HIGH SPEED RACK & PANEL CONNECTORS
TECHNICAL CHARACTERISTICS

SPECIFICATIONS
Temperature Rating: -55°C to +125°C
Corrosion: MIL-STD-202 Method 101, Test Condition B
Vibration: MIL-STD-202 Method 204, Test Condition B
Thermal Shock: MIL-STD-202 Method 107, Test Condition B
Durability: 500 Mate/Unmate cycles/min.
Dielectric Withstand Voltage: 250 VDC
Insulation Resistance: 5.000 MegaOhms min
Contact Current Rating: 3.0 Amps D.C. max.
Bandwidth: Up to 3 Gigahertz
Data Rates: Contacts designed to exceed 6 Gbps assembly dependent upon type and length of cable used
Differential Pair Cable Impedance: 150 Ohm ± 15Ohm and 100 Ohm ± 10 Ohms
Signal to Shield Cable Impedance: 75 Ohm ± 10 Ohm and 50 Ohm ± 7 Ohms

MATERIALS AND FINISHES
Sheils & Inner Contacts: Brass per ASTM-B16, alloy UNS C3600 or BeCU per ASTM-B196, alloy UNS C17200, C17300 or leaded nickel copper, alloy UNS C19500, C19600
Gold plate per MIL-DTL-45204 Type II, Class 1
Insulators: PTFE per ASTM-D1710 or ULTERM 1000
Connector Plug/Receptacle Shells: Aluminum per ASTM-B211/221, 6061-T6 or Electroless nickel plate per SAE AMS-C-26074 or Cadmium plate per SAE AMS QQ-P-416
Gasket/Seal: Silicone rubber per A-A-59588

HIGH SPEED RACK & PANEL

› Fibre Channel
› Ethernet: 10 Base-T, 100 Base-T, 1000 Base-T
› Firewire: IEEE 1394a and 1394b
› USB, DVII, HDMI and Infiniband

Smiths Connectors offers a complete line of differential Twinax and Quadrax connectors, contacts and cable assemblies for high speed Ethernet, Firewire, and Fibre Channel applications. Differential pair quadrax and twinax connectors and cable assemblies offer superior performance in high speed matched impedance data-on-demand applications. The signal to signal and signal to shield characteristic impedance is maintained throughout the connector pair. A true twinaxial connector interface ensures signal integrity while minimizing jitter and data rate errors.

Testing Capabilities
Smiths Connectors Quadrax and Twinax interconnects are characterized for testing eye pattern, jitter, skew, and insertion loss on differential pair 100 ohm high speed Gigabit Ethernet applications with a wide variety of testing protocols. We utilize the Agilent E5071C 4 port network analyzer to measure the differential pair TDR impedance between Twinax connectors, cable assemblies, and quad cable Ethernet and Fibre Channel interconnect systems ensuring the most accurate acquired signal for high speed communications testing. The E5071C 4 port network analyzer is capable of highly accurate 100 Ohm differential measurements up to 20 GHz and can measure Eye Diagrams up to 16 Gbps.
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Smiths Connectors’ ARINC 600 connector series are designed for interconnect systems including 100 Base-T, Ethernet, and high speed video Hot-Link. These connectors can be fitted with Ethernet based Quad 100 Ohm contacts or differential pair 100 Ohm or 150 Ohm matched impedance contacts.

The ARINC 600 Series can also be routed with ruggedized expanded beam fiber optic contacts or concentric triaxial contacts designed for numerous low-loss twinaxial and concentric triax cables in a variety of impedance values.

ARINC 600 Front Release/Front Removable Insert Layouts

ARINC 600 Rear Release/Rear Removable Insert Layouts

Note: Removable Size 8 Twinax and Quadrax Contacts use removal tool M81969/14-06
ARINC 600 SHELL SIZE 1 PLUG

ARINC 600 SHELL SIZE 1 RECEPTACLE

ARINC 600 SHELL SIZE 2 PLUG

ARINC 600 SHELL SIZE 2 RECEPTACLE

ARINC 600 SHELL SIZE 3 PLUG

ARINC 600 SHELL SIZE 3 RECEPTACLE
ARINC 600

1. **SIZE 8 PIN QUADRAX CONTACT 100 OHM**
   - Front Release/Rear Removable
   - P/N 019617-2107

2. **SIZE 8 SOCKET QUADRAX CONTACT 100 OHM**
   - Front Release/Rear Removable
   - P/N 019535-2031

3. **SIZE 8 PIN QUADRAX CONTACT PCB MOUNT 100 OHM**
   - Front Release/Rear Removable
   - P/N 019617-2107

4. **SIZE 8 TWINAX PIN CONTACT 100 OHM**
   - P/N 019634-8025
   - P/N 019634-8026
   - P/N 019634-8027

5. **SIZE 8 TWINAX SOCKET CONTACT 100 OHM**
   - P/N 019534-8025
   - P/N 019534-8026
   - P/N 019534-8027
# HOW TO ORDER

<table>
<thead>
<tr>
<th>600</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>5</th>
<th>6</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
</table>

1. **PREFIX**

2. **SHELL SIZE**
   - 1, 2, 3

3. **SHELL STYLE**
   - P: PLUG
   - R: RECEPTACLE

4. **PLATING**
   - C: CADMIUM (YELLOW CHROMATE)
   - N: ELECTROLESS NICKEL

5. **INSERT ARRANGEMENTS**
   - CAVITY A, B, C, D, E, F

6. **CONTACT TYPE**
   - P: PIN (Front Release/Rear Removable PC Tail Version)
   - S: SOCKET (Rear Release/Rear Removable Cable Mount)

7. **CONTACT TERMINATION**
   - S: SOLDER CUP
   - P: PC TAIL
   - C: CRIMP
Smiths Connectors’ MIL-DTL-83527 Rack and Panel style connectors meet or exceed the applicable requirements of the military specification and come in a wide variety of insert arrangements and shell sizes. Contact patterns include mixed Signal, Power, Coax, Triax, Fiber Optic (ARINC 801 and Expanded Beam Contacts) Twinax and Quadrax contacts for standard or custom insert arrangements. They can also incorporate EMI filtering and transient EMP protection to help maintain signal integrity.

Smiths Connectors’ Twinax and Quadrax contacts offer balanced and matched impedance performance for a wide variety of transmission systems and cable characteristics. Our contacts are designed to ensure optimum signal integrity even at the highest data rates.

Contacts are offered with crimp or solder termination with anti-rotational keyed insert assemblies for High-Speed Fibre Channel or Ethernet type applications. These connectors are designed for extreme environmental concerns including shock, vibration and humidity.

FEATURES:
► Isolated cavities available for tempest applications
► EMI/RFI environmentally sealed backshells
► Single or Multiport exit termination points with standard MIL-DTL-38999 backshells.

BACKSHELLS
Smiths Connectors’ rugged EMI/RFI environmental backshells for MIL-DTL-83527 and ARINC 600 connectors offer many innovative features including accessory threads, optional cable entry locations as well as single or multi-cavity ports.

FEATURES:
► EMI/RFI Environmentally sealed backshells
► Moisture, splash and dust proof
► Resilient gasket sealing from the rear of the connector shell to the backshell junction

Sample Backshells
MIL-DTL-83527
SHELL SIZE 4A PLUG

MIL-DTL-83527
SHELL SIZE 4A RECEPTACLE

MIL-DTL-83527 INSERT ARRANGEMENTS

For Size 8 Contacts Please Specify:
T = Twinax/Quadrax Cavity (Anti-Rotational)
C = Coaxial/Triaxial Cavity

Smiths Connectors provides specialty, enhanced performance connectors and cable assemblies and as such does not currently offer circular, rack and panel, or D-subminiature connectors that are listed on military standard Qualified Products Lists (QPL) per applicable detail specification sheets. Smiths Connectors’ connectors are fully intermateable with applicable QPL products and meet the applicable requirements of all military standards listed in this catalog.
SIZE 8 TWINAX PIN CONTACT 100 AND 150 OHM

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>OHMS</th>
<th>CABLE TYPE</th>
<th>CABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>019634-0005</td>
<td>150</td>
<td>Differential Twinax</td>
<td>540-1099-000</td>
</tr>
<tr>
<td>019634-0006</td>
<td>150</td>
<td>Differential Twinax</td>
<td>540-1114-000</td>
</tr>
<tr>
<td>019634-0007</td>
<td>100</td>
<td>Differential Twinax</td>
<td>540-1086-000</td>
</tr>
<tr>
<td>019634-0008</td>
<td>100</td>
<td>Differential Twinax</td>
<td>540-1153-000</td>
</tr>
<tr>
<td>019634-0009</td>
<td>100</td>
<td>Flexible Twinax</td>
<td>540-1161-000</td>
</tr>
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</table>

SIZE 8 TWINAX SOCKET CONTACT 100 AND 150 OHM

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<tr>
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<td>100</td>
<td>Differential Twinax</td>
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<td>100</td>
<td>Flexible Twinax</td>
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</table>

SIZE 8 QUADRAX PIN CONTACT 100 OHM

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<th>PART NUMBER</th>
<th>CABLE TYPE</th>
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</tr>
</thead>
<tbody>
<tr>
<td>019635-0000</td>
<td>Differential Quad</td>
<td>540-1183-000</td>
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SIZE 8 QUADRAX SOCKET CONTACT 100 OHM

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<td>Differential Quad</td>
<td>540-1183-000</td>
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# HOW TO ORDER

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<tbody>
<tr>
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<td>6</td>
</tr>
</tbody>
</table>

**1 › PREFIX**

**2 › SHELL STYLE**
- P PLUG
- R RECEPTACLE

**3 › SHELL SIZE**
- 2A, 3A, 4A

**4 › PLATING**
- G CADMIUM (YELLOW CHROMATE)
- N ELECTROLESS NICKEL

**5 › INSERT ARRANGEMENTS**
- CAVITY A, B, C, D, E, F

**6 › CONTACT TYPE**
- P PIN
- S SOCKET

**7 › CONTACT TERMINATION**
- S SOLDER CUP
- P PC TAIL
- C CRIMP
# HOW TO ORDER

## 1 CONNECTOR #1

## 2 CABLE GROUP #

<table>
<thead>
<tr>
<th>Flexible Twinax</th>
<th>Differential Twinax</th>
<th>Differential Quadrax</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 = M17/176-00002</td>
<td>540-1099-000</td>
<td>540-1138-000</td>
</tr>
<tr>
<td>2 = 540-1086-000</td>
<td>540-1114-000</td>
<td>540-1143-000</td>
</tr>
<tr>
<td>3 = 540-1161-000</td>
<td>540-1153-000</td>
<td>540-1183-000</td>
</tr>
<tr>
<td>4 = 540-1167-000</td>
<td>540-1161-000</td>
<td>540-1235-000</td>
</tr>
<tr>
<td>5 = 540-1210-000</td>
<td>540-1236-000</td>
<td>540-1209-000</td>
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</tbody>
</table>

## 3 CONNECTOR #2

- OL for Open Lead

## 4 CABLE LENGTH IN INCHES (XXX)

<table>
<thead>
<tr>
<th>CABLE GROUP</th>
<th>CABLE DESIGNATION</th>
<th>IMPEDANCE (OHMS)</th>
<th>JACKET</th>
<th>CONDUCTOR (DIA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>M17/176-00002</td>
<td>77</td>
<td>0.129&quot;</td>
<td>0.024&quot;</td>
</tr>
<tr>
<td>2</td>
<td>540-1086-000</td>
<td>98</td>
<td>0.143&quot;</td>
<td>0.019&quot;</td>
</tr>
<tr>
<td>3</td>
<td>540-1161-000</td>
<td>100</td>
<td>0.130&quot;</td>
<td>0.024&quot;</td>
</tr>
</tbody>
</table>

### FLEXIBLE TWINAX CABLES

### DIFFERENTIAL PAIR TWINAX CABLES

| 6        | 540-1099-000 | Differential: 150 Sig. to Shield: 75 | 0.097" x 0.160" | 0.014" Stranded |
| 7        | 540-1114-000 | Differential: 150 Sig. to Shield: 75 | 0.138" x 0.224" | 0.020" Solid   |
| 8        | 540-1153-000 | Differential: 100 Sig. to Shield: 50 | 0.085" x 0.130" | 0.019" Stranded|
| 34       | 540-1167-000 | Differential: 100 Sig. to Shield: 50 | 0.117" x 0.160" | 0.0233" Stranded|
| 38       | 540-1210-000 | Differential: 100 Sig. to Shield: 50 | 0.132"          | 0.019"         |
| 39       | 540-1236-000 | Differential: 150 Sig. to Shield: 75 | 0.191"          | 0.019"         |

### DIFFERENTIAL QUADRAX CABLES

| 9        | 540-1138-000 | Differential: 150 Sig. to Shield: 75 | 0.290"          | 0.032"         |
| 10       | 540-1143-000 | Differential: 150 Sig. to Shield: 75 | 0.190"          | 0.020"         |
| 36       | 540-1183-000 | Differential: 100 Sig. to Shield: 50 | 0.160"          | 0.024"         |
| 37       | 540-1235-000 | Differential: 100 Sig. to Shield: 50 | 0.108"          | 0.012"         |
| 40       | 540-1209-000 | Differential: 100 Sig. to Shield: 50 | 0.190"          | 0.029"         |
| 41       | 540-1229-000 | Differential: 100 Sig. to Shield: 50 | 0.137"          | 0.019"         |