | CA4-01-T           | 1SBN 010 110 T1001 | 3471523130395               | 10         | 0.014 |
|  |   | 1 0 - - | CA4-10-T           | 1SBN 010 110 T1010 | 3471523130371               | 10         | 0.014 |
|  | Front-mounted auxiliary contact blocks with N.O. leading contact and N.C. lagging contact               | - - 0 1 | CC4-01             | 1SBN 010 111 R1001 | 3471523130432               | 1          | 0.014 |
|  |   | - - 1 0 | CC4-10             | 1SBN 010 111 R1010 | 3471523130425               | 1          | 0.014 |
|  | Side-mounted instantaneous auxiliary contact blocks   | 1 1 - - | CAL4-11            | 1SBN 010 120 R1011 | 3471523130043               | 1          | 0.040 |
|  |   | 1 1 - - | CAL4-11-T          | 1SBN 010 120 T1011 | 3471523130418               | 10         | 0.040 |
|  | Front-mounted instantaneous auxiliary contact blocks  | 0 4 - - | CA4-04M            | 1SBN 010 140 R1104 | 3471523130197               | 1          | 0.055 |
|  |   | 1 3 - - | CA4-13M            | 1SBN 010 140 R1113 | 3471523130180               | 1          | 0.055 |
|  | 2 2 - -   | CA4-22M | 1SBN 010 140 R1122 | 3471523130166      | 1                           | 0.055      |       |
|  | 3 1 - -   | CA4-31M | 1SBN 010 140 R1131 | 3471523130173      | 1                           | 0.055      |       |
|  | Front-mounted instantaneous auxiliary contact and A1/A2 coil terminal blocks                            | 1 1 - - | CAT4-11M           | 1SBN 010 151 R1111 | 3471523130074               | 1          | 0.040 |
| <b>Interlocks</b>                          | Mechanical interlock unit   |         | VM4                | 1SBN 030 105 T1000 | 3471523130609               | 10         | 0.005 |
|  | Mechanical and electrical interlock set   | 1 1 - - | VEM4               | 1SBN 030 111 R1000 | 3471523130616               | 1          | 0.035 |
|  | Fixing clips  |         | BB4                | 1SBN 110 120 W1000 | 3471523130722               | 50         | 0.002 |
| <b>Connection accessories for starting</b> | Connecting links with manual motor starters   |         | BEA16-4            | 1SBN 081 306 T1000 | 3471523130739               | 10         | 0.025 |
|  | Connection sets for reversing contactors  |         | BER16-4            | 1SBN 081 311 R1000 | 3471523130777               | 1          | 0.045 |
| <b>Additional coil terminal block</b>      | Additional coil terminal block  |         | LDC4               | 1SBN 070 156 T1000 | 3471523130678               | 10         | 0.010 |
| <b>Protective covers</b>                   | Protective covers   |         | BX4                | 1SBN 110 108 T1000 | 3471523130708               | 10         | 0.006 |
|  |   |         | BX4-CA             | 1SBN 110 109 W1000 | 3471523130715               | 50         | 0.001 |
| <b>Function markers</b>                    | Function markers  |         | BA4                | 1SNA 235 156 R2700 | 3472592351568               | 16         | 0.011 |
|  |   |         | HTP500-BA4         | 1SNA 235 712 R2400 | 3472592357126               | 1          | 0.220 |
|  |   |         | SPRC 1             | 1SNA 360 010 R1500 | 3472593600108               | 1          | 0.290 |

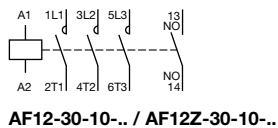
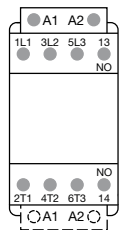
Note:

- CAT4: not fittable on AF.Z contactors with DC control voltage 12...20VDC.
- VM4: includes 2 fixing clips (BB4) to maintain together both contactors.
- VEM4: includes a VM4 mechanical interlock unit with 2 fixing clips (BB4), a VE4 electrical interlock block and A2-A2 connection. VE4 block must be used with its A2-A2 connection to respect the electrical connection diagram.
- VE4 not fittable on AF.Z contactors with DC control voltage 12...20 V DC.



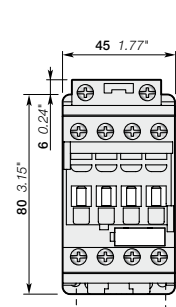
## Terminal Marking and Positioning

Standard devices without addition of auxiliary contacts

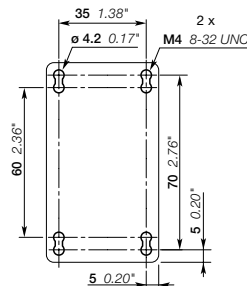
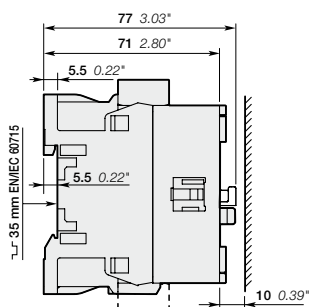


AF12-30-10.. / AF12Z-30-10..

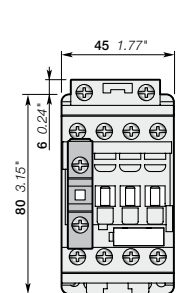
## Dimensions mm, inches



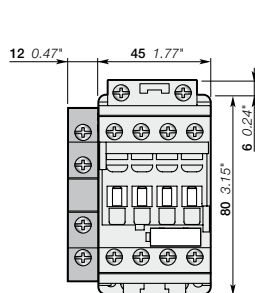
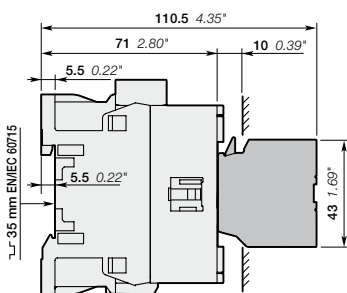
AF12



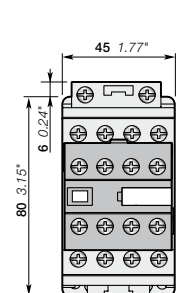
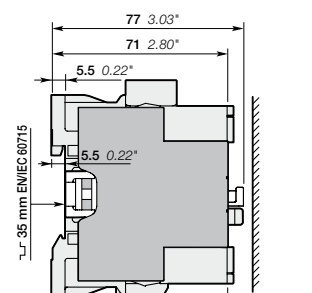
AF12



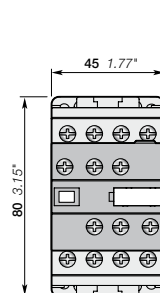
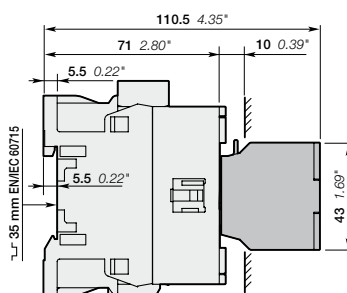
AF12  
+ CA4, CC4 1-pole auxiliary contact block



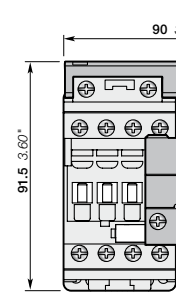
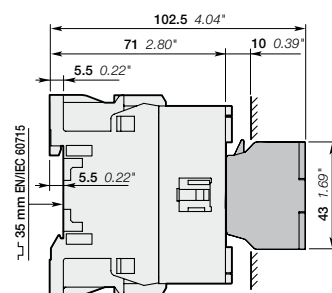
AF12  
+ CAL4-11 2-pole auxiliary contact block



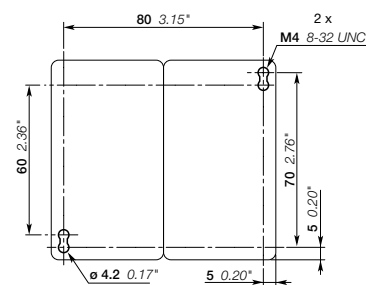
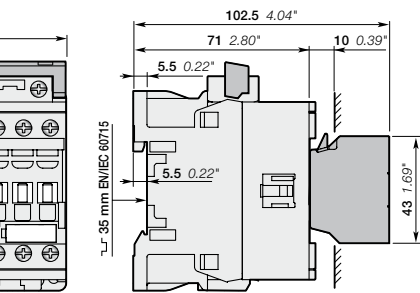
AF12  
+ CA4 4-pole auxiliary contact block



AF12  
+ CAT4 2-pole auxiliary contact and coil terminal block



AF12  
+ VEM4 mechanical and electrical interlock set



AF12  
+ VEM4 mechanical and electrical interlock set

Note: contactor lateral distance to grounded component 2 mm 0.08" min.

# Contact us

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You can find the address of your local sales organisation  
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<http://www.abb.com/contacts> -> Low Voltage products

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