



## Quadrax Contacts, Connectors and Cables



## Introduction

### Product Facts

- **2 mm centerlines**
- **Designed per ARINC 600 — Supplement 18**
- **Fits into keyed connector inserts for connectors such as: ARINC 404 & 600, General Purpose Rectangular (GPR), MIL-DTL-38999 style, BACC65/EPXB, and custom interconnects**
- **Patented single piece dielectric design simplifies termination and improves reliability**
- **Size 8 contacts are designed for standard hex crimp per M2252/5-01 and M22520/5-45**
- **24 AWG internal contacts are designed for crimp tooling M22520/2-01 and Daniels K-709**
- **Shells are keyed for proper orientation inside connector insert blocks**
- **Rear Release/Rear Remove cable versions and Front Release/Front Remove PCB versions**
- **Uses standard insertion/extraction tool**
- **Meets ASTM E595 outgassing limits for spacecraft materials**

A multi-signal contact system consisting of two differential pairs (matched impedance) used with quadraxial Ethernet and Fibre Channel cables. Available in shell size 8 (keyed); 24 AWG pin and socket contacts, Hex Crimp version as well as pin PCB tail solderable versions. Adaptable to a variety of connectors (ARINC 600, 404, D-Subminiature connectors, MIL-DTL-38999 style, etc.)

Designed for use in high speed applications such as Gigabit Ethernet, IEEE 802.3Z and Fibre Channel X3T11.2 for use on Commercial Avionics Systems, Aircraft Data Networks, Military Communications, In-Flight Entertainment, and Space applications.

### Materials

**Contacts, Shells, Ferrules** — Copper alloy with gold over nickel finish. One-piece thermoplastic dielectric.

### Performance Characteristics

**Maximum Mating Force per Contact Assembly** — 2.75 lbf.

**Minimum Un-mating Force per Contact Assembly** — 1.25 lbf.

**Durability** — 500 mating/unmating cycles

### Typical Electrical Performance:

**Bandwidth** — as high as 3 GHz (see characterization chart on page 3)

**Data Rate** — in excess of 2 Gb/s

**Characteristic Impedance** — 100 ohms ± 10 ohms

**Maximum Voltage Rating** — 500 Vrms @ sea level

**Dielectric Withstanding Voltage** — 1000 VAC rms between any two contacts @ sea level; 500 VAC rms between any contact and outer shell @ sea level

### Technical Documents

#### Product Specifications

- 108-2131 Quadrax Cable and PCB Connectors
- 108-2199 Quadrax MIL-DTL-38999 Style Connectors
- 108-2311 Quadrax 4Q4 In-Line D-Sub Style Connectors

#### Test Reports

- 501-574 Quadrax Cable and PCB Connectors
- 501-660 Quadrax MIL-DTL-38999 Style Connectors
- 501-738 Quadrax 4Q4 In-Line D-Sub Style Connectors
- 502-1182 Quadrax Rectangular Connector
- Qualified to Boeing Spec. BPS-C-193

#### Application Specifications

- 114-13123 Quadrax Rectangular Connectors and Quadrax Contacts
- 114-13163 Quadrax Circular Connectors and Quadrax Contacts
- 114-13190 In-Line Quadrax/Twinax Connectors
- 114-13233 Quadrax D-Sub Connectors and Quadrax Contacts

## Electrical Characteristics

- Designed for use with 100 ohm and 150 ohm characteristic impedance star quad cable. Reference contact chart on page 10.
- Signal integrity testing was completed per SFF-8410 (see engineering test report 502-1182).
- Characteristic impedance: 100 ohm  $\pm$  10 ohm nominal (measured 102.85 ohms)
- Near end cross talk (NEXT) in the time domain: 0.89% measured on Tek 11801C Digital Sampling Oscilloscope
- Eye Patterns (Differential Mode, 1 meter and 11.2 meter cable test lengths)
- The minimum output eye opening for a 1 V launch voltage measured at 50% of the period is:
  - 1 meter, 100 MHz Eye Opening 928.53 mV
  - 1 meter, 1.25 GHz Eye Opening 839.77 mV
  - 11.2 meter, 100 MHz Eye Opening 761.60 mV
  - 11.2 meter, 1.25 GHz Eye Opening 315.20 mV

### Return Loss

#### 1 Meter Cable Length

Frequency MHz	dB	VSWR*
50	34.33	1.039
62	36.03	1.032
102	40.21	1.02
502	21.21	1.191
1002	13.34	1.549
1954	9.32	2.039
2950	10.27	1.884

#### 11.2 Meter Cable Length

Frequency MHz	dB	VSWR*
50	35.26	1.035
62	36.87	1.029
102	38.90	1.023
502	26.02	1.105
1002	14.62	1.456
1798	11.74	1.698
2502	13.34	1.549
3702	6.54	2.781

\*calculated

### Insertion Loss

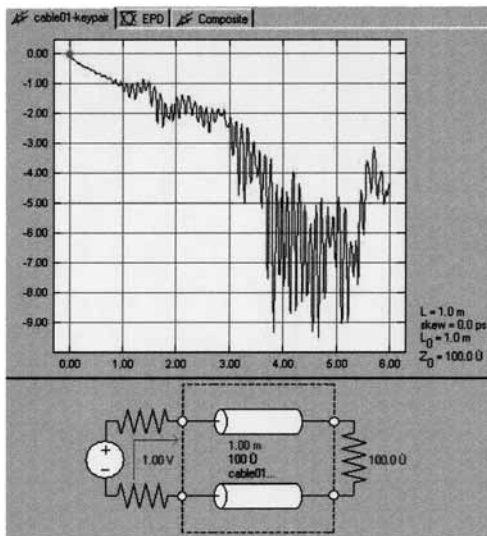
#### 1 Meter Cable Length

Frequency MHz	dB
50	0.13
62	0.19
102	0.27
502	0.87
1002	1.39
2002	2.48
3002	3.29

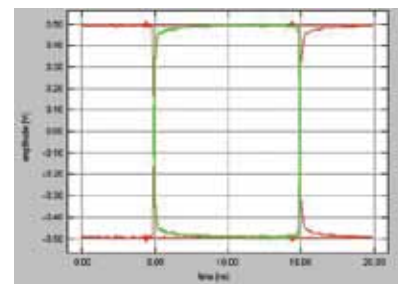
#### 11.2 Meter Cable Length

Frequency MHz	dB
50	1.87
62	2.13
102	2.72
502	6.38
1002	10.06
1798	15.69
2502	19.47
3702	28.20

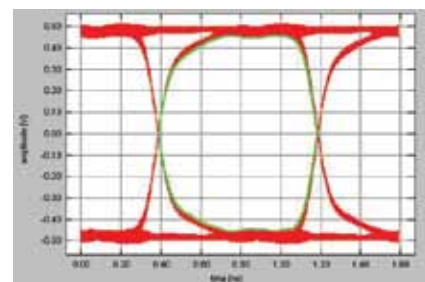
Typical Insertion Loss  
1 Meter Length, 100 Ohm Cable



Eye Pattern, 100 Ohm Cable  
(Time Domain Measurement of Voltage vs. Time)

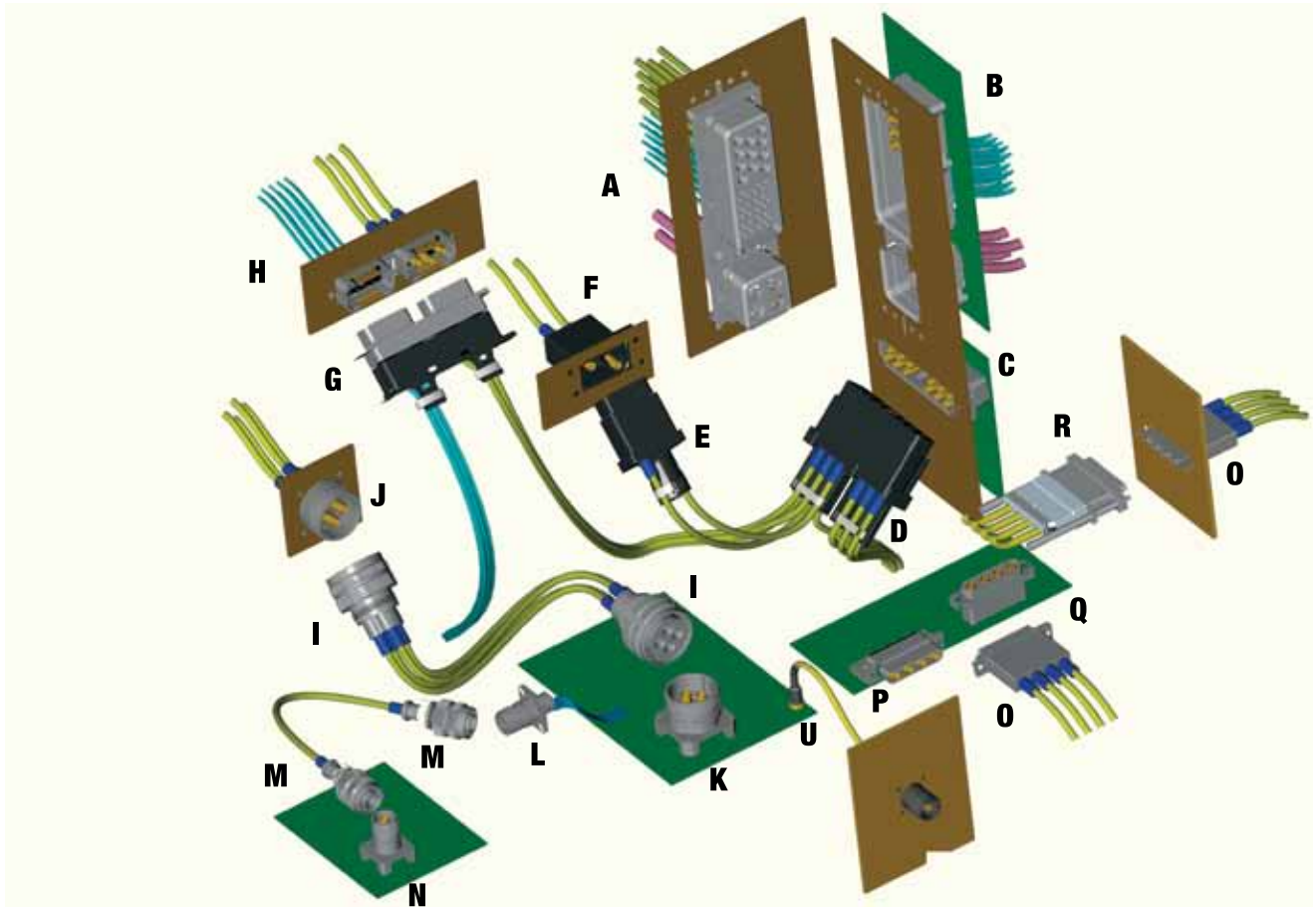


100 Mb/s Data Rate



1 Gb/s Data Rate

## Product Family Overview



### LEGEND

#### ARINC 600 Connectors:

- A Size 2 Plug Assembly with Q11 Quadrax Insert
- B Size 2 Receptacle Assembly with Q11 PCB Tail Quadrax

#### Quadrax Rectangular Connectors:

- C 12 Position Receptacle
- D 12 Position Plug Assembly with Strain Relief and Seal Boots
- E 2 Position Plug Assembly with Strain Relief and Seal Boots
- F 2 Position Panel Mount Receptacle with Strain Relief and Seal Boots
- U Direct Attach

#### General Purpose Rectangular Connectors:

- G GPRB2 Plug, Dual Insert Configuration w/3 Pos. Quadrax Insert
- H GPRB2 Receptacle, Dual Insert Configuration w/3 Pos. Quadrax insert

#### 38999 Style Circular Connectors:

- I Size 19 Plug, 4Q4 Quadrax arrangement with Seal Boots
- J Size 19 Receptacle, 4Q4 Quadrax arrangement, Panel Mount Configuration w/Seal Boots
- K Size 19 Receptacle, 4Q4 Quadrax arrangement, PCB Mount
- L Size 9 Receptacle, 1Q1 Quadrax arrangement, Panel Mount w/Custom Flex Circuit Assembly for direct attachment to printed circuit board
- M Size 9 Plug, 1Q1 Quadrax arrangement with Seal Boot
- N Size 9 Receptacle, 1Q1 Quadrax arrangement, PCB Mount

#### D-Sub Style Quadrax Rectangular Connectors:

- O Plug with Seal Boots
- P Receptacle, for right-angle PCB mount
- Q Receptacle, for vertical PCB mount
- R Cable Receptacle with Seal Boots



## Quadrax Contacts



### Product Facts

- **Patented one-piece dielectric inserts for easy assembly and lowest applied cost**
- **Available with silicone seal boots rated for 50,000 ft. altitude immersion**
- **Crimp type, screw machined, 24 AWG contacts**
- **Quadrax size 8 shells are keyed per ARINC 600 for correct orientation inside connector inserts**
- **Twinax contacts: Qualification tests pending**
- **Direct Attach to PCB**
  - **Asymmetric standoff leg provides built-in keying to PC board**
- **Internally keyed contacts for MIL-DTL-38999 connectors**
  - **One-piece dielectric inserts for easy assembly and lowest applied cost**

### PC Tail Contacts

Part No.	Description	Dim. A
1445626-1	Contact, Pin, Solder Tail	.228 [5.79]
1445626-2	Contact, Pin, Solder Tail	.422 [10.72]
1445626-3	Contact, Pin, Solder Tail	.181 [4.60]
1445626-4	Contact, Pin, Solder Tail	.297 [7.54]
1445626-5*	Contact, Pin, Solder Tail	.297 [7.54]

### Crimp Style Contacts<sup>1</sup>

Part No.	Description	Hex Crimp
1445692-1	Contact Kit, Pin, Crimp	.218
1445692-3**	Contact Kit, Pin, Crimp, with wire seal boot	.218
1445692-4 ***	Contact Kit, Pin, Crimp, with wire seal boot*	—
1445693-1	Contact Kit, Socket, Crimp	.218
1445693-3**	Contact Kit, Socket, Crimp, with wire seal boot	.218
1445693-4 ****	Contact Kit, Socket, Crimp, with wire seal boot	—
1445692-5**	Contact Kit, Pin, Crimp with wire seal boot	.218
1445692-6	Contact Kit, Pin, Crimp	.218
1445693-5**	Contact Kit, Socket, Crimp with wire seal boot	.218
1445693-6	Contact Kit, Socket, Crimp	.218

Reference cables: Tensolite NF24Q100, NF26Q100, 24443/03130X-4(LD), 24443/9P025X-4(LD); Raychem CEC-RWC-18687, Raychem CEC-RWC-18664

Reference cables: DRAKA F4703-3, F4704-4—insulation diameter is larger

		Hex Crimp
1877039-1	Contact Kit, Pin, Crimp	.231
1877039-2**	Contact Kit, Pin, Crimp with wire seal boot	.231
1877040-1	Contact Kit, Socket, Crimp	.231
1877040-2**	Contact Kit, Socket, Crimp with wire seal boot	.231

Reference cables: Tensolite 26473/02006X-4(LD); Raychem CEC-RWC-18684, Raychem CEC-RWC-18680

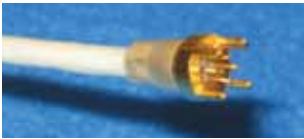
\*Tails are solder dipped  
 \*\*Used with Quadrax rectangular and circular connectors  
 \*\*\*Qualified to Boeing BACC47GA1  
 \*\*\*\*Qualified to Boeing BACC47GB1  
 (1) For other cables, contact TE.

**Quadrax Contacts** (Continued)

**Size 8 Quadrax Contacts**



Part No.	Description	Hex Crimp
1811010-1	Socket kit with heat-shrink tubing	.218
1811269-1	Pin kit with heat-shrink tubing	.218



**PC Tail Contact – Direct Attach to PCB**

Part No.	Description	Tail Length	Dim A
1954576-1	150 Ohm	.125 [3.18]	.250 [6.35]
1954576-2	100 Ohm	.125 [3.18]	.270 [6.86]
1954576-3	100 Ohm	.205 [5.21]	.270 [6.86]



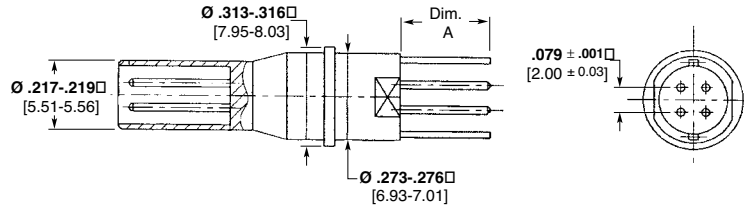
**Size 8 Differential Twinax Contacts**

Part No.	Description	Hex Crimp
1811865-1	Assembly, Pin, Twinax	.218
1811866-1	Assembly, Socket, Twinax	.218

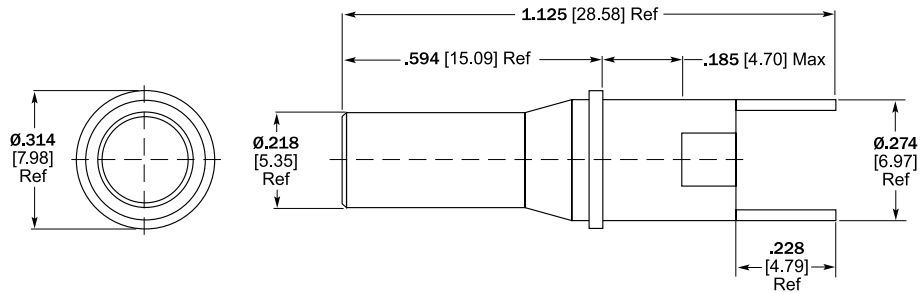
See page 2 for Application Specifications

**Quadrax Contacts** (Continued)

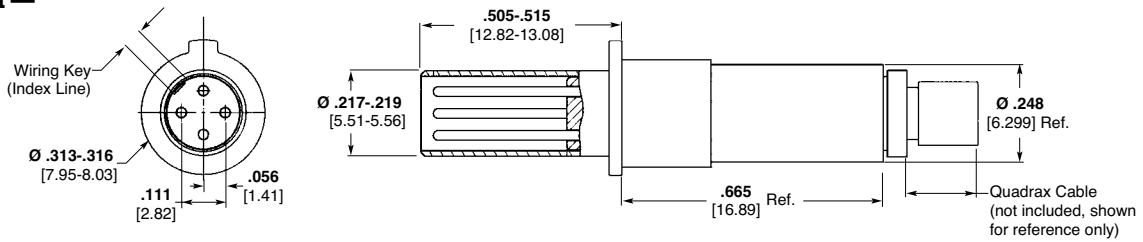
**Size 8 Quadrax PCB Pin Contact**  
**Front Release/  
 Front Remove Design**  
**Part No. 1445626-1** ♦♦  
 ♦♦ various tail lengths



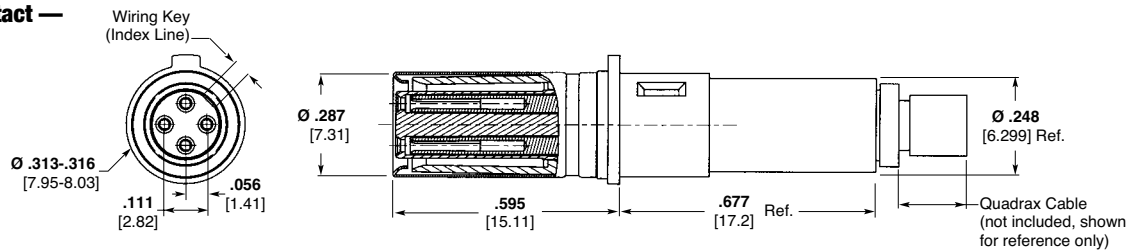
**Blank**  
**Front Release/  
 Front Remove Design**  
**Part No. 1604940-2**



**Size 8 Quadrax Pin Contact —  
 Crimp Style**  
**Rear Release/  
 Rear Remove Design**  
**Part No. 1445692-1** ♦  
 ♦ -3 with boot



**Size 8 Quadrax Socket Contact —  
 Crimp Style**  
**Rear Release/  
 Rear Remove Design**  
**Part No. 1445693-1** ♦  
 ♦ -3 with boot

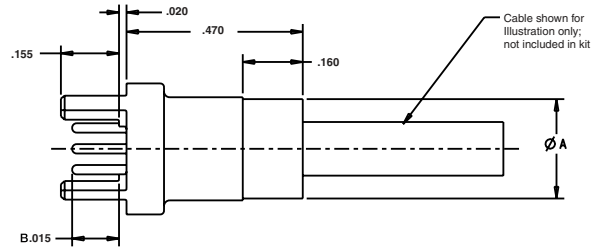
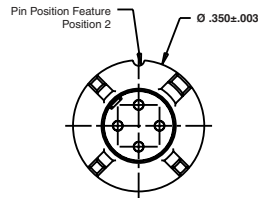


### Quadrax Contacts (Continued)



#### PC Tail Contact – Direct Attach to PCB

- 100 and 150 ohm Systems
- Simple Direct Attach to PCB without connector for component reduction
- Designed from ARINC size 8 Quadrax contacts
- Low cost solution from both assembly and component ends



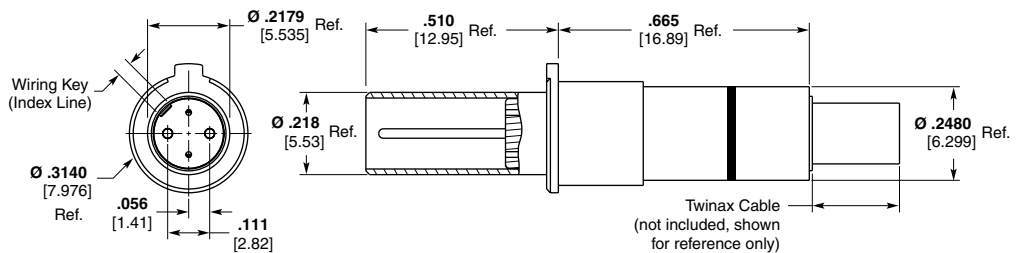
Part Number 1954576-1, -2: B = .125  
 Part Number 1954576-3: B = .205

Part No.	Impedance (Ω)	Dim A (Max)	Dim B
1954576-1	150	.270 [6.86]	.125 [3.18]
1954576-2	100	.250 [6.35]	.125 [3.18]
1954576-3	100	.250 [6.35]	.205 [5.21]

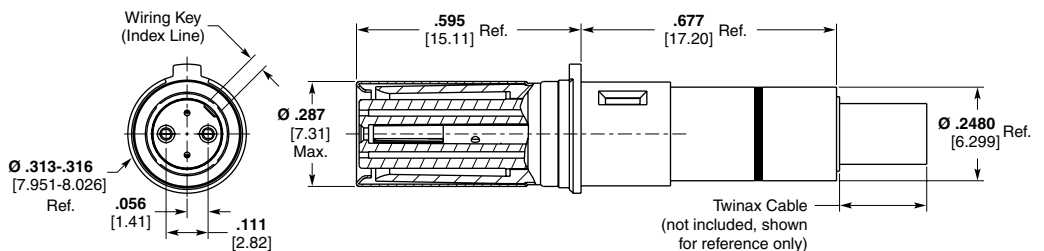
### Size 8 Differential Twinax Contacts

#### 100 Ohm Differential Pair Twinax Contact

- Designed to meet the requirements of ARINC Specification 810 for 100 ohm size 8 non-concentric twin-axial contacts
- Works in all connectors accepting ARINC 600 style Quadrax contacts



Part No. 1811865-1

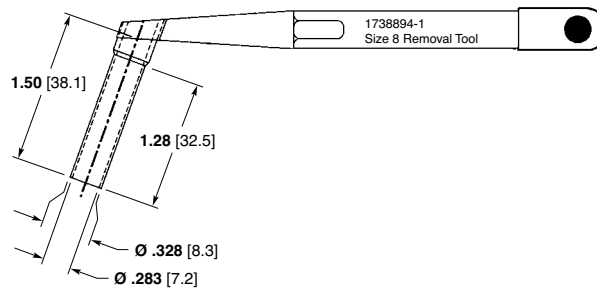


Part No. 1811866-1

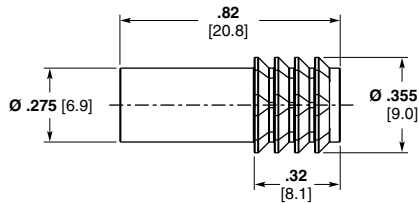
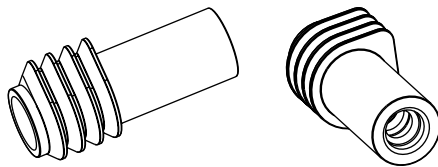


### Quadrax/Twinax Contact Accessories

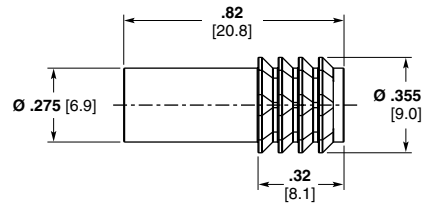
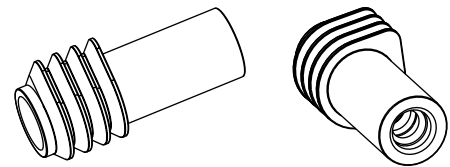
#### Size 8 Quadrax Extraction Tool Part No. 1738894-1



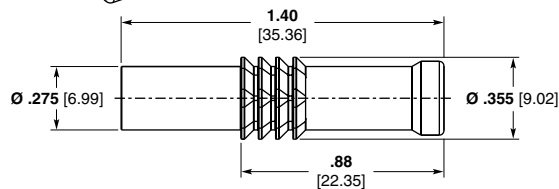
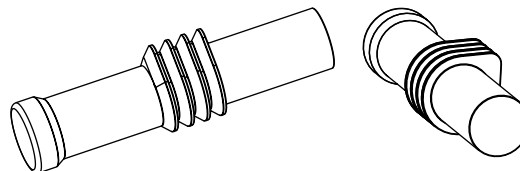
#### Seal Boots



**Wire Seal Boot**  
Part No. 1811481-1  
Cable O.D. .145-.175  
.218 Hex Crimp



**Wire Seal Boot**  
Part No. 1811943-1  
Cable O.D. .170-.200  
.231 Hex Crimp



**Solid Seal Boot**  
Part No. 1811633-1

## ARINC Size 8 Quadrax Connectors

### Product Facts

- Utilizes four size 24 screw-machined contacts with standard crimp tooling per M22520/2-01 and M22520/5-01 for ease of termination
- Front release/front removable PCB mount contact design for use in ARINC 600 receptacle connectors
- Rear release/rear remove crimp contact design for use in ARINC 600 plug connectors & receptacles
- Quadrax housing is keyed to assure mating alignment
- Contacts are on 2 mm centerline per ARINC 600 specification
- To extract Quadrax contact from connector insert, use Extraction Tool Part Number 1738894-1
- Per Supplement 18 to ARINC Specification 600

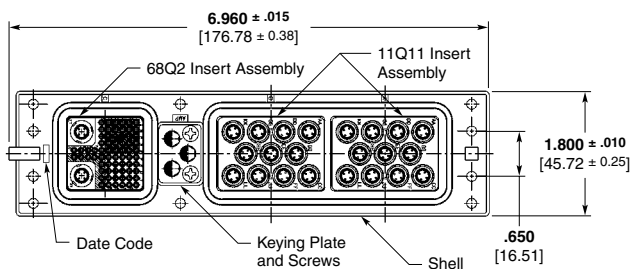


ARINC Size 2 Connectors		Insert Arrangement			Style	Shell Features	Contacts
Part No.	Type	A	B	C			
1484406-2	Receptacle	Q11	Q11	68Q2	Front Release Front Remove	Electroless Nickel Plated, no clinch nuts	Size 22 signal & Quadrax contacts supplied loaded in inserts; post extension = .25 [6.35]
1484407-2	Plug	Q11	Q11	68Q2	Rear Release Rear Remove	Electroless Nickel Plated, no clinch nuts	Crimp style size 22 signal and Quadrax contacts supplied unloaded
1663032-1	Receptacle	150	150	11Q2	Front Release Front Remove	Chromate with six 4-40 clinch nuts	Signal, Power and Quadrax contacts supplied loaded in inserts; post extension = .25 [6.35]
1663900-1	Receptacle	Q11	Q11	85	Front Release Front Remove	Chromate, no clinch nuts	Signal, Power and Quadrax contacts supplied loaded in inserts; post extension = .25 [6.35]
1484620-1	Receptacle	Q11	Q11	85	Front Release Front Remove	Electroless Nickel Plated, with ten 4-40 clinch nuts	Signal, Power and Quadrax contacts supplied loaded in inserts; post extension = .15 [3.81]
1484621-1	Plug	Q11	Q11	85	Rear Release Rear Remove	Electroless Nickel Plated, no clinch nuts	Crimp contacts

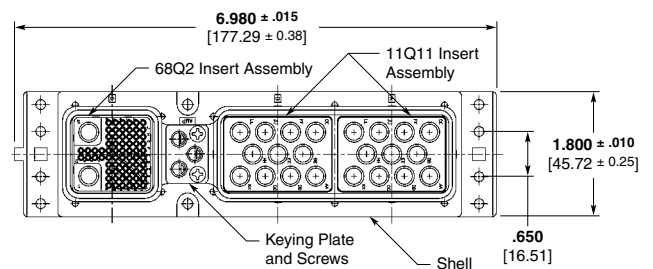
  

ARINC Size 3 Connectors		Insert Arrangement				Style	Shell Features	Contacts
Part No.	Type	A D	B E	C F				
1663018-1	Receptacle	150 150	150 150	11Q2 11Q2	Front Release/ Front Remove	Electroless Nickel Plated	No contacts	
1663018-2	Receptacle	150 150	150 150	11Q2 11Q2	Front Release/ Front Remove	Electroless Nickel Plated	Signal, Power and Quadrax contacts supplied loaded in inserts; post extension signal and power = .25 [6.35]; Quadrax = .200 [5.08]	
1663018-3	Receptacle	150 150	150 150	11Q2 11Q2	Front Release Front Remove	Chromate with fourteen 6-32 clinch nuts	Signal, Power and Quadrax contacts supplied loaded in inserts, post extension = .25 [6.35]	
1663019-1	Plug	150 150	150 150	11Q2 11Q2	Rear Release Rear Remove	Electroless Nickel Plated	No contacts	
1663019-2	Plug	150 150	150 150	11Q2 11Q2	Rear Release Rear Remove	Electroless Nickel Plated	Crimp contacts	
1663019-3	Plug	150 150	150 150	11Q2 11Q2	Rear Release Rear Remove	Chromate	Crimp contacts	

Note: Custom insert combinations available upon request. Contact TE.



**Receptacle, Assembly Size 2  
Front Release/Front Remove  
Part No. 1484406-2 shown**

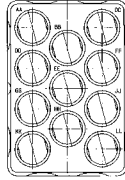


**Plug, Assembly Size 2  
Rear Release/Rear Remove  
Part No. 1484407-2 shown**

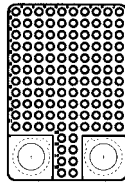
**ARINC Size 8 Quadrax Connectors** (Continued)

**Contact Inserts & Arrangement Codes — Shell Size 2 or 3**

**Shell Module A, B, D or E**

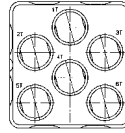


**Q11 1, 2, 3**  
11 Size 8 Quadrax Metal

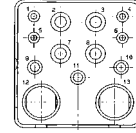


**118Q2 2, 3, 4**  
118 Size 22  
2 Size 8 Quadrax

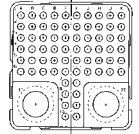
**Shell Module C or F**



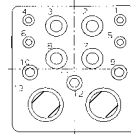
**Q6 1, 2, 3**  
6 Size 8 Quadrax Metal



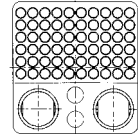
**11Q2 1, 2, 3**  
4 Size 20  
4 Size 12  
3 Size 16  
2 Size 8 Quadrax



**68Q2 2, 3, 4**  
68 Size 22  
2 Size 8 Quadrax



**13CQ2 2, 3**  
4 Size 20  
3 Size 16  
4 Size 12  
2 Size 8 Quadrax



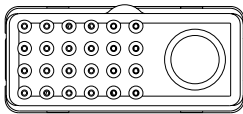
**62Q2 2, 3, 4**  
60 Size 22  
2 Size 16  
2 Size 8 Quadrax

**Notes:**

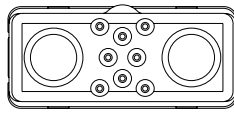
1. Available for plug or receptacle with rear release/remove contacts.
2. Available for receptacle only with all contacts front release/remove.
3. Standard size 8 contacts will not fit in Quadrax size 8 inserts. Also, Quadrax size 8 contacts will not fit into standard size 8 inserts.
4. Available for plug only with all contacts rear release/remove.

For complete listing of all ARINC 600 insert arrangements, reference catalog 1308940.

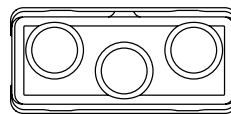
**GPRB Insert Arrangements<sup>1,2</sup>**



**25QI<sup>3</sup>**

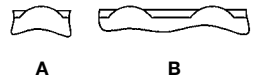


**10Q2<sup>3</sup>**



**3Q3<sup>3</sup>**

**Keying:**



- Notes:**
1. Pin inserts: Mating faces shown above.
  2. In a GPRB2 shell, one insert must be "A" keyed and the other one must be "B" keyed (See at right).
  3. Size 8 cavity applicable for use with Arinc 600 Quadrax or Twinax contacts.

For complete listing of all General Purpose Rectangular insert arrangements, reference catalog 1654763.

## Rectangular Connectors

### Product Facts

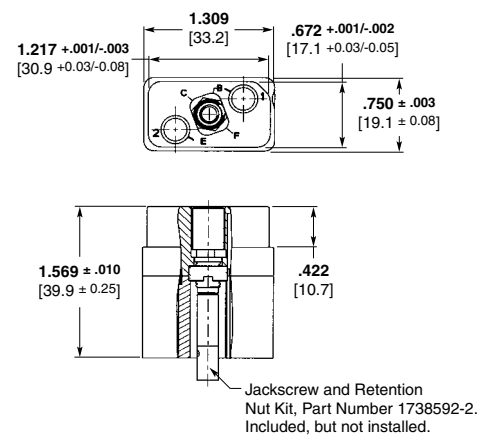
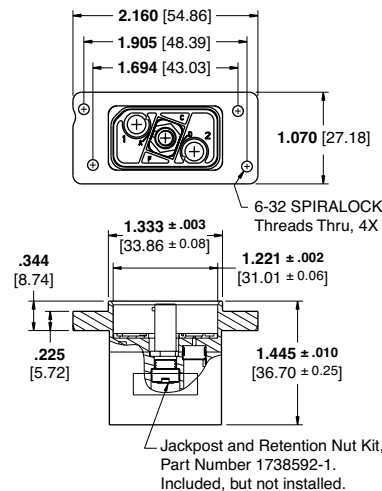
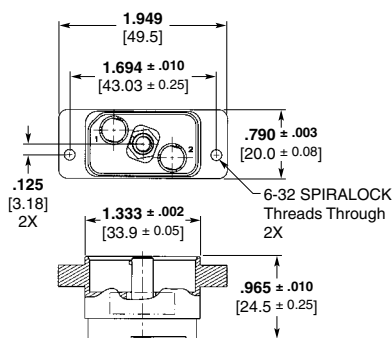
- High performance rectangular connector
- Available in 2, 4, and 12 positions
- Designed for use with wire seal boots and rated for use up to 50,000 ft. altitude
- Center jackscrew design for fast, reliable mating
- Aluminum shells are keyed and polarized, and are available with lightweight plastic backshell strain reliefs
- Provides excellent density in a rectangular profile for packaging flexibility.
- Qualified to Boeing Part Standard BPS-C-193



Position	Part No.	Type	Mounting Style	Style	Polarization	Note:
2	1604896-2	Receptacle	PCB	Front Release/Front Remove	Flat	
	1604897-5*	Receptacle	Panel Mount	Rear Release/Rear Remove	Flat	
	1604898-5*	Plug	Free-Hanging	Rear Release/Rear Remove	Flat	
	1604905-1	Backshell - (1 pc)	—	—	—	Use w/1604897-5 or 1604898-5
4	1738949-2	Receptacle	PCB	Front Release/Front Remove	Flat	
	1738950-2*	Receptacle	Panel Mount	Rear Release/Rear Remove	Flat	
	1738951-2*	Plug	Free-Hanging	Rear Release/Rear Remove	Flat	
	1738955-1	Backshell - (1 pc)	—	—	—	Use w/1738950-2 or 1738951-2
12	1604798-2	Receptacle	PCB	Front Release/Front Remove	Flat	
	1604799-5*	Receptacle	Panel Mount	Rear Release/Rear Remove	Flat	
	1604800-5*	Plug	Free-Hanging	Rear Release/Rear Remove	Flat	
	1604874-1	Backshell - Receptacle (2 pc)	—	—	—	Use w/1604799-5
	1604874-2	Backshell - Plug (2 pc)	—	—	—	Use w/1604800-5

\*Jackscrew/Jackpost hardware included but not installed

### 2 Position



PCB Mount Receptacle (Part No. 1604896)

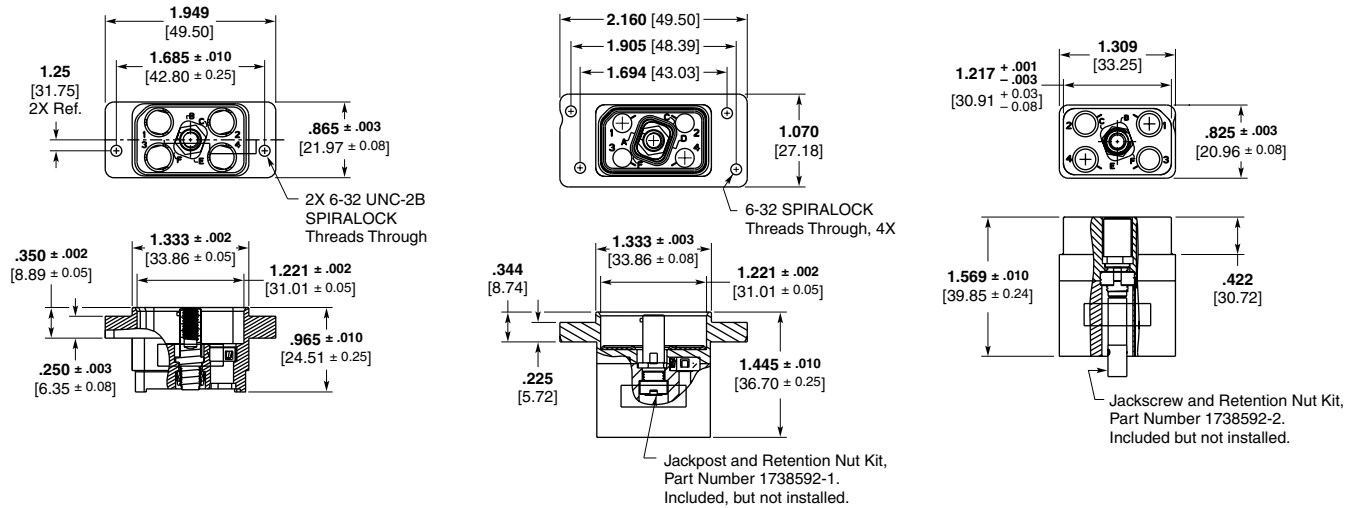
Panel Mount Receptacle (Part No. 1604897)

Free-Hanging Plug (Part No. 1604898)

SPIRALOCK is a trademark of Detroit Tool Industries Corporation.

## Rectangular Connectors (Continued)

### 4 Position

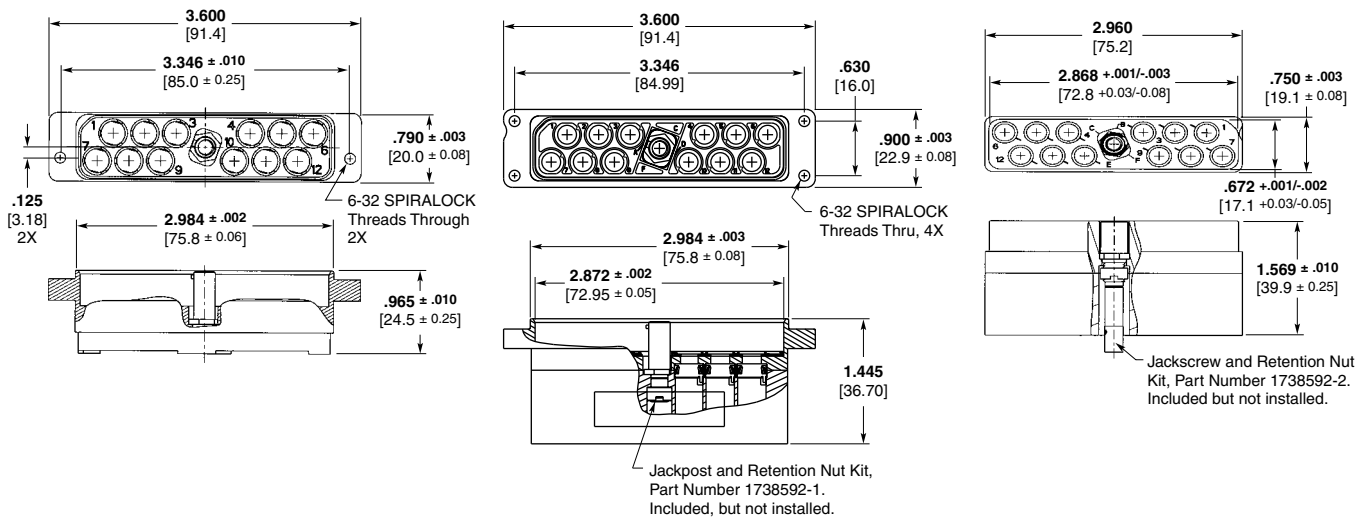


PCB Mount Receptacle (Part No. 1738949)

Panel Mount Receptacle (Part No. 1738950)

Free-Hanging Plug (Part No. 1738951)

### 12 Position



PCB Mount Receptacle (Part No. 1604798)

Panel Mount Receptacle (Part No. 1604799)

Free-Hanging Plug (Part No. 1604800)

SPIRALLOCK is a trademark of Detroit Tool Industries Corporation.

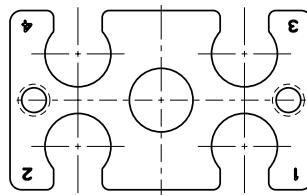
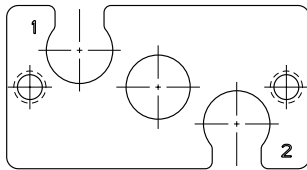
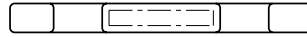


**Rectangular Connectors** (Continued)

**Accessories**

**2 Position Low Profile Seal Retainer**  
Part No. 2101752-1

**4 Position Low Profile Seal Retainer**  
Part No. 2157322-1

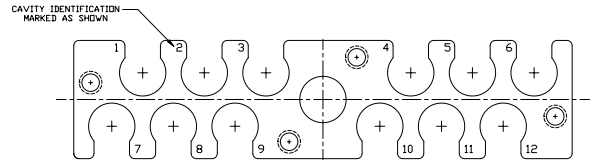
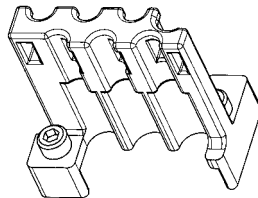


ORIENTATION OF BOOT SEAL PLATE FOR PLUG APPLICATION

ORIENTATION OF BOOT SEAL PLATE FOR PLUG APPLICATION

**12 Position Backshell/Strain Relief Kit**  
Part No. 1996373-1 for receptacle;  
Part No. 1996373-2 for plug

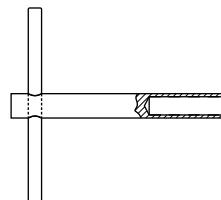
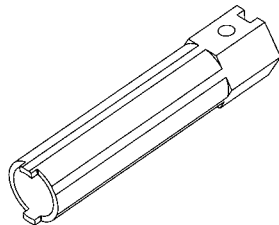
**12 Position Low Profile Seal Retainer**  
Part No. 1996544-2



ORIENTATION OF SEAL BOOT PLATE FOR PLUG APPLICATIONS

**Wrench, Retention Nut, Jackscrew and Jackpost, Quadrax Rectangular Connector**  
Part No. 1604972-1

**Wrench, Retention Nut, T-handle Tool**  
Part No. 1950030-1



## Rectangular Connectors (Continued)

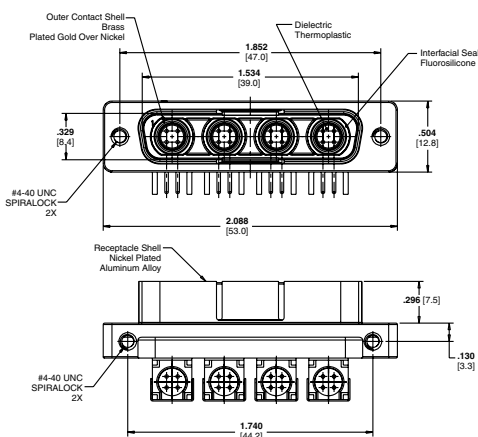
### Low Profile Rectangular Connector Assemblies

#### Product Facts

- Designed to provide a ruggedized in-line solution for Quadrax cable to printed circuit board mount applications, in a blind-mateable D-subminiature configuration
- Quadrax contacts ground directly to connector shell

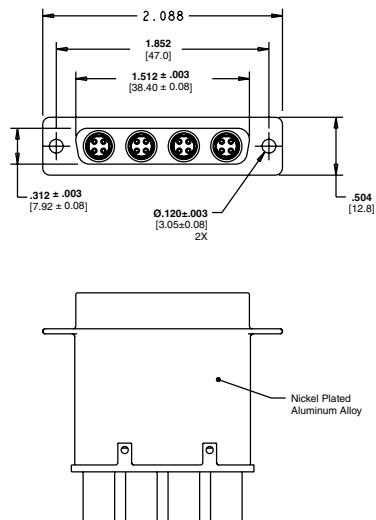


### 4Q4



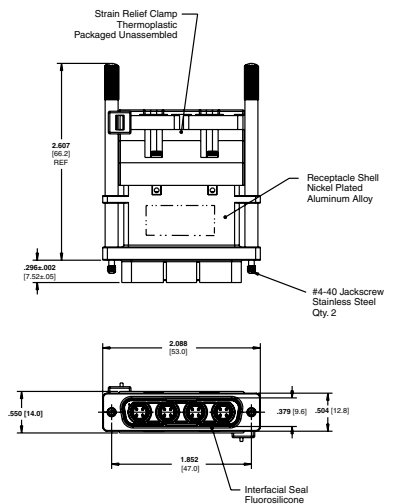
**Right Angle PCB Mount Receptacle**  
(Part No. 2000314)

Accepts standard AMPLIMITE Boardlock Hardware (sold separately).



**Panel-Mount or Free-Hanging Plug Kit**  
(Part No. 2000317)

Socket Contacts included in Kit. Accepts standard AMPLIMITE Screwlock Hardware (sold separately).



**Free-Hanging Receptacle Kit**  
(Part No. 2000263)

Jackscrews, Strain Relief, and Crimp Pin Contacts included in kit.

#### Female Screwlock Part No. 212447-1

#### Nut Driver Part No. 811262-1

For assembling female screwlocks to connector flange.

## Custom MIL-DTL-38999 Series III Style Circular Connectors

### Product Facts

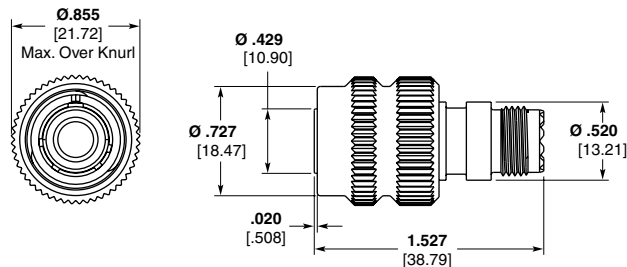
- Available in various shell sizes: 9 (1Q1), 17 (2Q2), 19 (4Q4) and 25 (8Q8)
- Designed for use with wire seal boots for sealing and optimized alignment
- Front metal-shell design provides a full ground plane
- Lightweight composite rear shell available in size 19 for reduced weight
- Accepts standard backshells



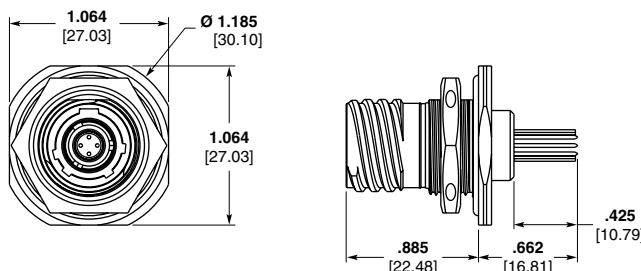
Shell Size	Part No.	Type	Description
9	1877384	Plug	Single Quadrax, RR-RR
	1738916	Receptacle	38999 Style, Single Quadrax, FR-FR, Jam Nut Style, with PC Tail Contacts
	1811184	Receptacle	38999 Style, Single Quadrax, FR-FR, PCB Mount with Stand-offs and PC Tail Contacts
	2157694	Receptacle	38999 Style, Single Quadrax, with 1 Contact, FR-FR, Jam Nut Style, Series III
17	1877775	Plug	38999 Style, Arrangement 2Q2, RR-RR
	1877774	Receptacle	38999 Style, Arrangement 2Q2, RR-RR
	2157455	Receptacle	38999 Style, Arrangement 2Q2, FR-FR, PCB Mount
	2157695	Receptacle	38999 Style, with 2 Quadrax Contacts, Arrangement 2Q2, FR-FR, Jam Nut Style, Series III
19	1811902	Plug	38999 Style, Arrangement 4Q4, RR-RR
	1738974	Receptacle	38999 Style, with 4 Quadrax Contacts, FR-FR
	1877732	Receptacle	38999 Style, with 4 Quadrax Contacts, FR-FR, with PC Tail Contacts
	1811901	Receptacle	38999 Style, Arrangement 4Q4, RR-RR
21	2157696	Receptacle	38999 Style, with 4 Quadrax Contacts, Arrangement 2Q2, FR-FR, Jam Nut Style, Series III
	1954355	Plug	38999 Style, Arrangement 4Q4, FR-FR, Series III
23	1954353	Receptacle	38999 Style, Arrangement 4Q4, FR-FR, Series III, with PC Tail Contacts
	1877921	Plug	38999 Style, Arrangement 6Q6, Series III
25	1954577	Receptacle	38999 Style, Arrangement 6Q6, Series III
	1811928	Plug	38999 Style, Arrangement 8Q8, RR-RR
	1811927	Receptacle	38999 Style, Arrangement 8Q8, RR-RR
	2101395	Receptacle	38999 Style, Arrangement 8Q8, FR-FR, with PC Tail Contacts

See TE Customer Drawing for finish options

### Plug, Shell Size 9 Single Quadrax, RR-RR Part No. 1877384



### Receptacle, Shell Size 9, 38999 Style Single Quadrax, FR-FR Jam Nut Style Part No. 1738916

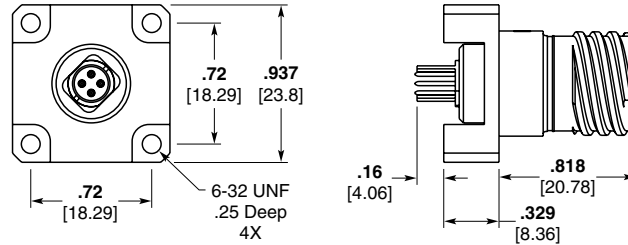


Contacts sold separately  
(unless noted) see page 5

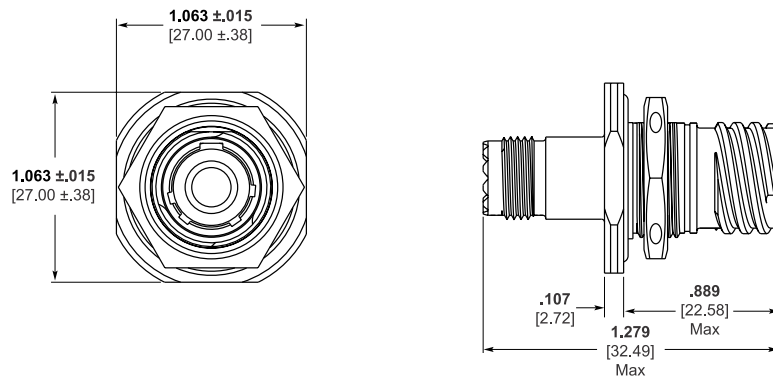
**Custom MIL-DTL-38999 Series III Style Circular Connectors** (Continued)

**Receptacle, Shell Size 9,  
38999 Style  
Single Quadrax, FR-FR  
PCB Mount with Stand-offs**

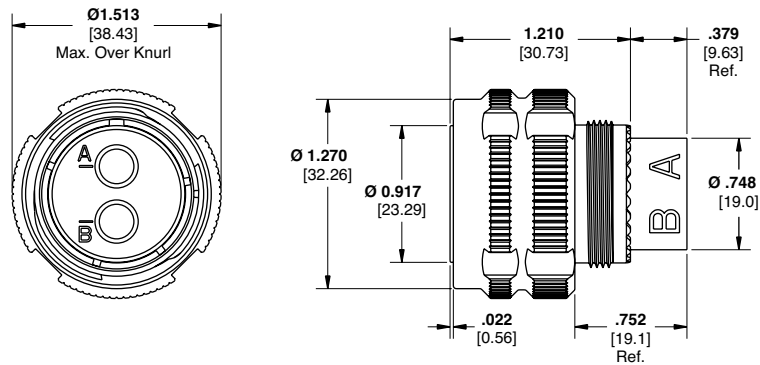
**Part No. 1811184  
(with PC tail contacts)**



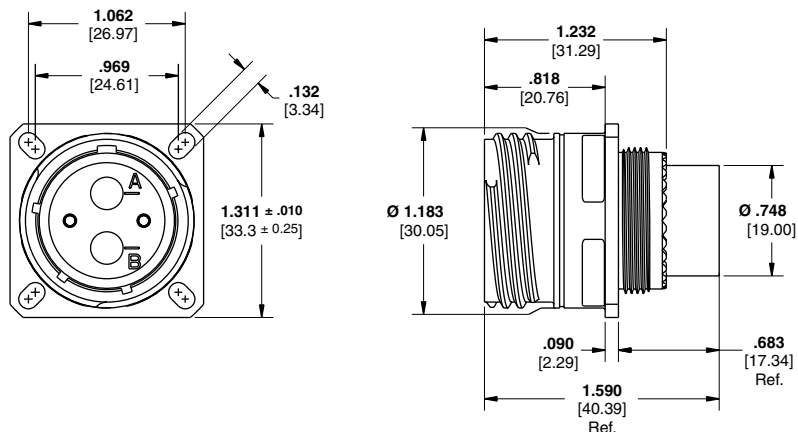
**Receptacle, Shell Size 9  
38999 Style  
Single Quadrax, FR-FR  
Jam Nut Style  
Part No. 2157694**



**Plug, Shell Size 17,  
38999 Style  
Arrangement 2Q2, RR-RR  
Part No. 1877775**



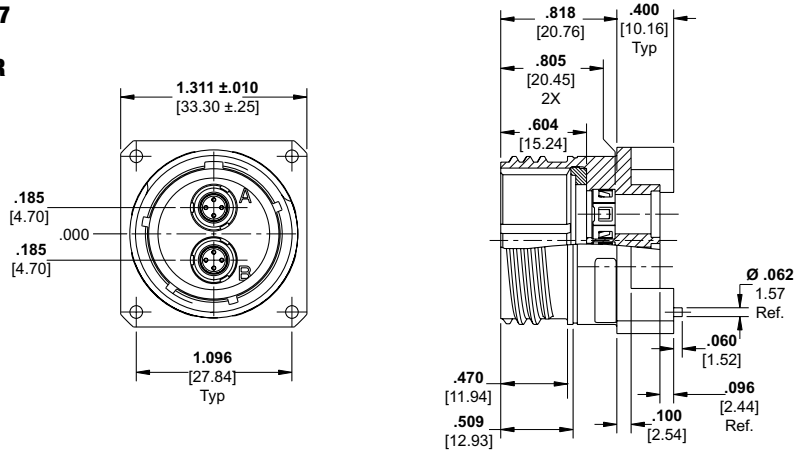
**Receptacle, Shell Size 17  
38999 Style  
Arrangement 2Q2, RR-RR  
Part No. 1877774**



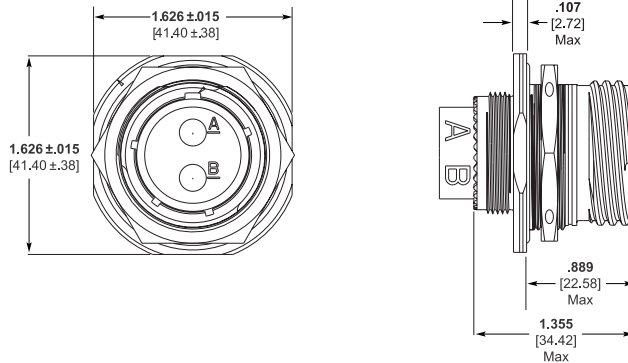
**Contacts sold separately  
(unless noted) see page 5**

**Custom MIL-DTL-38999 Series III Style Circular Connectors (Continued)**

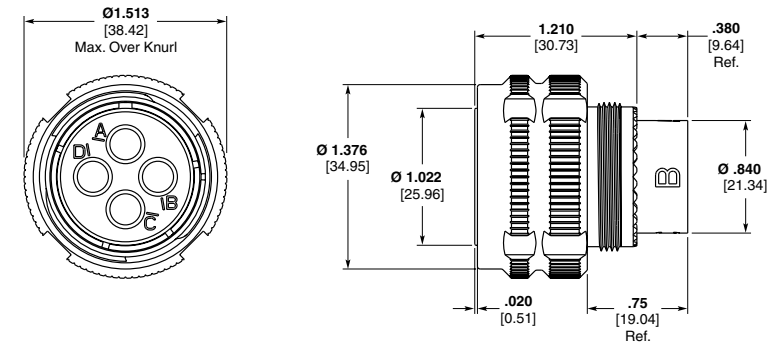
**Receptacle, Shell Size 17  
38999 Style  
Arrangement 2Q2, FR-FR  
Part No. 2157455**



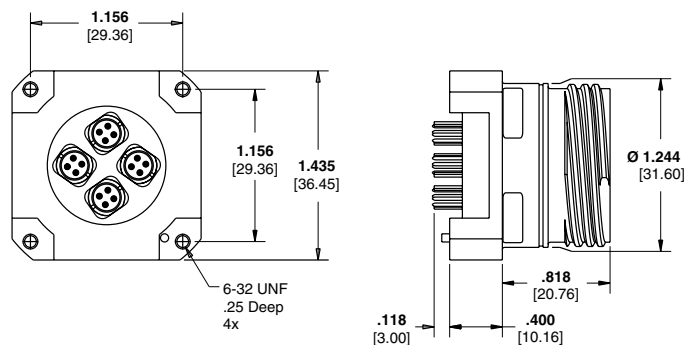
**Receptacle, Shell Size 17  
38999 Style  
Arrangement 2Q2, FR-FR  
Jam Nut Style  
Part No. 2157695**



**Plug, Shell Size 19  
38999 Style  
Arrangement 4Q4, RR-RR  
Part No. 1811902**



**Receptacle, Shell Size 19,  
38999 Style w/4 Quadrax  
Contacts, FR-FR  
Part No. 1877732  
(w/ PC Tail Contacts)  
Part No. 1738974  
(connector only)**

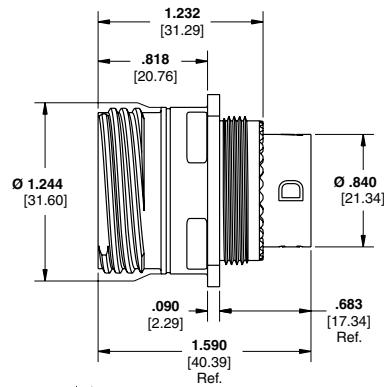
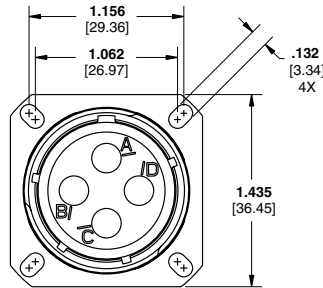


**Contacts sold separately  
(unless noted) see page 5**

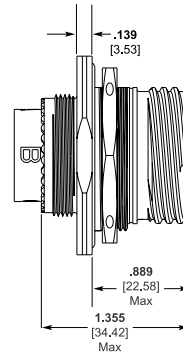
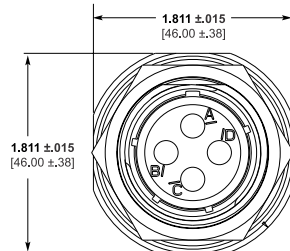


**Custom MIL-DTL-38999 Series III Style Circular Connectors (Continued)**

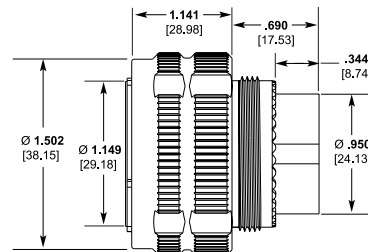
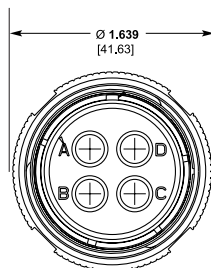
**Receptacle, Shell Size 19,  
38999 Style  
Arrangement 4Q4, RR-RR  
Part No. 1811901**



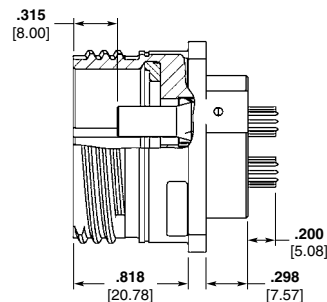
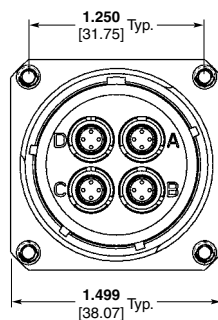
**Receptacle, Shell Size 19  
38999 Style  
Arrangement 4Q4, FR-FR  
Jam Nut Style  
Part No. 2157696**



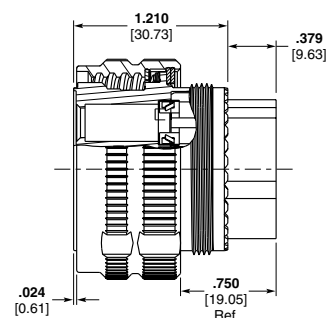
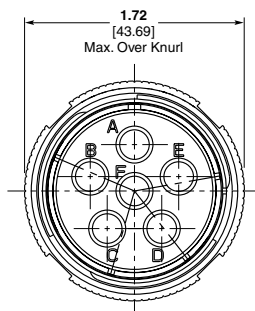
**Plug, Shell Size 21,  
38999 Style  
Arrangement 4Q4, FR-FR  
Series III  
Part No. 1954355**



**Receptacle, Shell Size 21,  
38999 Style  
Arrangement 4Q4, FR-FR  
Series III  
Part No. 1954353**



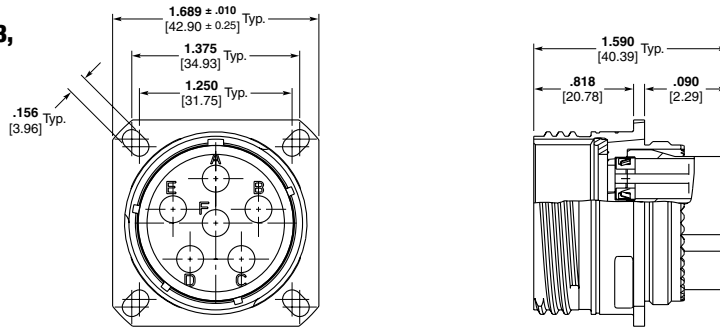
**Plug, Shell Size 23,  
38999 Style  
Arrangement 6Q6,  
Series III  
Part No. 1877921**



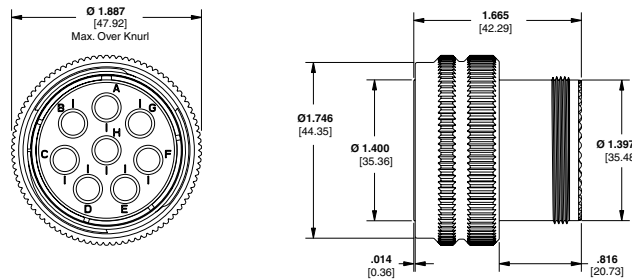
**Contacts sold separately  
(unless noted) see page 5**

**Custom MIL-DTL-38999 Series III Style Circular Connectors (Continued)**

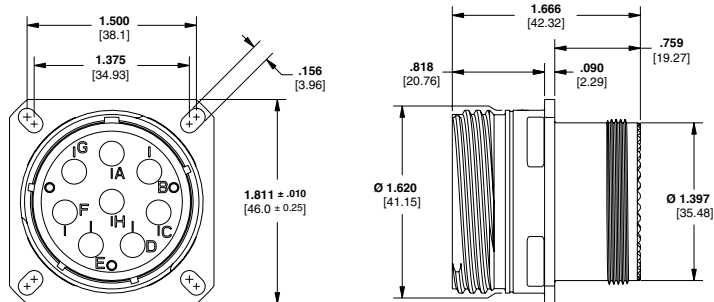
**Receptacle, Shell Size 23,  
M38999 Style  
Arrangement 6Q6,  
Series III  
Part No. 1954577**



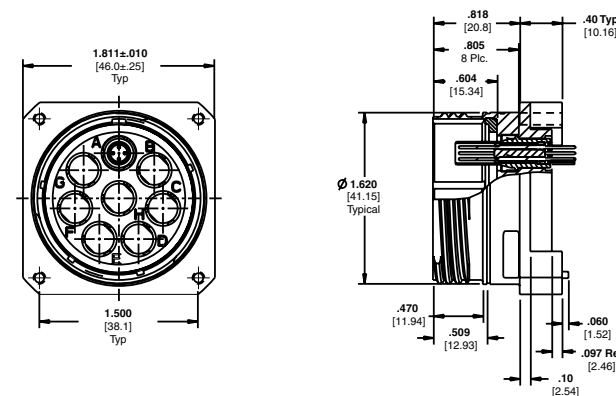
**Plug, Shell Size 25  
38999 Style  
Arrangement 8Q8, RR-RR  
Part No. 1811928**



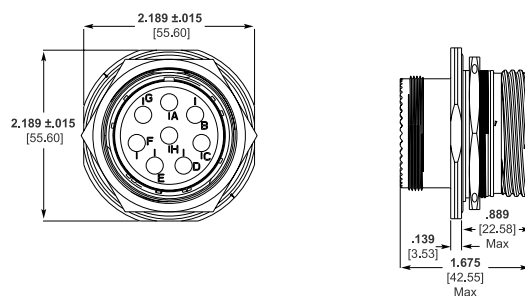
**Receptacle, Shell Size 25  
38999 Style  
Arrangement 8Q8, RR-RR  
Part No. 1811927**



**Receptacle, Shell Size 25  
38999 Style  
Arrangement 8Q8, FR-FR  
Part No. 2101395  
(w/ PC Tail Contacts)**



**Receptacle, Shell Size 25  
38999 Style  
Arrangement 8Q8  
Jam Nut  
Part No. 2157628**

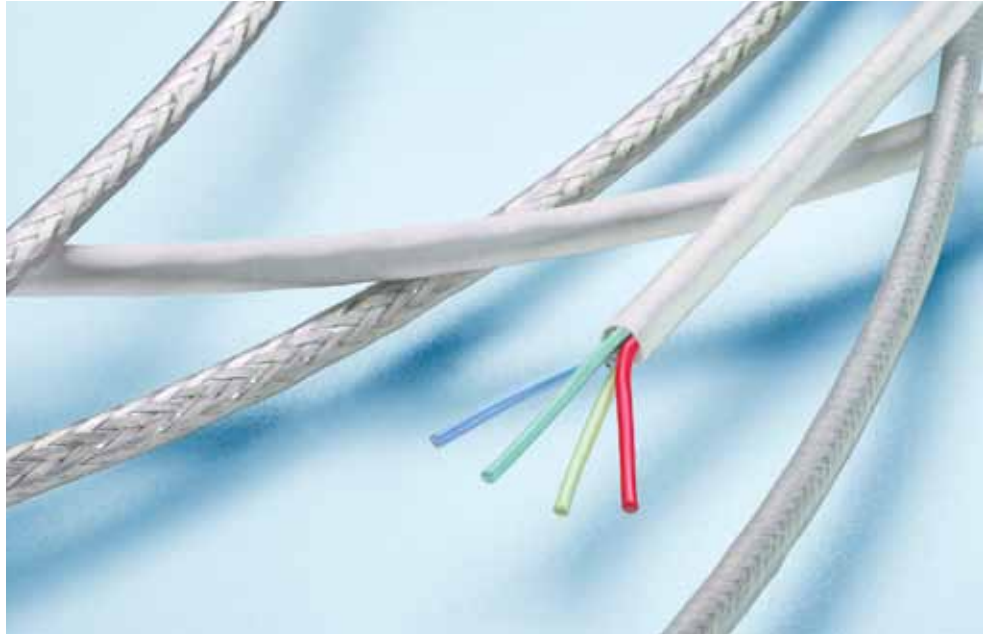


**Contacts sold separately  
(unless noted) see page 5**

## QUADLITE Quadraxial Cables

### Product Facts

- 100 ohm and 150 ohm cables
- Materials rated from -65°C to +200°C
- Low outgassing materials (PTFE, FEP)
- Custom design capabilities
- Proven technologies and materials
- Lightweight
- Low smoke and low toxicity
- Available in 150°C and 200°C rated construction



TE's Quadlite family of lightweight, fluoropolymer cables are for use in high speed, high bandwidth applications such as 100Base-T, Gigabit Ethernet, IEEE 1394 and Fibre Channel employed in commercial avionics systems, aircraft data networks, in-flight entertainment systems and military communications.

The Quadlite cables are designed to meet the flammability requirements of FAR Part 25 and the rigorous smoke and toxicity requirements found in commercial aerospace standards such as EN3475.

Quadlite cables are to be used with the Quadrax contacts and connectors.

### Applications

Cables are used in communications, control and instrumentation for:

- In-Flight Entertainment
- Satellite TV
- Flight Subsystems
- Military Communications

### Materials

**Dielectrics** — Foamed FEP  
**Jacket** — FEP

### Standards and Specifications

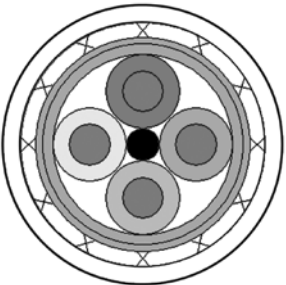
TE Specification 1200  
 ANSI/TIA-568-B.2  
 IEEE 1394  
 ARINC 664

**QUADLITE Quad coaxial Cables** (Continued)

**100Base-T Ethernet Cables**  
**100 Ohms - 150°C**

TE Part No.	CEC-RWC-18634		CEC-RWC-18664		CEC-RWC-18666	
Conductor AWG Size (19 Strand)	26		24		22	
Conductor Material:	SCCA		SCCA		SCC	
Nom. Conductor Diameter (in.):	0.0185		0.0235		0.0295	
Insulation Material:	Formed FEP		Formed FEP		Formed FEP	
Nom. Insulation OD ± 0.002 (in.):	0.037		0.042		0.057	
Nom. Cable OD (in.):	0.145		0.154		0.195	
Nom. Cable Weight (lb/1 kft):	17.7		20.3		32.0	
Shield Material:	TCC		TCC		TCC	
Jacket Material:	FEP		FEP		FEP	
Impedance ± 10% (Ω):	100		100		100	
Temp. Rating:	150°C		150°C		150°C	
Nom. Capacitance (pF/ft):	13.5		13.0		12.9	
Nom. Attenuation (dB/100 m):						
1 MHz	4.0		2.2		1.6	
10 MHz	10.5		6.8		5.9	
100 MHz	36.0		24.8		21.0	
	<u>10 MHz</u>	<u>100 MHz</u>	<u>10 MHz</u>	<u>100 MHz</u>	<u>10 MHz</u>	<u>100 MHz</u>
Min. NEXT (dB)	50	35	50	35	50	35
Min. SRL (dB)	23	16	23	16	23	16

TE Part No.	CEC-RWC-20555		CEC-RWC-20333	
Conductor AWG Size (19 Strand)	26		24	
Conductor Material:	SCCA		SCCA	
Nom. Conductor Diameter (in.):	0.0185		0.0235	
Insulation Material:	Formed FEP		Formed FEP	
Nom. Insulation OD ± 0.002 (in.):	0.037		0.042	
Nom. Cable OD (in.):	0.144		0.153	
Nom. Cable Weight (lb/1 kft):	18.7		22.2	
Shield Material:	TCC		TCC	
Jacket Material:	FEP		FEP	
Impedance ± 10% (Ω):	100		100	
Temp. Rating:	150°C		150°C	
Nom. Capacitance (pF/ft):	13.5		13.0	
Nom. Attenuation (dB/100 m):				
1 MHz	4.0		2.2	
10 MHz	10.5		6.8	
100 MHz	36.0		24.8	
	<u>10 MHz</u>	<u>100 MHz</u>	<u>10 MHz</u>	<u>100 MHz</u>
Min. NEXT (dB)	50	35	50	35
Min. SRL (dB)	23	16	23	16



**100Base-T Ethernet**





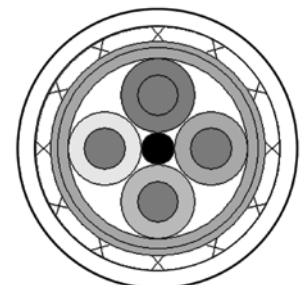
**QUADLITE Quadraxial Cables** (Continued)

**Fibre Channel Cables**  
**150 Ohms - 150°C**

TE Part No.	CEC-RWC-18680	CEC-RWC-18681	CEC-RWC-18682
Conductor AWG Size (19 Strand)	26	24	22
Conductor Material:	SCCA	SCCA	SCC
Nom. Conductor Diameter (in.):	0.0185	0.0235	0.0295
Insulation Material:	Formed FEP	Formed FEP	Formed FEP
Nom. Insulation OD ± 0.002 (in.):	0.058	0.077	0.094
Nom. Cable OD (in.):	0.193	0.224	0.281
Nom. Cable Weight (lb/1 kft):	23.4	38.3	57.2
Shield Material:	TCC	TCC	TCC
Jacket Material:	FEP	FEP	FEP
Impedance ± 10% (Ω):	150	150	150
Temp. Rating:	150°C	150°C	150°C
Nom. Capacitance (pF/ft):	6.0	6.0	6.0
Nom. Attenuation (dB/100 m):			
531 MHz	13	11	9
1062 MHz	21	17	13

**150 Ohms - 200°C**

TE Part No.	CEC-RWC-18684	CEC-RWC-18685	CEC-RWC-18686
Conductor AWG Size (19 Strand)	26	24	22
Conductor Material:	SCCA	SCCA	SCC
Nom. Conductor Diameter (in.):	0.0185	0.0235	0.0295
Insulation Material:	Formed FEP	Formed FEP	Formed FEP
Nom. Insulation OD ± 0.002 (in.):	0.058	0.077	0.094
Nom. Cable OD (in.):	0.192	0.247	0.284
Nom. Cable Weight (lb/1 kft):	25.8	38.3	57.2
Shield Material:	SCC	SCC	SCC
Jacket Material:	FEP	FEP	FEP
Impedance ± 10% (Ω):	150	150	150
Temp. Rating:	200°C	200°C	200°C
Nom. Capacitance (pF/ft):	6.0	6.0	6.0
Nom. Attenuation (dB/100 m):			
531 MHz	13	11	9
1062 MHz	21	17	13



**Fibre Channel**

**QUADLITE Quad coaxial Cables** (Continued)

**4-Pair Cat 5E Constructions**  
100 Ohms - 150°C/200°C

TE Part No.	CEC-RWC-20412		CEC-RWC-21064		CEC-RWC-20638	
Conductor AWG Size (19 Strand)	24		24		26 (7 strand)	
Conductor Material:	SCHSCA		SCC		SCC	
Nom. Conductor Diameter (in.):	0.0235		0.0235		0.019	
Insulation Material:	Formed FEP		Formed FEP		Formed FEP	
Nom. Insulation OD ± 0.002 (in.):	0.046		0.046		0.036	
Nom. Cable OD (in.):	0.279		0.249		0.204	
Nom. Cable Weight (lb/1 kft):	46.2		39.5		29.8	
Shield Material:	TCC		TCC		SCC	
Jacket Material:	FEP		XL-ETFE		FEP	
Impedance ± 10% (Ω):	100		100		100	
Temp. Rating:	150°C		150°C		200°C	
Nom. Capacitance (pF/ft):	13.5		13.5		13.5	
Nom. Attenuation (dB/100 m):						
1 MHz	2.4		2.2		2.4	
100 MHz	7.5		6.8		8.8	
100 MHz	26.4		24.8		30.5	
Min. NEXT (dB)	10 MHz	100 MHz	10 MHz	100 MHz	10 MHz	100 MHz
Min. SRL (dB)	50	35	50	35	50	35
	25	19	25	19	23	16

**Cat 6 Constructions**  
100 Ohms - 100°C/90°C

TE Part No.	CEC-RWC-20837		CEC-RWC-21088			
Conductor AWG Size (19 Strand)	23		23			
Conductor Material:	Bare Copper		Bare Copper			
Nom. Conductor Diameter (in.):	0.021		0.021			
Insulation Material:	Foamed PE		PE			
Nom. Insulation OD ± 0.002 (in.):	0.046		0.046			
Nom. Cable OD (in.):	0.350		0.249			
Nom. Cable Weight (lb/1 kft):	52.6		39.5			
Shield Material:	TCC		TCC			
Jacket Material:	FDR-25		Raythane			
Impedance ± 10% (Ω):	100		100			
Temp. Rating:	100°C		90°C			
Nom. Capacitance (pF/ft):	13.5		13.5			
Nom. Attenuation (dB/100 m):						
1 MHz	1.8		1.8			
100 MHz	5.5		5.5			
100 MHz	18.3		18.3			
250 MHz	30.4		30.4			
Min. NEXT (dB)	10 MHz	250 MHz	10 MHz	250 MHz		
Min. SRL (dB)	70	52	70	52		
	36	24	36	24		

## Custom Solutions

### Spacecraft Applications

#### Product Facts

- Quadrax contacts and QUADLITE cables meet ASTM E595 outgassing limits for spacecraft applications



### Custom Cable and Flex Assemblies

#### Product Facts

- Quadrax contacts and connectors can be provided as custom cable and flex assemblies for customer specific applications

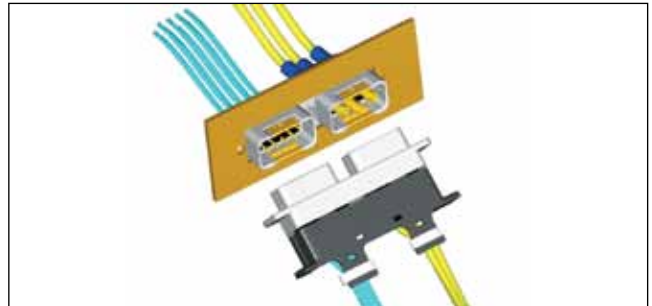


### General Purpose Rectangular (GPR) Connector Assemblies (See Catalog 1654763)

This product is sold by TE under license from Radiall S.A.

#### Product Facts

- Quadrax inserts are available for the rugged, modular General Purpose Rectangular connector, facilitating the mix of high speed signals with a variety of other power, fiber optic, signal, and coax insert configurations in a single connector system



### Single Splice Quadrax Part No. 1996500

#### Product Facts

- Provides field repairable splicing mechanism
- Ideally suited for a Quadrax cable production break where space is limited



Contact TE for additional information on any of these custom solutions.

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