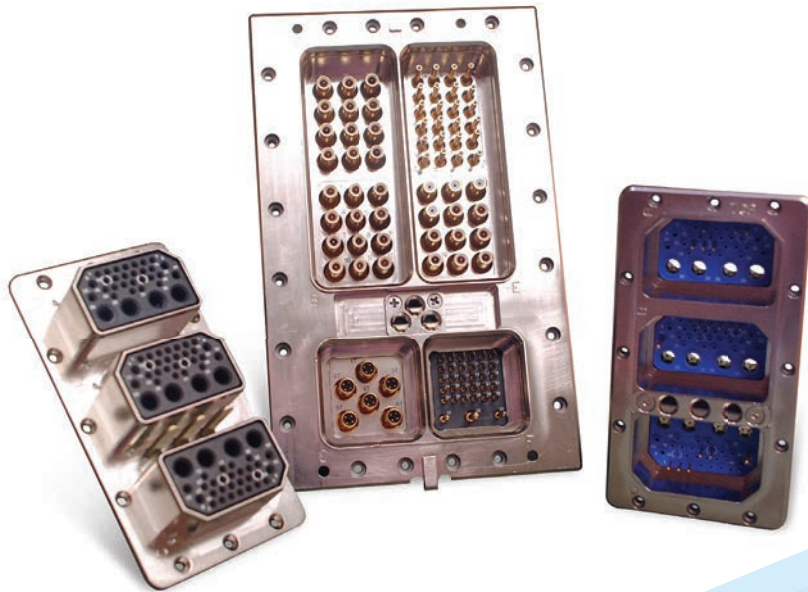


smiths connectors

# HIGH SPEED RACK & PANEL CONNECTORS



## TECHNICAL CHARACTERISTICS

### SPECIFICATIONS

**Temperature Rating:** -55°C to + 125°C  
**Corrosion:** MIL-STD-202 Method 101, Test Condition B  
**Shock:** MIL-STD-202 Method 213, 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  $\pm$  15Ohm and 100 Ohm  $\pm$  10 Ohms  
**Signal to Shield Cable Impedance:** 75 Ohm  $\pm$  10 Ohm and 50 Ohm  $\pm$  7 Ohms

### MATERIALS AND FINISHES

**Shells & 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/** Aluminum per ASTM-B211/221, 6061-T6  
**Receptacle Shells** 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 Quadrx connectors, contacts and cable assemblies for high speed Ethernet, Firewire, and Fibre Channel applications. Differential pair quadrx 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.

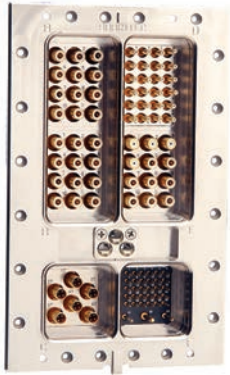
#### Testing Capabilities

Smiths Connectors Quadrx 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.



# TABLE OF CONTENTS

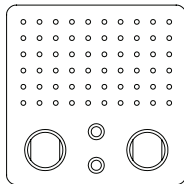
ARINC 600 .....	4
▶ Technical characteristics .....	4
▶ How to order.....	7
 MIL-DTL-83527 .....	 8
▶ Technical characteristics .....	8
▶ How to order.....	11
 ▶ Cable Assembly Ordering .....	 12



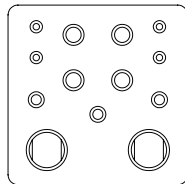
Smiths Connectors' ARINC 600 connector series are designed for interconnect systems including 100 Base-T, Ethernet, and high speed video Hot-Link. These connectors can be fitted with Ethernet based Quad 100 Ohm contacts or differential pair 100 Ohm or 150 Ohm matched impedance contacts.

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.

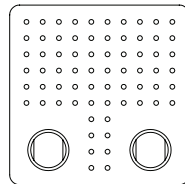
### ARINC 600 Front Release/Front Removable Insert Layouts



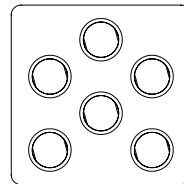
II - 62Q2  
60 SIZE 22  
2 SIZE 16  
2 SIZE 8



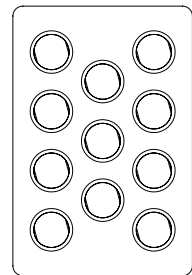
II - 11Q2  
4 SIZE 20  
3 SIZE 16  
4 SIZE 12  
2 SIZE 8



II - 68Q2  
68 SIZE 22  
2 SIZE 8

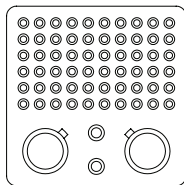


II - Q6  
6 SIZE 8  
METALLIC INSERT

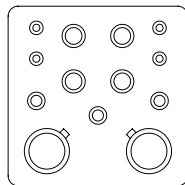


I - Q11  
11 SIZE 8  
METALLIC INSERT

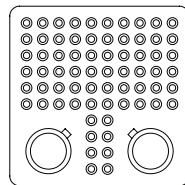
### ARINC 600 Rear Release/Rear Removable Insert Layouts



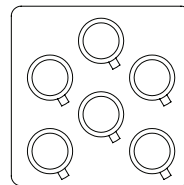
II - 62Q2  
60 SIZE 22  
2 SIZE 16  
2 SIZE 8



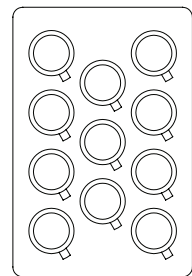
II - 11Q2  
4 SIZE 20  
3 SIZE 16  
4 SIZE 12  
2 SIZE 8



II - 68Q2  
68 SIZE 22  
2 SIZE 8



II - Q6  
6 SIZE 8  
METALLIC INSERT

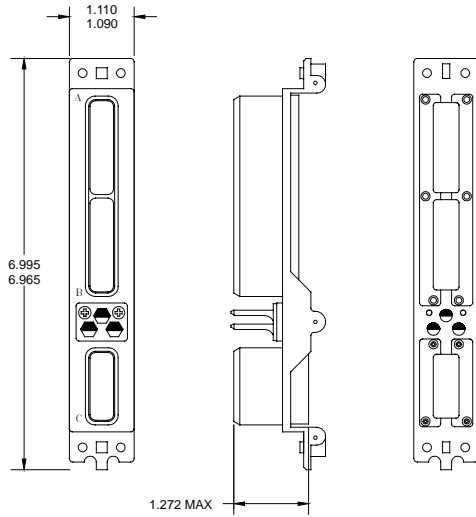


I - Q11  
11 SIZE 8  
METALLIC INSERT

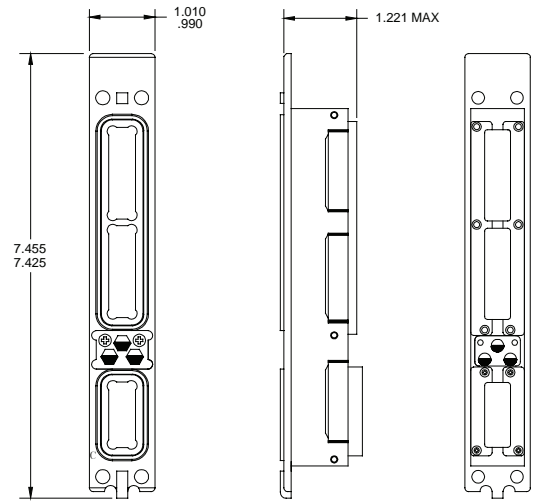
Note: Removable Size 8 Twinax and Quadax Contacts use removal tool M81969/14-06

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.

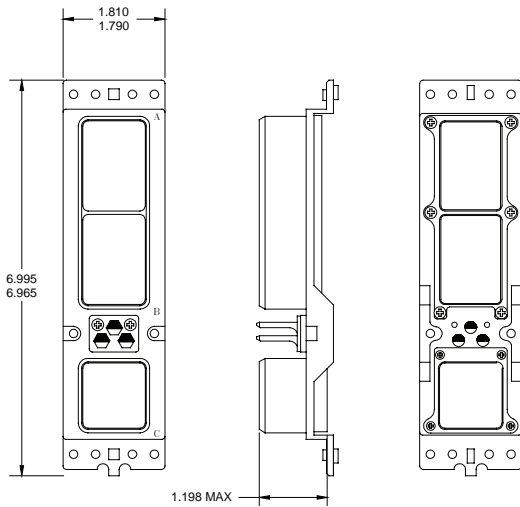
## ▶ ARINC 600 SHELL SIZE 1 PLUG



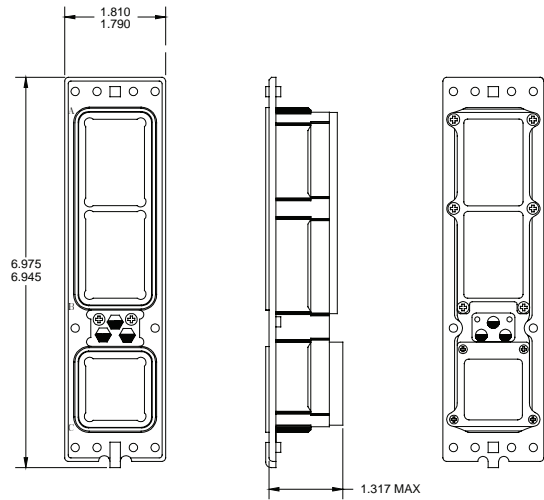
## ▶ ARINC 600 SHELL SIZE 1 RECEPTACLE



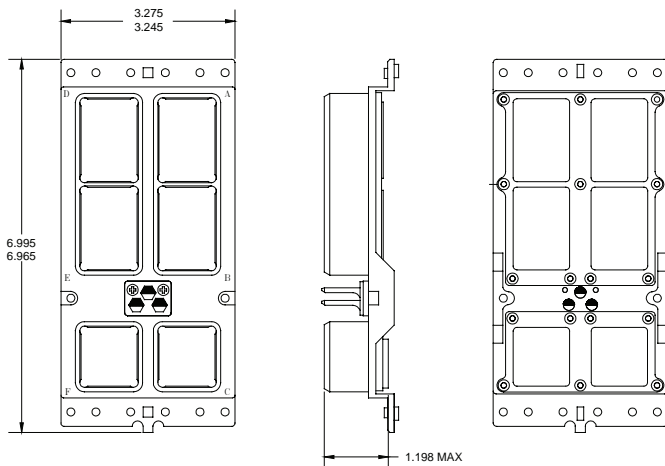
## ▶ ARINC 600 SHELL SIZE 2 PLUG



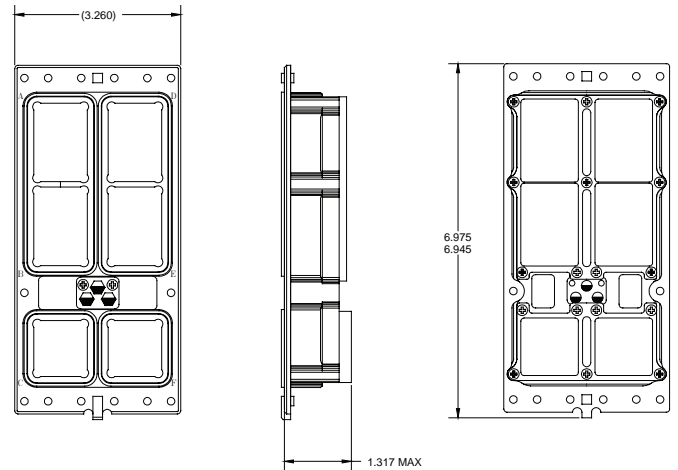
## ▶ ARINC 600 SHELL SIZE 2 RECEPTACLE



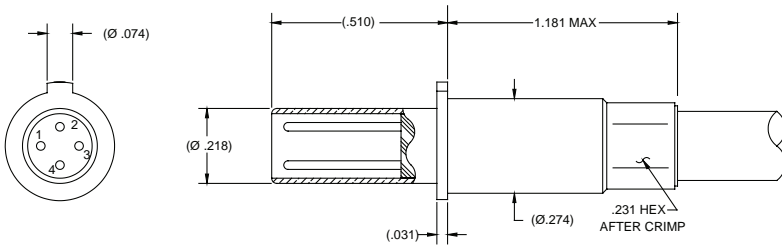
## ▶ ARINC 600 SHELL SIZE 3 PLUG



## ▶ ARINC 600 SHELL SIZE 3 RECEPTACLE

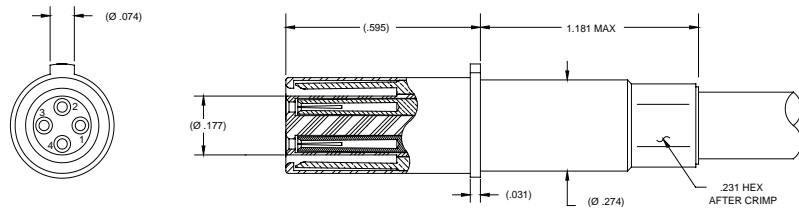


▶ **SIZE 8 PIN QUADRAx CONTACT 100 OHM**



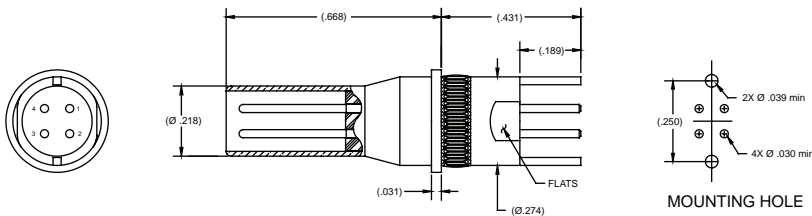
PART NUMBER	CABLE TYPE	CABLE
<b>019635-2031</b>	Differential Quad	540-1183-000
Rear Release/Rear Removable		

▶ **SIZE 8 SOCKET QUADRAx CONTACT 100 OHM**



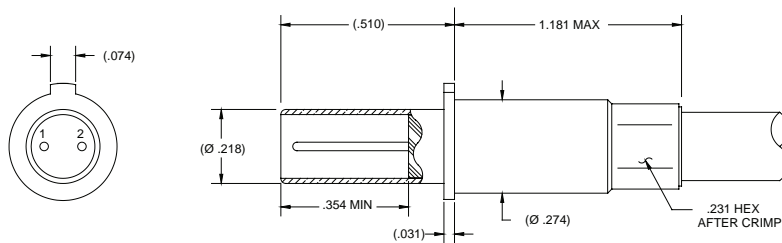
PART NUMBER	CABLE TYPE	CABLE
<b>019535-2031</b>	Differential Quad	540-1183-000
Rear Release/Rear Removable		

▶ **SIZE 8 PIN QUADRAx CONTACT PCB MOUNT 100 OHM**



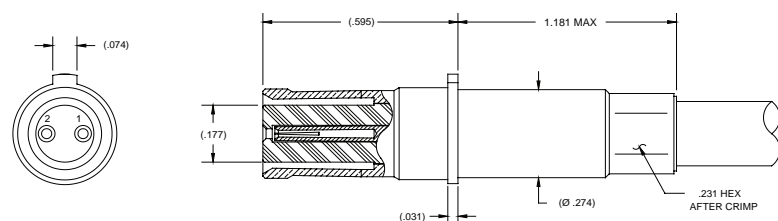
P/N 019617-2107  
Front Release/Rear Removable

▶ **SIZE 8 TWINAx PIN CONTACT 100 OHM**



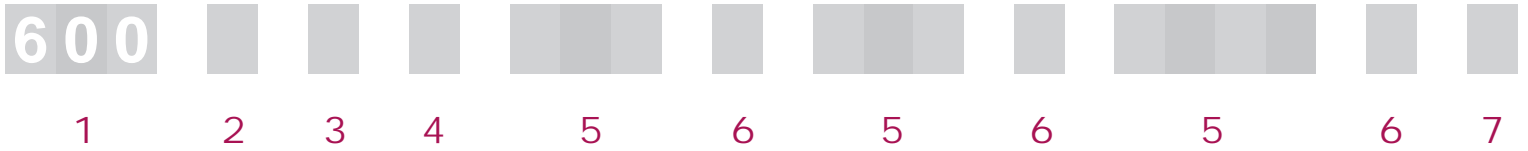
PART NUMBER	CABLE TYPE	CABLE
<b>019634-8025</b>	Differential Twinax	540-1167-000
<b>019634-8026</b>	Flexible Twinax	540-1161-000
<b>019634-8027</b>	Differential Twinax	540-1086-000

▶ **SIZE 8 TWINAx SOCKET CONTACT 100 OHM**



PART NUMBER	CABLE TYPE	CABLE
<b>019534-8025</b>	Differential Twinax	540-1167-000
<b>019534-8026</b>	Flexible Twinax	540-1161-000
<b>019534-8027</b>	Differential Twinax	540-1086-000

# HOW TO ORDER



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

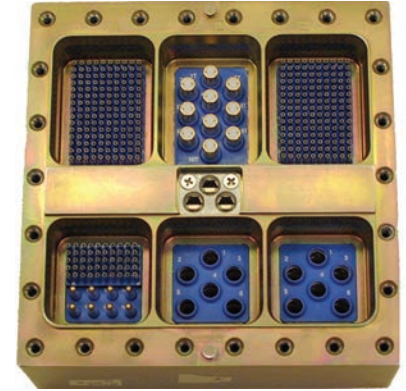
C CRIMP



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.

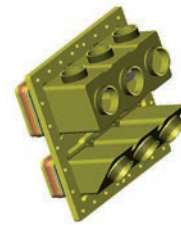
Smiths Connectors' Twinax and Quadrax contacts offer balanced and matched impedance performance for a wide variety of transmission systems and cable characteristics. Our contacts are designed to ensure optimum signal integrity even at the highest data rates.

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**

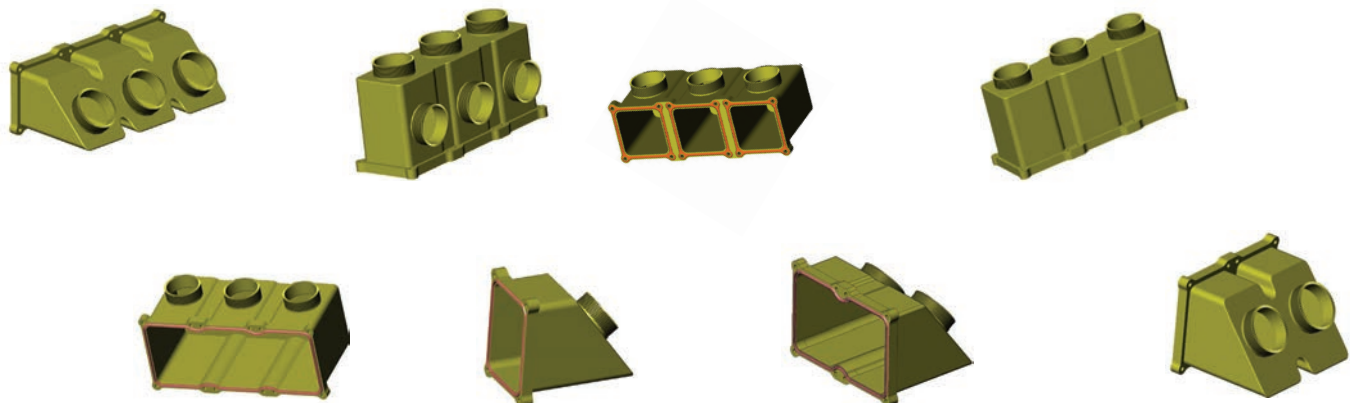
Smiths Connectors' rugged EMI/RFI environmental backshells for MIL-DTL-83527 and ARINC 600 connectors offer many innovative features including accessory threads, optional cable entry locations as well as single or multi-cavity ports.



**FEATURES:**

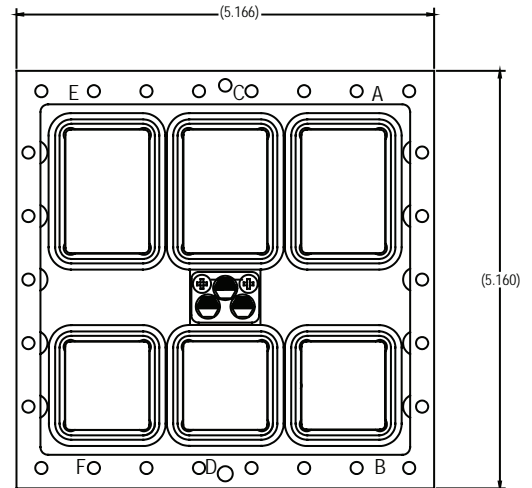
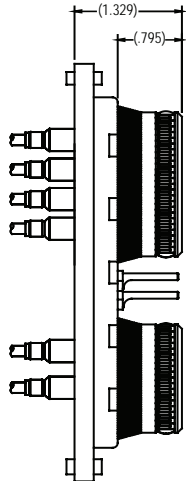
- ▶ EMI/RFI Environmentally sealed backshells
- ▶ Moisture, splash and dust proof
- ▶ Resilient gasket sealing from the rear of the connector shell to the backshell junction

**Sample Backshells**

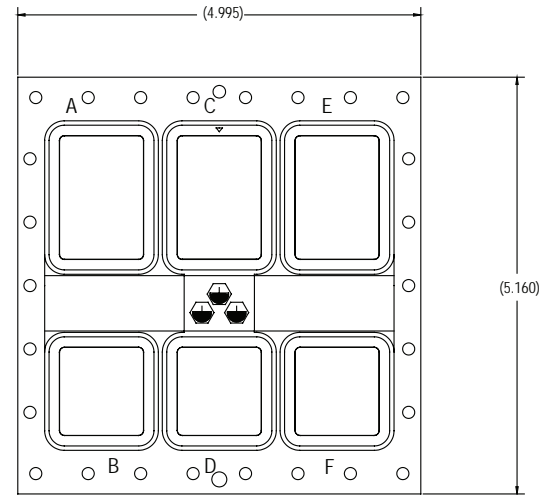
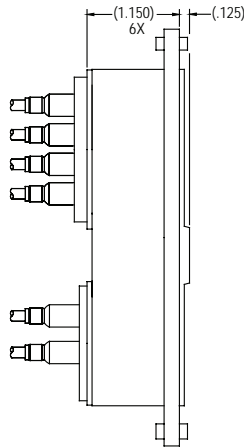




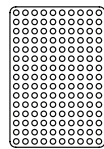
## ▶ MIL-DTL-83527 SHELL SIZE 4A PLUG



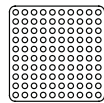
## ▶ MIL-DTL-83527 SHELL SIZE 4A RECEPTACLE



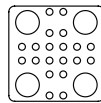
## ▶ MIL-DTL-83527 INSERT ARRANGEMENTS



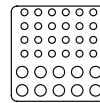
I-150  
150 #22



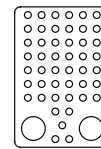
II-100  
100 #22



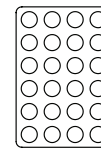
II-20T4  
20 #20  
4 #8 T/C



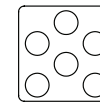
II-34  
24 #20  
10 #16



I-47T2  
47 #20  
2 #8 T/C



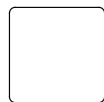
I-24  
24 #12



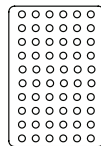
II-T6  
6 #8 T/C



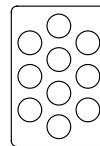
I-0  
BLANK  
CUSTOM



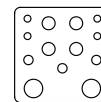
II-0  
BLANK  
CUSTOM



I-60  
60 #20



10P10  
10 #8 T/C

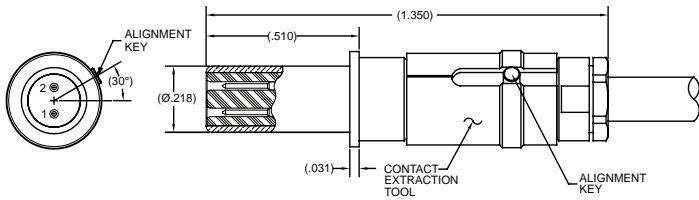


II-11C2  
4 #20  
3 #16  
4 #12  
2 #5

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

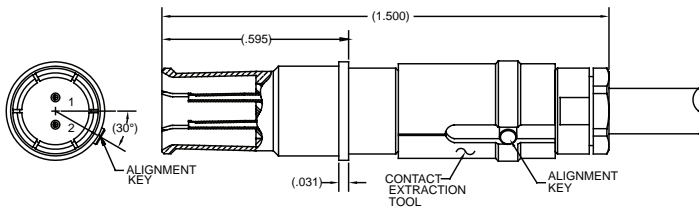
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SIZE 8 TWINAX PIN CONTACT 100 AND 150 OHM



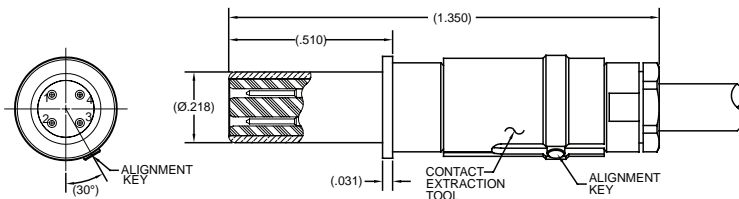
PART NUMBER	OHMS	CABLE TYPE	CABLE
<a href="#">019634-0005</a>	150	Differential Twinax	540-1099-000
<a href="#">019634-0006</a>	150	Differential Twinax	540-1114-000
<a href="#">019634-0007</a>	100	Differential Twinax	540-1086-000
<a href="#">019634-0008</a>	100	Differential Twinax	540-1153-000
<a href="#">019634-0009</a>	100	Flexible Twinax	540-1161-000

SIZE 8 TWINAX SOCKET CONTACT 100 AND 150 OHM



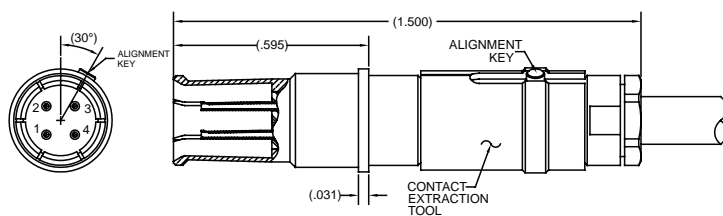
PART NUMBER	OHMS	CABLE TYPE	CABLE
<a href="#">019534-0005</a>	150	Differential Twinax	540-1099-000
<a href="#">019534-0006</a>	150	Differential Twinax	540-1114-000
<a href="#">019534-0007</a>	100	Differential Twinax	540-1086-000
<a href="#">019534-0008</a>	100	Differential Twinax	540-1153-000
<a href="#">019534-0009</a>	100	Flexible Twinax	540-1161-000

SIZE 8 QUADRIX PIN CONTACT 100 OHM



PART NUMBER	CABLE TYPE	CABLE
<a href="#">019635-0000</a>	Differential Quad	540-1183-000

SIZE 8 QUADRIX SOCKET CONTACT 100 OHM



PART NUMBER	CABLE TYPE	CABLE
<a href="#">019535-0000</a>	Differential Quad	540-1183-000

# HOW TO ORDER



1 ▶ PREFIX

2 ▶ SHELL STYLE

**P** PLUG

**R** RECEPTACLE

3 ▶ SHELL SIZE

**2A**, **3A**, **4A**

4 ▶ PLATING

**C** 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 #

Flexible Twinax

**1** = M17/176-00002

**2** = 540-1086-000

**3** = 540-1161-000

Differential Twinax

**6** = 540-1099-000

**7** = 540-1114-000

**8** = 540-1153-000

**34** = 540-1167-000

**38** = 540-1210-000

**39** = 540-1236-000

Differential Quadrax

**9** = 540-1138-000

**10** = 540-1143-000

**36** = 540-1183-000

**37** = 540-1235-000

**42** = 540-1209-000

**41** = 540-1229-000

## 3 ▶ CONNECTOR #2      OL for Open Lead

## 4 ▶ CABLE LENGTH IN INCHES (XXX)

FLEXIBLE TWINAX CABLES					
CABLE GROUP	CABLE DESIGNATION	IMPEDANCE (OHMS)		JACKET	CONDUCTOR (DIA)
1	M17/176-00002	77		0.129"	0.024"
2	540-1086-000	98		0.143"	0.019"
3	540-1161-000	100		0.130"	0.024"
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"



# SMITHS CONNECTORS GLOBAL SUPPORT

## AMERICAS

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