

**SERIES**  
**790**  
**HD**

## Cable Receptacle with Backshell Groove

- ◆ Crimp, rear-release
- ◆ Pin contacts



- Aerospace-grade microminiature connector with M39029-type crimp contacts
- 42 insert arrangements with up to 153 contacts
- Environmental

## HOW TO ORDER

| Sample Part Number                |                                                                                                                                                                                                                                                                              | 790-024P | H-66 | M | S |
|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|------|---|---|
| Basic Part Number                 | 790-024P Cable Receptacle, Pin Contacts                                                                                                                                                                                                                                      |          |      |   |   |
| Shell Size-Insert Arr.            | See <i>"Insert Arrangements"</i> Table                                                                                                                                                                                                                                       |          |      |   |   |
| Shell Finish                      | <b>M</b> Electroless Nickel<br><b>MT</b> Nickel / PTFE<br><b>NF</b> Olive Drab Cadmium<br><b>TZ</b> Tin-Zinc<br><b>ZR</b> Black Zinc-Nickel                                                                                                                                  |          |      |   |   |
| Hardware Option<br><i>Table 1</i> | <b>N</b> Thru-Hole <i>No Hardware</i><br><b>K</b> Extended Jackscrews <i>Slot head male</i><br><b>L</b> Jackscrews <i>Socket head male</i><br><b>P</b> Female Jackposts<br><b>S</b> Screwlocks <i>Socket head male</i><br><b>T</b> Extended Screwlocks <i>Slot head male</i> |          |      |   |   |

| TABLE 1 HARDWARE OPTIONS                                                            |                                                                                     |                                                                                      |                                                                                       |                                                                                       |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |  |  |  |  |
| <b>N</b>                                                                            | <b>K</b>                                                                            | <b>L</b>                                                                             | <b>P</b>                                                                              | <b>S</b>                                                                              | <b>T</b>                                                                              |
| No Hardware<br>Thru Mounting<br>Holes                                               | Extended<br>Jackscrew<br>Slot Head                                                  | Jackscrew<br>Socket Head                                                             | Female Jackscrew<br>With Nut and<br>Lockwasher                                        | Screwlock<br>Socket Head                                                              | Extended<br>Screwlock<br>Slot Head                                                    |

Screwlocks allow connector to be plugged in before the screws are tightened. Jackscrews must be tightened in order to mate connector.

## CONSTRUCTION

- **Contacts:** Copper alloy, gold over nickel finish
- **Shell:** Aluminum
- **Insulators:** High performance thermoplastic
- **Wire grommet, face seal:** Fluorosilicone/silicone blend
- **Contact retaining clip:** Beryllium copper, unplated
- **Hardware:** Stainless steel

# MICRO-CRIMP RECTANGULAR CONNECTORS

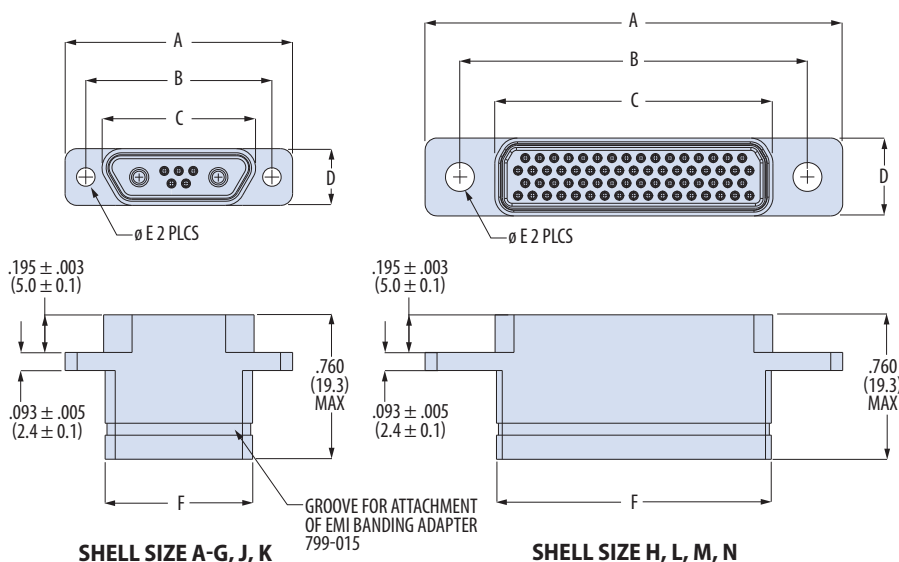
## Series 790 High-Density



### 790-024

### Cable Receptacle with Backshell Groove

- ◆ Crimp, rear-release
- ◆ Pin contacts



#### Application Note

##### Panel Mounting

For panel mounting, specify connector with Hardware Option N (thru-holes). Use rear panel mount jackpost **799-117**. See page F-18 for jackpost ordering information, page F-19 for panel cutout dimensions.

#### Application Note

##### EMI Banding Backshells



**799-011**

See page F-24 for backshell ordering information



**799-015**

See page F-26 for backshell ordering information

| Shell Size | A Max |      | B ± .005 (0.1) |      | C Max |      | D Max |      | ø E ± .004 (0.1) |     | F Max |      |
|------------|-------|------|----------------|------|-------|------|-------|------|------------------|-----|-------|------|
|            | in    | mm   | in             | mm   | in    | mm   | in    | mm   | in               | mm  | in    | mm   |
| A          | .785  | 19.9 | .565           | 14.4 | .400  | 10.2 | .308  | 7.8  | .092             | 2.3 | .390  | 9.9  |
| B          | .935  | 23.7 | .715           | 18.2 | .551  | 14.0 | .308  | 7.8  | .092             | 2.3 | .540  | 13.7 |
| C          | 1.085 | 27.6 | .865           | 22.0 | .701  | 17.8 | .308  | 7.8  | .092             | 2.3 | .690  | 17.5 |
| D          | 1.185 | 30.1 | .965           | 24.5 | .801  | 20.3 | .308  | 7.8  | .092             | 2.3 | .790  | 20.1 |
| E          | 1.335 | 33.9 | 1.115          | 28.3 | .951  | 24.2 | .308  | 7.8  | .092             | 2.3 | .940  | 23.9 |
| F          | 1.485 | 37.7 | 1.265          | 32.1 | 1.101 | 28.0 | .308  | 7.8  | .092             | 2.3 | 1.090 | 27.7 |
| G          | 1.435 | 36.4 | 1.215          | 30.9 | 1.079 | 27.4 | .395  | 10.0 | .092             | 2.3 | 1.055 | 26.8 |
| H          | 2.175 | 55.2 | 1.800          | 45.7 | 1.450 | 36.8 | .410  | 10.4 | .149             | 3.8 | 1.440 | 36.6 |
| J          | 1.845 | 46.9 | 1.615          | 41.0 | 1.460 | 37.1 | .308  | 7.8  | .092             | 2.3 | 1.450 | 36.8 |
| K          | 2.240 | 56.9 | 2.015          | 51.2 | 1.860 | 47.2 | .308  | 7.8  | .092             | 2.3 | 1.840 | 46.7 |
| L          | 2.420 | 61.5 | 2.036          | 51.7 | 1.686 | 42.8 | .410  | 10.4 | .149             | 3.8 | 1.675 | 42.5 |
| M          | 2.575 | 65.4 | 2.200          | 55.9 | 1.745 | 44.3 | .470  | 11.9 | .172             | 4.4 | 1.740 | 44.2 |
| N          | 3.240 | 82.3 | 2.725          | 69.2 | 2.145 | 54.5 | .567  | 14.4 | .248             | 6.3 | 2.115 | 53.7 |

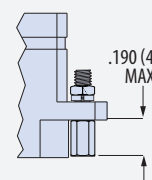
#### CRIMP CONTACTS AND TOOLS

Contacts are bulk packed with connector. Spare contacts are not included with connector and are ordered separately. See "Contacts and Tools" section for additional information.

| Contact Size | Pin Contact Part No. | AWG Wire Size | Installing and Removal Tool      | Tool                             | Crimp Tools Positioner          | Die Assembly                     |
|--------------|----------------------|---------------|----------------------------------|----------------------------------|---------------------------------|----------------------------------|
| 23           | <b>809-001</b>       | 22 – 28       | <b>809-088</b>                   | <b>809-015</b><br>(M22520/2-01)  | <b>809-005</b><br>(K1461)       | —                                |
| 16           | <b>809-110</b>       | 16 – 20       | <b>809-131</b><br>(M81969/14-03) | <b>809-136</b><br>(M22520/1-01)  | <b>809-137</b><br>(M22520/1-04) | —                                |
| 12           | <b>809-112</b>       | 12 – 14       | <b>809-132</b><br>(M81969/14-04) | <b>809-136</b><br>(M22520/1-01)  | <b>809-137</b><br>(M22520/1-04) | —                                |
| 8            | <b>850-014F</b>      | 8             | <b>859-049</b><br>(M81969/14-12) | <b>859-025</b><br>(M22520/23-01) | <b>859-046</b><br>(WA23-395L)   | <b>859-026</b><br>(M22520/23-02) |

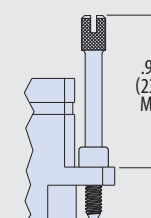
#### HARDWARE DIMENSIONS

| Shell Size  | Thread Size |
|-------------|-------------|
| A – G, J, K | #2-56       |
| H, L        | #4-40       |
| M           | #6-32       |
| N           | #10-32      |



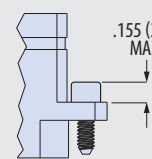
**P**

Female Jackpost with Hex Nut and Lockwasher



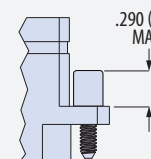
**K T**

Extended Jackscrew and Screwlock



**L**

Low Profile Jackscrew Socket Head



**S**

Low Profile Screwlock Socket Head

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## Series 790 High-Density

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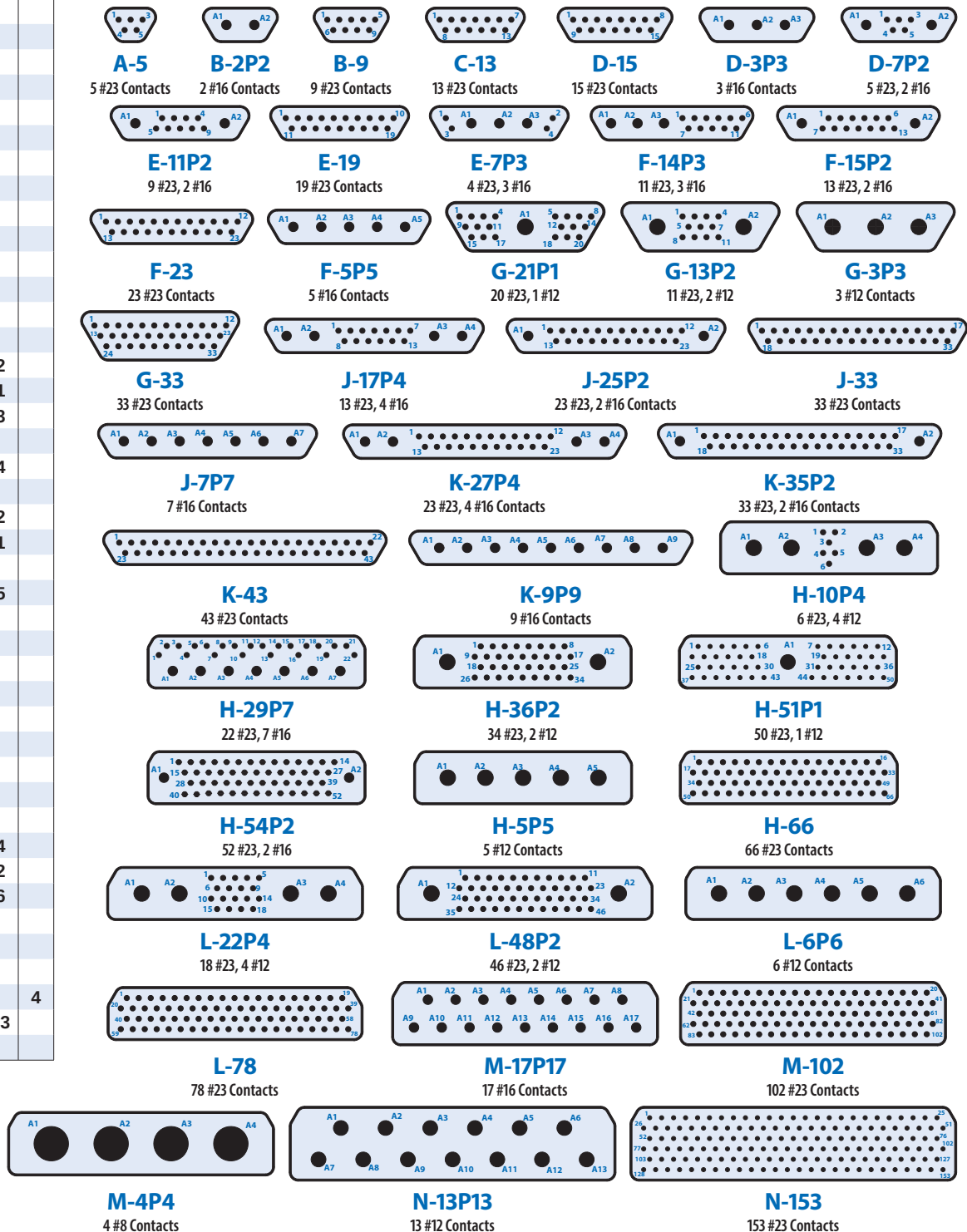
### Insert Arrangements

SERIES 790 HIGH-DENSITY

| INSERT ARRANGEMENTS |                 |     |     |    |
|---------------------|-----------------|-----|-----|----|
| Insert Arr.         | No. of Contacts |     |     |    |
|                     | #23             | #16 | #12 | #8 |
| A-5                 | 5               |     |     |    |
| B-2P2               |                 | 2   |     |    |
| B-9                 | 9               |     |     |    |
| C-13                | 13              |     |     |    |
| D-15                | 15              |     |     |    |
| D-3P3               |                 | 3   |     |    |
| D-7P2               | 5               | 2   |     |    |
| E-11P2              | 9               | 2   |     |    |
| E-19                | 19              |     |     |    |
| E-7P3               | 4               | 3   |     |    |
| F-14P3              | 11              | 3   |     |    |
| F-15P2              | 13              | 2   |     |    |
| F-23                | 23              |     |     |    |
| F-5P5               |                 | 5   |     |    |
| G-13P2              | 11              |     | 2   |    |
| G-21P1              | 20              |     | 1   |    |
| G-3P3               |                 |     | 3   |    |
| G-33                | 33              |     |     |    |
| H-10P4              | 6               |     | 4   |    |
| H-29P7              | 22              | 7   |     |    |
| H-36P2              | 34              |     | 2   |    |
| H-51P1              | 50              |     | 1   |    |
| H-54P2              | 52              | 2   |     |    |
| H-5P5               |                 |     | 5   |    |
| H-66                | 66              |     |     |    |
| J-17P4              | 13              | 4   |     |    |
| J-25P2              | 23              | 2   |     |    |
| J-33                | 33              |     |     |    |
| J-7P7               |                 | 7   |     |    |
| K-27P4              | 23              | 4   |     |    |
| K-35P2              | 33              | 2   |     |    |
| K-43                | 43              |     |     |    |
| K-9P9               |                 | 9   |     |    |
| L-22P4              | 18              |     | 4   |    |
| L-48P2              | 46              |     | 2   |    |
| L-6P6               |                 |     | 6   |    |
| L-78                | 78              |     |     |    |
| M-17P17             |                 | 17  |     |    |
| M-102               | 102             |     |     |    |
| M-4P4               |                 |     |     | 4  |
| N-13P13             |                 |     | 13  |    |
| N-153               | 153             |     |     |    |

#### ⚠ Cavity Numbers

Cavity numbers shown are for mating face of receptacle (pin) connector. Plug (socket) numbers are reversed.



# MICRO-CRIMP RECTANGULAR CONNECTORS

## Series 790 High-Density



## Specifications

### CONSTRUCTION

|                         |                                           |
|-------------------------|-------------------------------------------|
| Contacts                | Copper alloy, gold over nickel finish     |
| Hood, socket contact    | Stainless steel, passivated               |
| Clip, contact retaining | Beryllium copper                          |
| Clip, insert retaining  | Beryllium copper                          |
| Insulators              | High performance thermoplastic            |
| Grommet and face seal   | Fluorosilicone/silicone blend             |
| Shell                   | Aluminum                                  |
| Gasket, panel           | Cho-Seal 1287 Ag/Al filled fluorosilicone |
| EMI spring              | Stainless steel, gold plated              |
| EMI shroud (90° PCB)    | Aluminum                                  |
| Encapsulant (PCB)       | Epoxy                                     |
| Hardware                | Stainless steel, passivated               |

### RATINGS

|                       |                                                                   |                    |
|-----------------------|-------------------------------------------------------------------|--------------------|
| Voltage (DWV)         | Size 23 contacts: 750 VAC<br>Size 8, 12 and 16 contacts: 1800 VAC |                    |
| Current Rating        | <b>Contact Size</b>                                               | <b>Current (A)</b> |
|                       | #23                                                               | 5                  |
|                       | #16                                                               | 13                 |
|                       | #12                                                               | 23                 |
|                       | #8                                                                | 46                 |
| Operating Temperature | -65 to +150 °C                                                    |                    |
| Ingress Protection    | IP67                                                              |                    |
| Durability            | 500 mating cycles                                                 |                    |

### PRODUCT SPECIFICATIONS

| Description                     | Requirement                                               | Procedure                                       |
|---------------------------------|-----------------------------------------------------------|-------------------------------------------------|
| Contact Resistance              | SAE AS39029 Table 5                                       | EIA-364-06                                      |
| Low Level Contact Resistance    | SAE AS39029 Table 4                                       | EIA-364-23                                      |
| Insulation Resistance           | 5000 megohms minimum                                      | EIA-364-21                                      |
| Dielectric Withstanding Voltage | #23 contacts 750 volts, #8, 12 & 16 contacts 1800 volts   | EIA-364-20                                      |
| Current Rating                  | #23: 5A, #16: 13A, #12: 23A, #8: 46A                      | EIA-364-70 Method 1                             |
| Shell-to-shell Resistance       | 2.5 millivolt drop maximum (connector with EMI spring)    | EIA-364-83                                      |
| Shielding Effectiveness         | 100 – 1000MHz: >50 dB, 1 – 4GHz: >41dB, 4 – 10GHz: >35 dB | EIA-364-66                                      |
| Ingress Protection              | IP67 rating                                               | IEC-60529                                       |
| Vibration, Sine                 | 20 g                                                      | EIA-364-28 Test Condition IV                    |
| Vibration, Random               | 16.91 g rms                                               | EIA-364-28 Test Condition V Letter E            |
| Mechanical Shock                | 300 g                                                     | EIA-364-27 Condition D                          |
| Thermal Shock                   | -65 to +150 °C                                            | EIA-364-32 Test Condition IV                    |
| Humidity                        | 10 Day, +25 to +65° C                                     | EIA-364-31 Method IV, Step 7b vibration deleted |
| Mechanical Durability           | 500 mating cycles                                         | EIA-364-09                                      |
| Salt Spray                      | Plating code M: 48 hours, MT, ZR, N, TZ: 500 hours        | EIA-364-26                                      |
| Solderability, PC Tail Contacts | 95% solder coverage. Smooth, bright and even finish.      | EIA-364-52 Category 3, 8 hours steam aging      |
| Resistance To Soldering Heat    | 260° C, 10 seconds                                        | EIA-364-56                                      |
| Fluid Immersion                 | No damage from immersion in various fuels and oils.       | EIA-364-10                                      |
| Altitude Immersion              | 75,000 feet                                               | EIA-364-03                                      |
| Contact Retention               | MIL-DTL-38999 Table XVIII                                 | EIA-364-29                                      |
| Contact Separation Force        | SAE AS39029 Table 9                                       | EIA-364-37                                      |
| Magnetic Permeability           | 2 μ maximum.                                              | EIA-364-54                                      |

# MICRO-CRIMP RECTANGULAR CONNECTORS

## Series 790 High-Density



### Series 790 Material and Finish Options

SERIES 790 HIGH-DENSITY

**The Series 790 Micro-Crimp® connector is available in five preferred finishes: electroless nickel, nickel-PTFE, tin-zinc, cadmium, and zinc-nickel.**

Additional material and finish options are available. Replace the preferred plating code with the alternate code from the table below.

#### SERIES 790 SHELL FINISH OPTIONS

|                               | Electroless Nickel | Nickel-PTFE | Tin-Zinc  | Olive Drab Cadmium | Black Zinc-Nickel |
|-------------------------------|--------------------|-------------|-----------|--------------------|-------------------|
| Glenair Code                  | <b>M</b>           | <b>MT</b>   | <b>TZ</b> | <b>N</b>           | <b>ZR</b>         |
| Corrosion Resistance          | Fair               | Excellent   | Excellent | Excellent          | Excellent         |
| Salt Spray Hours              | 48                 | 500         | 500       | 500                | 500               |
| Conductivity                  | Excellent          | Excellent   | Very Good | Very Good          | Very Good         |
| RoHS Compliant <sup>(1)</sup> | Yes                | Yes         | Yes       | No                 | Yes               |

<sup>(1)</sup> Does not contain cadmium or hexavalent chromium. Meets EU requirements.

#### TIN-ZINC PLATING

The United States Department of Defense (DOD) has mandated the elimination of cadmium from DOD weapons systems because of toxicity concerns. The European Union has also restricted the use of cadmium on electronics equipment (RoHS). Tin-Zinc is a RoHS cadmium-free sacrificial finish that offers high conductivity and shielding performance, corrosion resistance, solderability, and proven compatibility with legacy cadmium and zinc-nickel finishes. Tin-Zinc is DLA-qualified and RoHS compliant.

#### ALTERNATE SHELL MATERIAL AND FINISH CODES

| Code                   | Shell Material | Shell Finish        | Finish Specification | Salt Spray Hrs. | Electrical Conductivity | RoHS <sup>(1)</sup> |
|------------------------|----------------|---------------------|----------------------|-----------------|-------------------------|---------------------|
| <b>C</b>               | Alum           | Anodize, Black      | MIL-PRF-8625         | 48              | Non-Conductive          | ✓                   |
| <b>E<sup>(2)</sup></b> | Alum           | Chem Film, Gold     | MIL-DTL-5541         | 168             | Conductive              |                     |
| <b>J</b>               | Alum           | Cadmium, Yellow     | AMS-QQ-P-416         | 500             | Conductive              |                     |
| <b>Z1</b>              | SST            | Passivate           | AMS2700              | 500             | Conductive              | ✓                   |
| <b>Z2</b>              | Alum           | Gold                | MIL-DTL-45204        | 48              | Conductive              | ✓                   |
| <b>ZM</b>              | SST            | Electroless Nickel  | AMS-C-26074          | 500             | Conductive              | ✓                   |
| <b>ZMT</b>             | SST            | Nickel-PTFE         | AMS2454              | 1000            | Conductive              | ✓                   |
| <b>ZW</b>              | SST            | Cadmium, Olive Drab | AMS-QQ-P-416         | 500             | Conductive              |                     |
| <b>ZZR</b>             | SST            | Zinc-Nickel, Black  | ASTM B841            | 500             | Conductive              | ✓                   |

<sup>(1)</sup> Does not contain cadmium or hexavalent chromium. Meets EU requirements.

<sup>(2)</sup> Maximum temperature = +125°C