



# 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

<b>Caution</b>
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											•	•	•	•	•	•	•	•				
412		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

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**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

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