



# Electrical Spring Connector 412

## Data Sheet



### Application

The 3M™ Electrical Spring Connector 412 will electrically connect copper conductors in a pigtail application.

### Wire

#### AWG Range

Copper conductors only, No. 22 through 8 solid and/or stranded.  
(See wire matrix for specific combinations)

#### Metric Range

Copper conductors only, .5mm<sup>2</sup> thru 6mm<sup>2</sup> ridged (solid or stranded).

### Construction

**Spring** - Spring steel, corrosion-resistant coating  
**Insulator** - PVC

### Weight

0.0068 lbs (3,1 grams)

### Performance Test

The following tests were performed to the specifications of UL Standard 486C and CSA Standard C22.2 No. 188.

Static Heating	Pass
Secureness	Pass
Pullout	Pass
Dielectric Voltage Withstand	Pass
Secureness of Insulation	Pass
Flammability	V2 Min.

### Engineering Specification

3M Spring Connector 412 is capable of a 1 conductor termination or a 2 or more conductor connection in a pigtail application. The connector shall be UL listed and CSA certified as a pressure wire connector. The connector shall be rated 600 volts maximum for building wire and 1000 volts maximum for lighting fixtures. The connector shall have a maximum operating temperature of 105°C (221°F).

### Installation Instructions

**Caution**

Turn power off before installing or removing terminal. All electrical work should be done according to appropriate electrical codes.

1. Strip wire insulation ½ inch.
2. Firmly grasp wires and ensure conductor ends are even. Conductors may be twisted or untwisted.
3. Place connector over the stripped conductor tips.
4. Turn connector on in a clockwise direction until secure.
5. To remove, turn connector counter-clockwise.

### Regulatory Agencies

**UL Listed** as a Wire Connector, tested per UL Standard 486C, UL File No. E23438  
Operating Temperature: 105°C (221°F)  
Voltage Rating: 600 volts max building wire, 1000 volts max signs and fixtures.

**CSA Certified**  
CSA Standard C22.2 No. 188, CSA File No. LR15503  
Operating Temperature: 105°C (221°F)  
Voltage Rating: 600 volts max building wire, 1000 volts max signs and fixtures.

# Wire Matrix

22 SOL or STR	1 2 3 4	••••• ••••• ••••• •••••														
20 SOL or STR	1 2 3 4	••••• ••••• ••••• •••••	••••• ••••• ••••• •••••													
18 STR	1 2 3 4 5	••••• ••••• ••••• ••••• •••••	••••• ••••• ••••• ••••• •••••	••••• ••••• ••••• ••••• •••••												
18 SOL	1 2 3 4 5	••••• ••••• ••••• ••••• •••••	••••• ••••• ••••• ••••• •••••	••••• ••••• ••••• ••••• •••••	••••• ••••• ••••• ••••• •••••											
16 STR	1 2 3 4 5	••••• ••••• ••••• ••••• •••••	••••• ••••• ••••• ••••• •••••	••••• ••••• ••••• ••••• •••••	••••• ••••• ••••• ••••• •••••	••••• ••••• ••••• ••••• •••••										
16 SOL	1 2 3 4 5	••••• ••••• ••••• ••••• •••••	••••• ••••• ••••• ••••• •••••	••••• ••••• ••••• ••••• •••••	••••• ••••• ••••• ••••• •••••	••••• ••••• ••••• ••••• •••••	••••• ••••• ••••• ••••• •••••									
14 STR	1 2 3 4 5		••••• ••••• ••••• ••••• •••••	••••• ••••• ••••• ••••• •••••	••••• ••••• ••••• ••••• •••••	••••• ••••• ••••• ••••• •••••	••••• ••••• ••••• ••••• •••••	••••• ••••• ••••• ••••• •••••	••••• ••••• ••••• ••••• •••••							
14 SOL	1 2 3 4 5		••••• ••••• ••••• ••••• •••••	••••• ••••• ••••• ••••• •••••	••••• ••••• ••••• ••••• •••••	••••• ••••• ••••• ••••• •••••	••••• ••••• ••••• ••••• •••••	••••• ••••• ••••• ••••• •••••	••••• ••••• ••••• ••••• •••••	••••• ••••• ••••• ••••• •••••						
12 STR	1 2 3 4			••••• ••••• ••••• •••••	••••• ••••• ••••• •••••	••••• ••••• ••••• •••••	••••• ••••• ••••• •••••	••••• ••••• ••••• •••••	••••• ••••• ••••• •••••	••••• ••••• ••••• •••••	••••• ••••• ••••• •••••					
12 SOL	1 2 3 4			••••• ••••• ••••• •••••	••••• ••••• ••••• •••••	••••• ••••• ••••• •••••	••••• ••••• ••••• •••••	••••• ••••• ••~••~ •••••	••••• ••••• ••••• •••••	••••• ••••• ••••• •••••	••••• ••••• ••••• •••••					
10 STR	1 2				••••• •••••	••••• •••••	••••• •••••	••••• •••••	••••• •••••	••••• •••••	••••• •••••	••••• •••••	••••• •••••	••••• •••••		
10 SOL	1 2				••••• •••••	••••• •••••	••••• •••••	••••• •••••	••••• •••••	••••• •••••	••••• •••••	••••• •••••	••••• •••••	••••• •••••	••••• •••••	••••• •••••
8 SOL	1 2							•	•	•	•	•	•	•	•	•
8 STR	1 2							•	•	•	•	•	•	•	•	•
<b>412</b>	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4	0 1 2 3 4	0 1 2 3	0 1 2 3	0 1 2	0 1 2	0 1 2	0 1 2		
	22 SOL or STR	20 SOL or STR	18 STR	18 SOL	16 STR	16 SOL	14 STR	14 SOL	12 STR	12 SOL	10 STR	10 SOL				

## Other Combinations

1 #16 w/1-2 #14 w/1 #12 or 10	1 #22 w/ 1 #18 w/ 1 #16
1 #22 w/ 1 #20 w/ 1-2 #16	1 #14 w/ 1-2 #12 w/ 1 #10
2 #14 w/ 1 #12 w/ 1 #10	1 #16 w/ 1 #12 w/ 1 #10
2 #16 w/ 2 #14 w/ 1 #12	2 #16 w/ 1 #12 w/ 1 #10
3 #16 w/ 1 #14 w 1 #12	4 #16 w/ 1 #12 w/ 1 #10
1#20sol w/ 1#22sol	

3M is a trademark of 3M Company.

### Important Notice

All statements, technical information, and recommendations related to 3M's products are based on information believed to be reliable, but the accuracy or completeness is not guaranteed. Before using this product, you must evaluate it and determine if it is suitable for your intended application. You assume all risks and liability associated with such use. Any statements related to the product which are not contained in 3M's current publications, or any contrary statements contained on your purchase order shall have no force or effect unless expressly agreed upon, in writing, by an authorized officer of 3M.

### Warranty; Limited Remedy; Limited Liability.

This product will be free from defects in material and manufacture for a period of one year from the time of purchase. 3M MAKES NO OTHER WARRANTIES INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. If this product is defective within the warranty period stated above, your exclusive remedy shall be, at 3M's option, to replace or repair the 3M product or refund the purchase price of the 3M product. Except where prohibited by law, 3M will not be liable for any indirect, special, incidental or consequential loss or damage arising from this 3M product, regardless of the legal theory asserted.



### Electrical Markets Division

6801 River Place Blvd.  
Austin, TX 78726-9000  
www.3M.com/electrical

Litho in USA

© 3M 2005 78-8126-6759-6-A



# Electrical Spring Connector 412

## Data Sheet



### Application

The 3M™ Electrical Spring Connector 412 will electrically connect copper conductors in a pigtail application.

### Wire

#### AWG Range

Copper conductors only, No. 22 through 8 solid and/or stranded.  
(See wire matrix for specific combinations)

#### Metric Range

Copper conductors only, .5mm<sup>2</sup> thru 6mm<sup>2</sup> ridged (solid or stranded).

### Construction

**Spring** - Spring steel, corrosion-resistant coating  
**Insulator** - PVC

### Weight

0.0068 lbs (3,1 grams)

### Performance Test

The following tests were performed to the specifications of UL Standard 486C and CSA Standard C22.2 No. 188.

Static Heating	Pass
Secureness	Pass
Pullout	Pass
Dielectric Voltage Withstand	Pass
Secureness of Insulation	Pass
Flammability	V2 Min.

### Engineering Specification

3M Spring Connector 412 is capable of a 1 conductor termination or a 2 or more conductor connection in a pigtail application. The connector shall be UL listed and CSA certified as a pressure wire connector. The connector shall be rated 600 volts maximum for building wire and 1000 volts maximum for lighting fixtures. The connector shall have a maximum operating temperature of 105°C (221°F).

### Installation Instructions

**Caution**

Turn power off before installing or removing terminal. All electrical work should be done according to appropriate electrical codes.

1. Strip wire insulation ½ inch.
2. Firmly grasp wires and ensure conductor ends are even. Conductors may be twisted or untwisted.
3. Place connector over the stripped conductor tips.
4. Turn connector on in a clockwise direction until secure.
5. To remove, turn connector counter-clockwise.

### Regulatory Agencies

**UL Listed** as a Wire Connector, tested per UL Standard 486C, UL File No. E23438  
Operating Temperature: 105°C (221°F)  
Voltage Rating: 600 volts max building wire, 1000 volts max signs and fixtures.

**CSA Certified**  
CSA Standard C22.2 No. 188, CSA File No. LR15503  
Operating Temperature: 105°C (221°F)  
Voltage Rating: 600 volts max building wire, 1000 volts max signs and fixtures.

# Wire Matrix

22 SOL or STR	1 2 3 4	••••														
20 SOL or STR	1 2 3 4	••••	••••													
18 STR	1 2 3 4 5	••••	••••	••••												
18 SOL	1 2 3 4 5	••••	••••	••••	••••											
16 STR	1 2 3 4 5	••••	••••	••••	••••	••••										
16 SOL	1 2 3 4 5	••••	••••	••••	••••	••••	••••									
14 STR	1 2 3 4 5		••••	••••	••••	••••	••••	••••								
14 SOL	1 2 3 4 5		••••	••••	••••	••••	••••	••••	••••							
12 STR	1 2 3 4			••••	••••	••••	••••	••••	••••	••••						
12 SOL	1 2 3 4			••••	••••	••••	••••	••••	••••	••••	••••					
10 STR	1 2				••••	••••	••••	••••	••••	••••	••••	••••				
10 SOL	1 2				••••	••••	••••	••••	••••	••••	••••	••••	••••			
8 SOL	1 2								•	•	•	•	•	•	•	•
8 STR	1 2													•	•	•
<b>412</b>	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4	0 1 2 3 4	0 1 2 3	0 1 2 3	0 1 2	0 1 2	0 1 2			
	22 SOL or STR	20 SOL or STR	18 STR	18 SOL	16 STR	16 SOL	14 STR	14 SOL	12 STR	12 SOL	10 STR	10 SOL				

### Other Combinations

1 #16 w/1-2 #14 w/1 #12 or 10      1 #22 w/ 1 #18 w/ 1 #16

1 #22 w/ 1 #20 w/ 1-2 #16      1 #14 w/ 1-2 #12 w/ 1 #10

2 #14 w/ 1 #12 w/ 1 #10      1 #16 w/ 1 #12 w/ 1 #10

2 #16 w/ 2 #14 w/ 1 #12      2 #16 w/ 1 #12 w/ 1 #10

3 #16 w/ 1 #14 w 1 #12      4 #16 w/ 1 #12 w/ 1 #10

1 #20sol w/ 1 #22sol

3M is a trademark of 3M Company.

### Important Notice

All statements, technical information, and recommendations related to 3M's products are based on information believed to be reliable, but the accuracy or completeness is not guaranteed. Before using this product, you must evaluate it and determine if it is suitable for your intended application. You assume all risks and liability associated with such use. Any statements related to the product which are not contained in 3M's current publications, or any contrary statements contained on your purchase order shall have no force or effect unless expressly agreed upon, in writing, by an authorized officer of 3M.

### Warranty; Limited Remedy; Limited Liability.

This product will be free from defects in material and manufacture for a period of one year from the time of purchase. 3M MAKES NO OTHER WARRANTIES INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. If this product is defective within the warranty period stated above, your exclusive remedy shall be, at 3M's option, to replace or repair the 3M product or refund the purchase price of the 3M product. Except where prohibited by law, 3M will not be liable for any indirect, special, incidental or consequential loss or damage arising from this 3M product, regardless of the legal theory asserted.



### Electrical Markets Division

6801 River Place Blvd.  
Austin, TX 78726-9000  
www.3M.com/electrical

Litho in USA  
© 3M 2005 78-8126-6759-6-A