



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 quadaxial 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 \pm 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

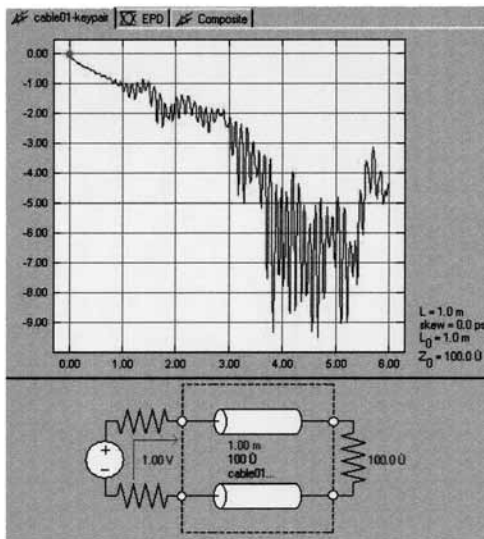
1 Meter Cable Length

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

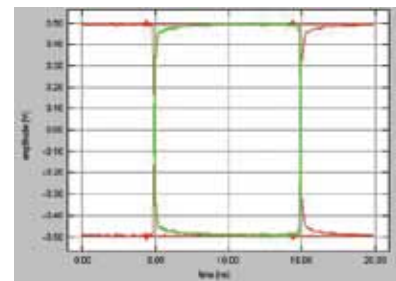
11.2 Meter Cable Length

| 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 |

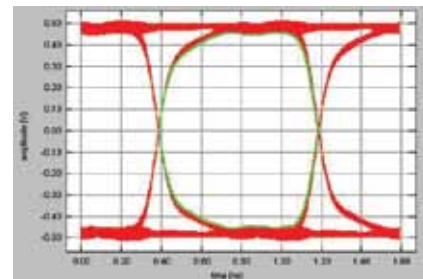
Typical Insertion Loss
1 Meter Length, 100 Ohm Cable



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

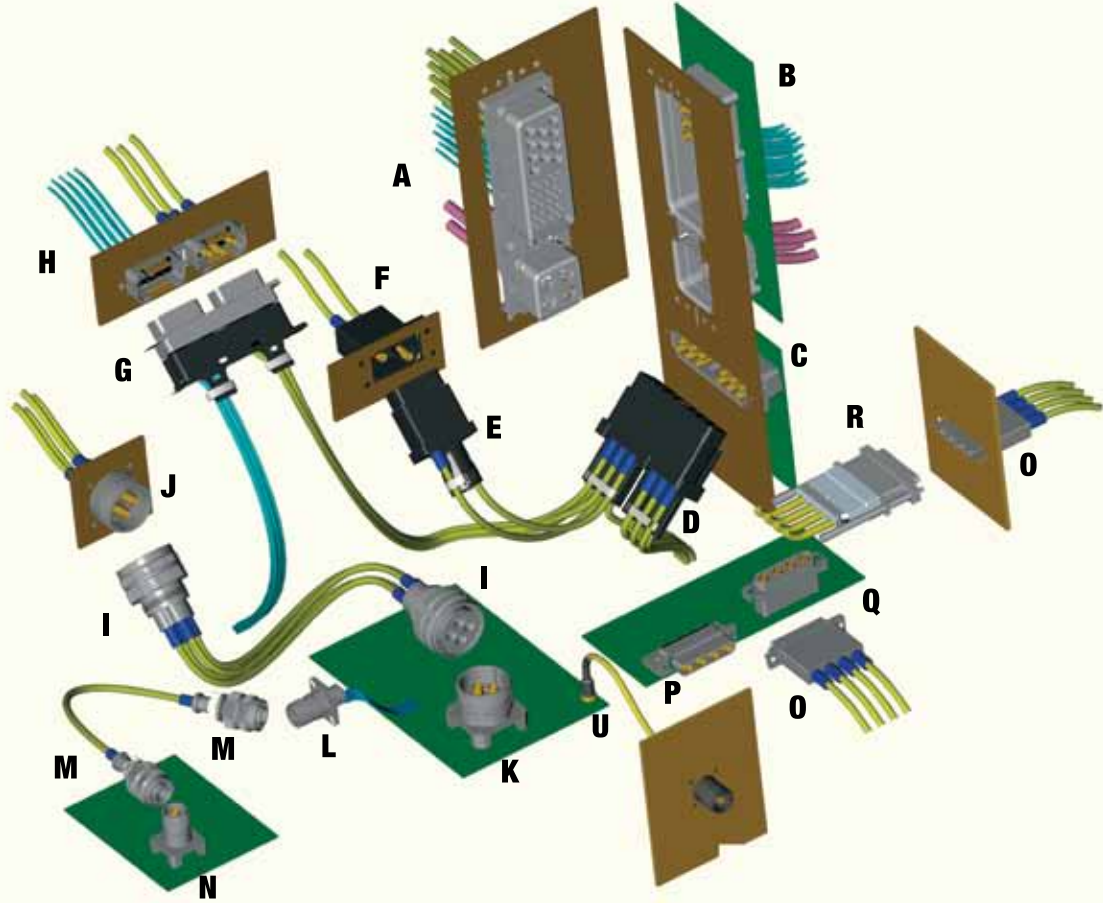


100 Mb/s Data Rate



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 PCB 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 Contacts¹

| 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 | — |

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

| | | |
|-------------|--|------|
| 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: 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] |



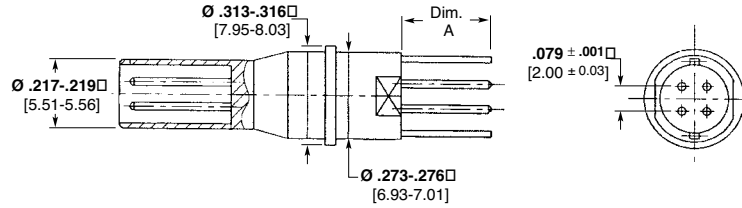
Size 8 Differential Twinax Contacts

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

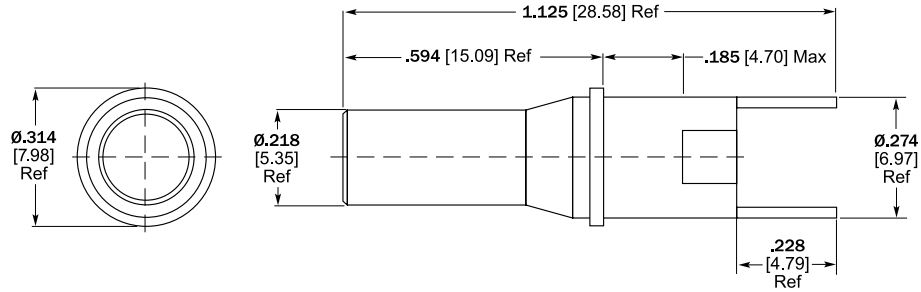
See page 2 for Application Specifications

Quadrax Contacts (Continued)

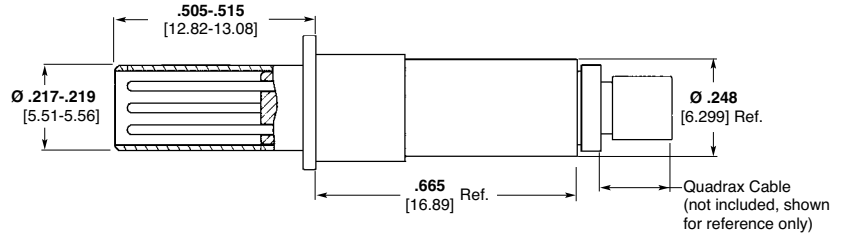
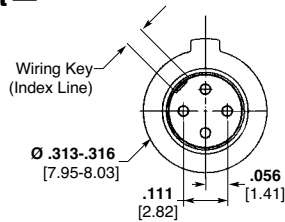
Size 8 Quadrax PCB Pin Contact
**Front Release/
 Front Remove Design**
Part No. 1445626-1 ♦♦
 ♦♦ various tail lengths



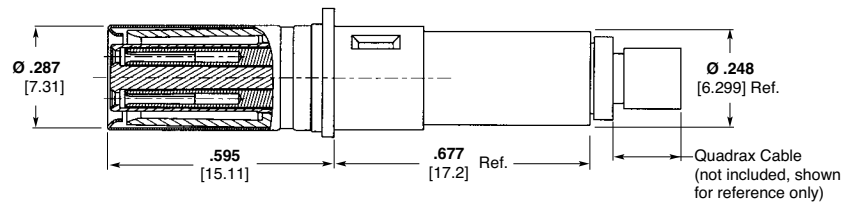
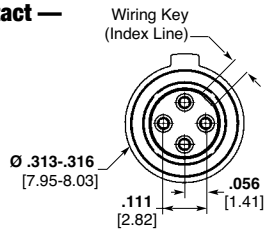
Blank
**Front Release/
 Front Remove Design**
Part No. 1604940-2



**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

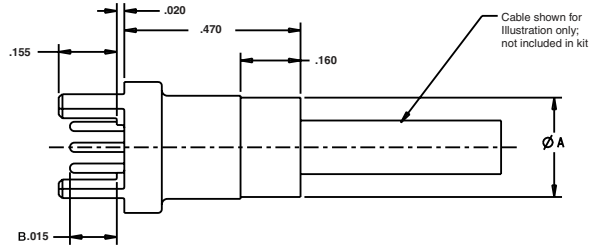
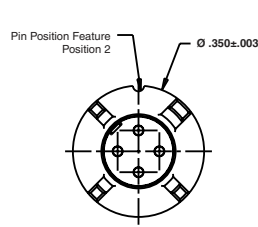


Quadrax Contacts (Continued)



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



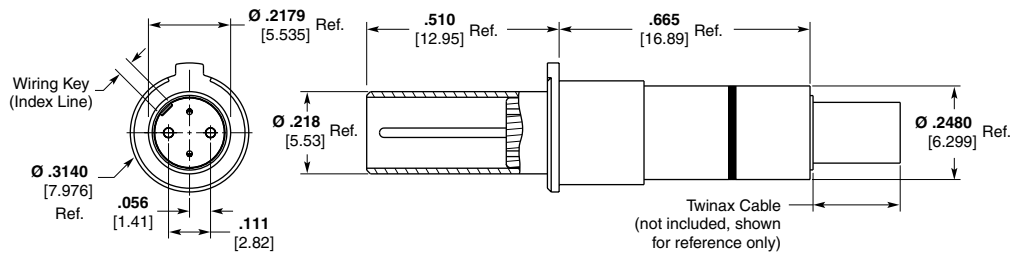
Part Number 1954576-1, -2: B = .125
 Part Number 1954576-3: B = .205

| 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] |

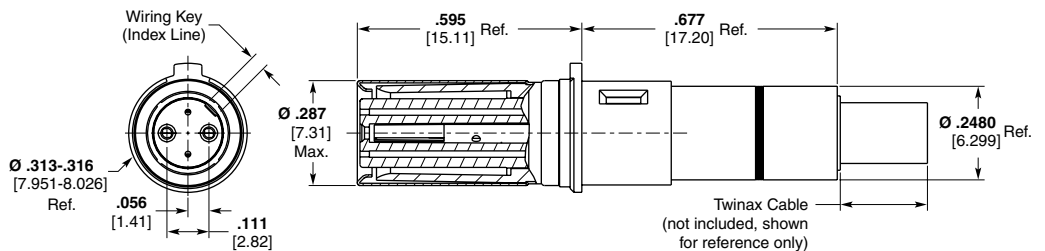
Size 8 Differential Twinax Contacts

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



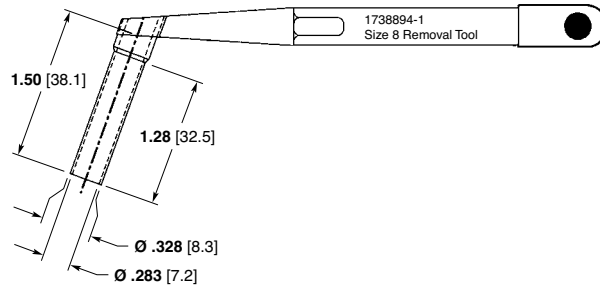
Part No. 1811865-1



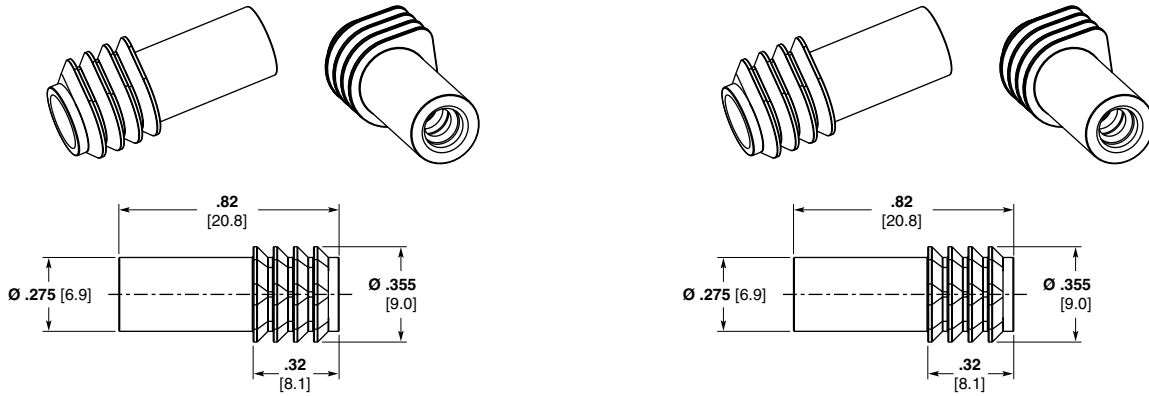
Part No. 1811866-1

Quadrax/Twinax Contact Accessories

Size 8 Quadrax Extraction Tool
Part No. 1738894-1

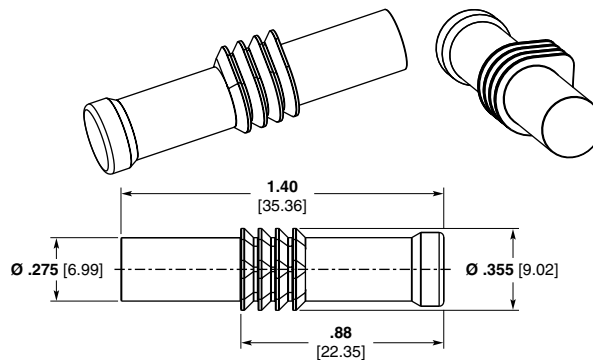


Seal Boots



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

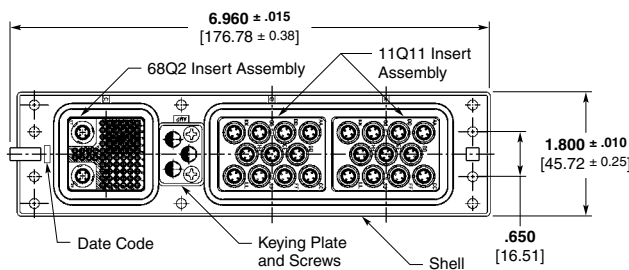
- Utilizes four size 24 screw-machined contacts with standard crimp tooling per M22520/2-01 and M22520/5-01 for ease of termination
- Front release/front removable PCB mount contact design for use in ARINC 600 receptacle connectors
- Rear release/rear remove crimp contact design for use in ARINC 600 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



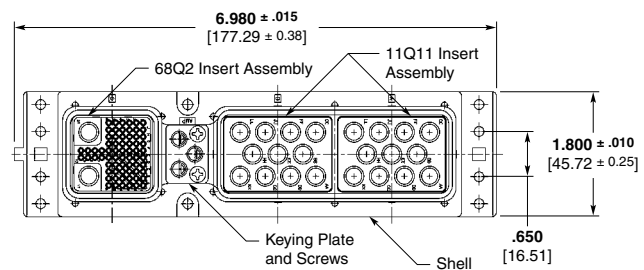
| ARINC Size 2 Connectors | | Insert Arrangement | | | Style | Shell Features | Contacts |
|-------------------------|------------|--------------------|-----|------|-------------------------------|---|--|
| Part No. | Type | A | B | C | | | |
| 1484406-2 | Receptacle | Q11 | Q11 | 68Q2 | Front Release 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**

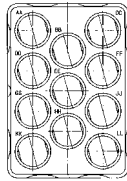


**Plug, Assembly Size 2
Rear Release/Rear Remove
Part No. 1484407-2 shown**

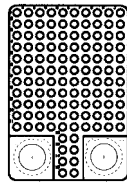
ARINC Size 8 Quadrax Connectors (Continued)

Contact Inserts & Arrangement Codes — Shell Size 2 or 3

Shell Module A, B, D or E

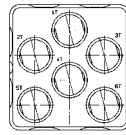


Q11 1, 2, 3
11 Size 8 Quadrax
Metal

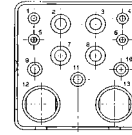


118Q2 2,3,4
118 Size 22
2 Size 8 Quadrax

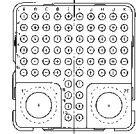
Shell Module C or F



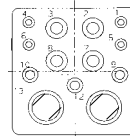
Q6 1, 2, 3
6 Size 8 Quadrax
Metal



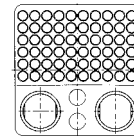
11Q2 1, 2, 3
4 Size 20
4 Size 12
3 Size 16
2 Size 8 Quadrax



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



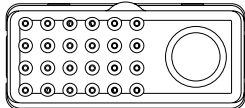
62Q2 2, 3, 4
60 Size 22
2 Size 16
2 Size 8 Quadrax

Notes:

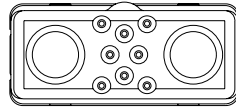
1. Available for plug or receptacle with rear release/remove contacts.
2. Available for receptacle only with all contacts front release/remove.
3. Standard size 8 contacts will not fit in Quadrax size 8 inserts. Also, Quadrax size 8 contacts will not fit into standard size 8 inserts.
4. Available for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

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

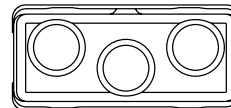
GPRB Insert Arrangements^{1,2}



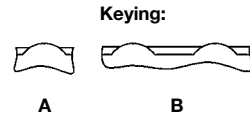
25QI³



10Q2³



3Q3³



Keying:

A

B

- 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

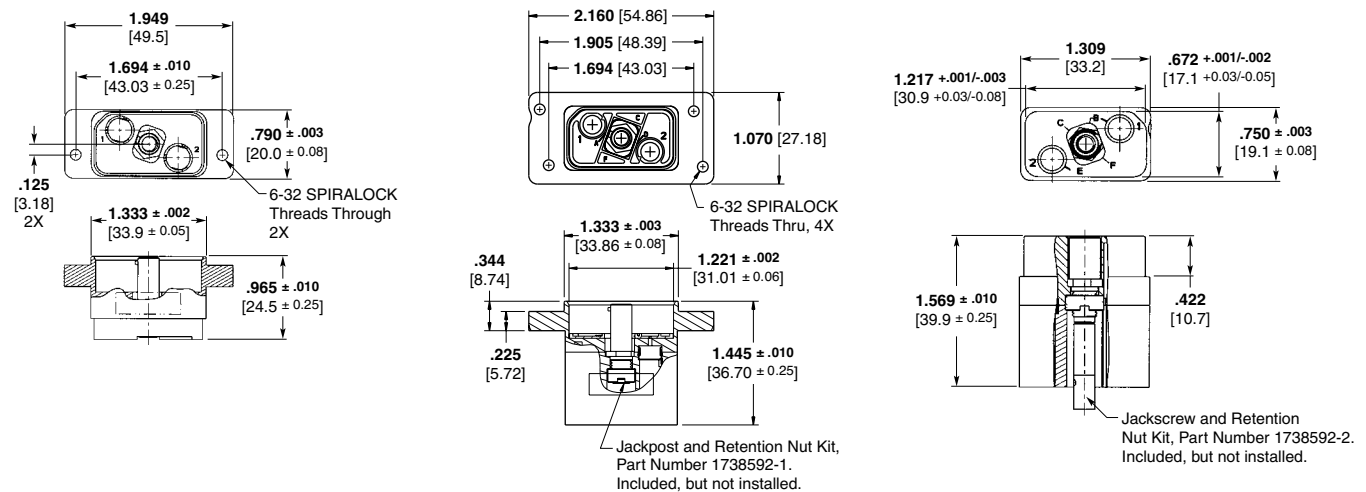
- High performance rectangular connector
- Available in 2, 4, and 12 positions
- Designed for use with wire seal boots and rated for use up to 50,000 ft. altitude
- Center jackscrew design for fast, reliable mating
- Aluminum shells are keyed and polarized, and are available with lightweight plastic 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)

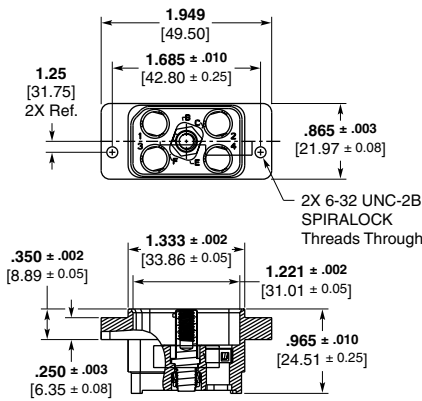
Panel Mount Receptacle (Part No. 1604897)

Free-Hanging Plug (Part No. 1604898)

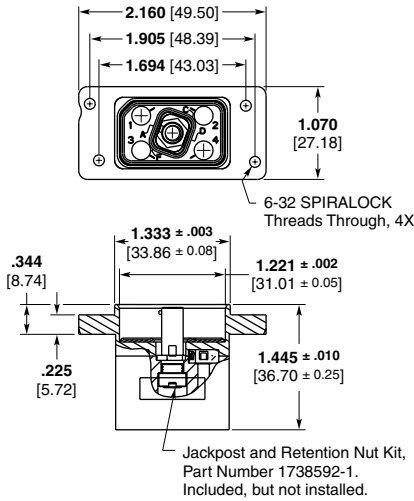
SPIRALOCK is a trademark of Detroit Tool Industries Corporation.

Rectangular Connectors (Continued)

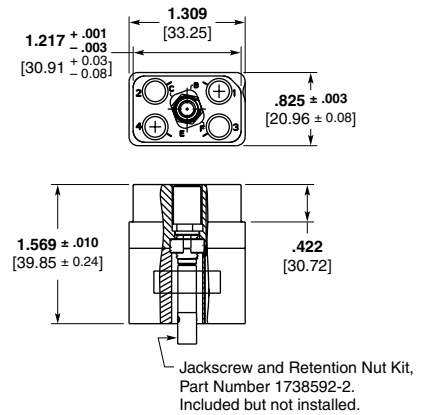
4 Position



PCB Mount Receptacle (Part No. 1738949)

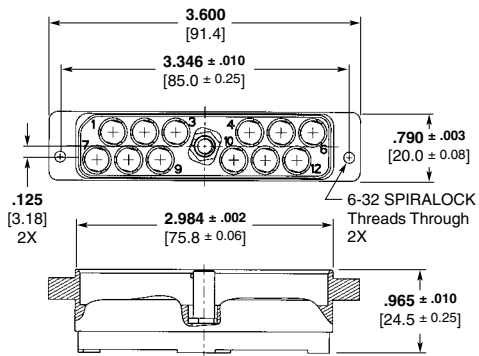


Panel Mount Receptacle (Part No. 1738950)

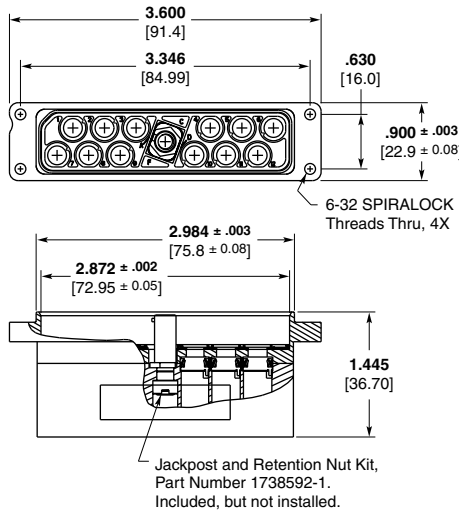


Free-Hanging Plug (Part No. 1738951)

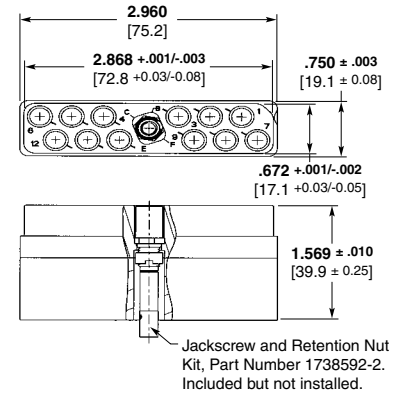
12 Position



PCB Mount Receptacle (Part No. 1604798)



Panel Mount Receptacle (Part No. 1604799)



Free-Hanging Plug (Part No. 1604800)

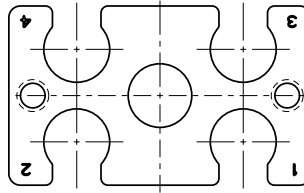
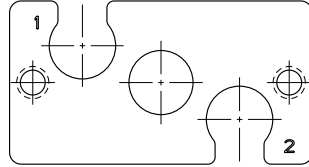
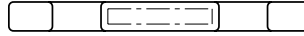
SPIRALLOCK is a trademark of Detroit Tool Industries Corporation.

Rectangular Connectors (Continued)

Accessories

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

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

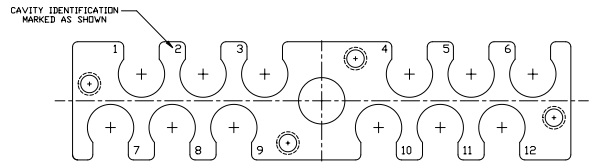
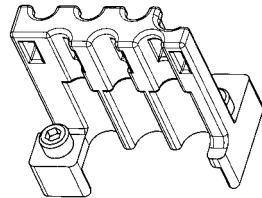


ORIENTATION OF BOOT SEAL PLATE FOR PLUG APPLICATION

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

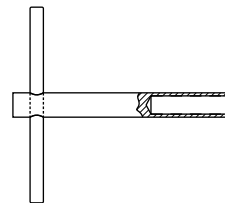
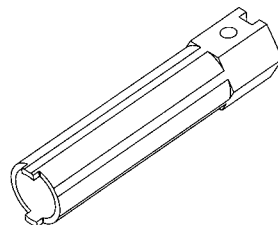
12 Position Low Profile Seal Retainer
Part No. 1996544-2



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)

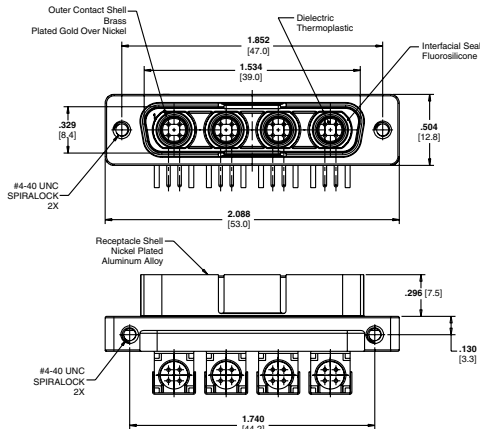
Low Profile Rectangular Connector Assemblies

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

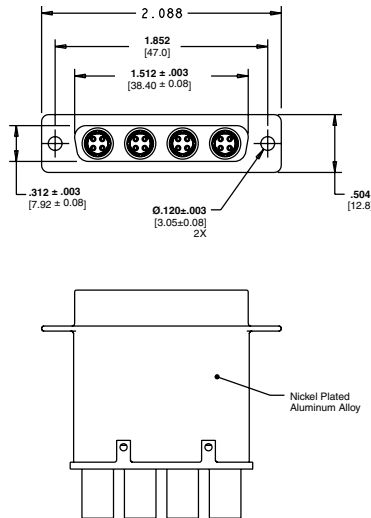


4Q4



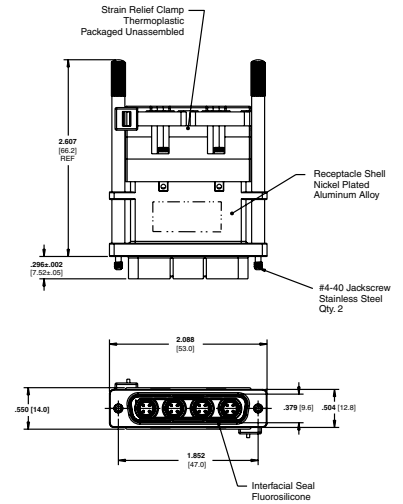
Right Angle PCB Mount Receptacle
(Part No. 2000314)

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

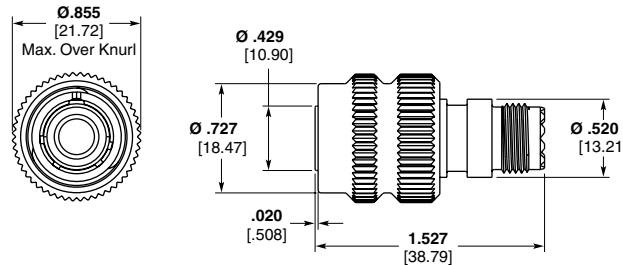
- Available in various shell sizes: 9 (1Q1), 17 (2Q2), 19 (4Q4) and 25 (8Q8)
- Designed for use with wire seal boots for sealing and optimized alignment
- Front metal-shell design provides a full ground plane
- Lightweight composite rear shell available in size 19 for reduced weight
- Accepts standard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



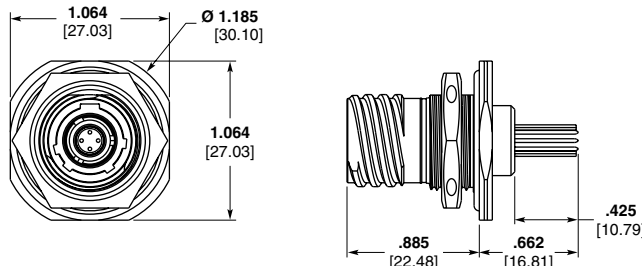
| Shell Size | Part No. | Type | Description |
|------------|----------|------------|---|
| 9 | 1877384 | Plug | Single Quadrax, RR-RR |
| | 1738916 | Receptacle | 38999 Style, Single Quadrax, FR-FR, Jam Nut Style, with PC Tail Contacts |
| | 1811184 | Receptacle | 38999 Style, Single Quadrax, FR-FR, 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 |
| | 1954353 | Receptacle | 38999 Style, Arrangement 4Q4, FR-FR, Series III, with PC Tail Contacts |
| 23 | 1877921 | Plug | 38999 Style, Arrangement 6Q6, Series III |
| | 1954577 | Receptacle | 38999 Style, Arrangement 6Q6, Series III |
| 25 | 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

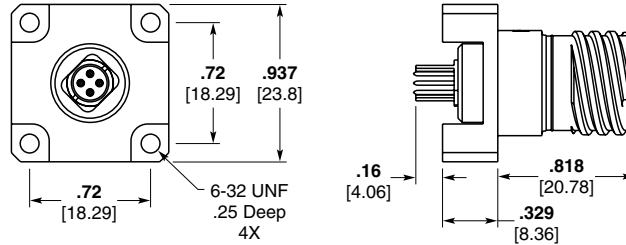


**Contacts sold separately
(unless noted) see page 5**

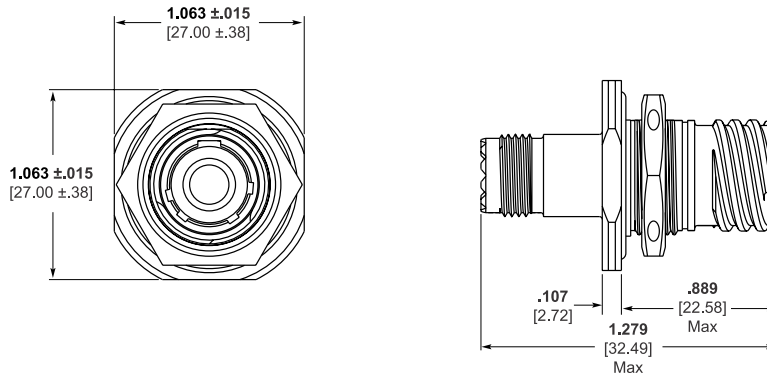
Custom MIL-DTL-38999 Series III Style Circular Connectors (Continued)

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

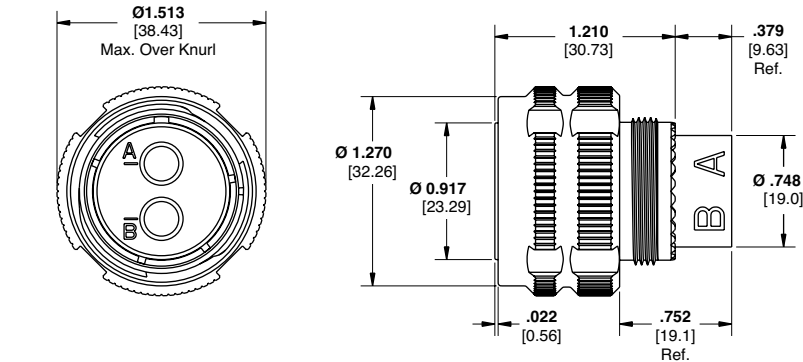
**Part No. 1811184
(with PC tail contacts)**



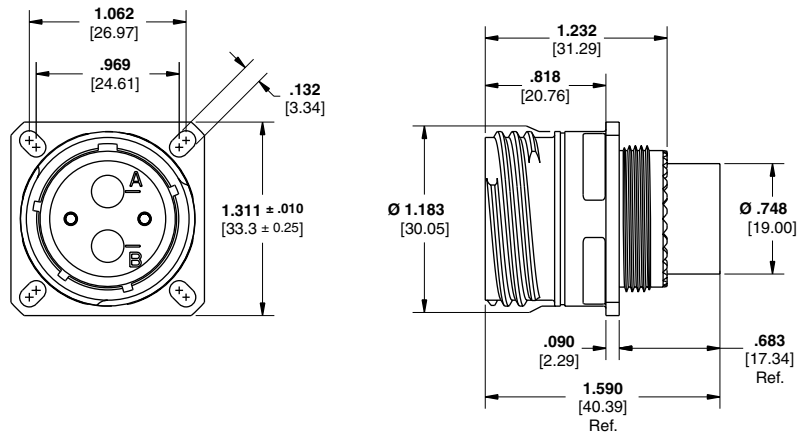
**Receptacle, Shell Size 9
38999 Style
Single Quadrax, FR-FR
Jam Nut Style
Part No. 2157694**



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



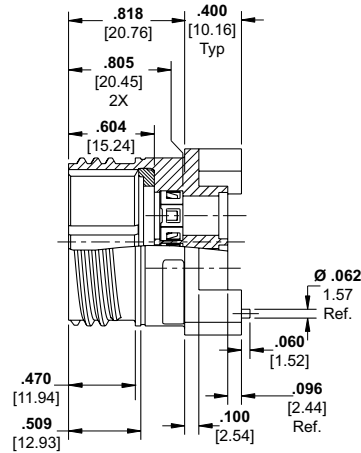
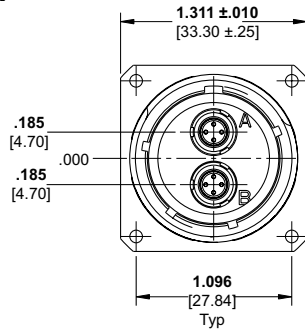
**Receptacle, Shell Size 17
38999 Style
Arrangement 2Q2, RR-RR
Part No. 1877774**



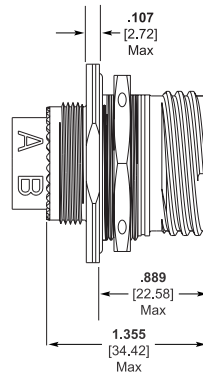
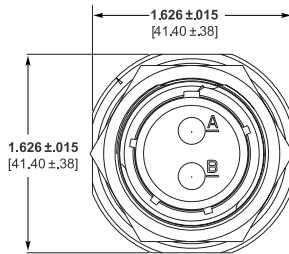
**Contacts sold separately
(unless noted) see page 5**

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

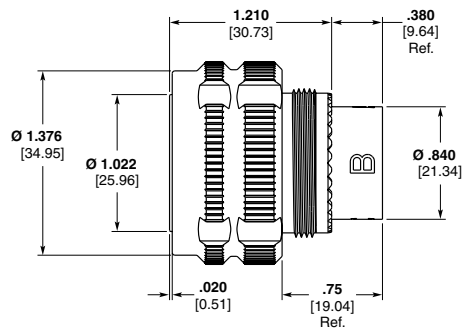
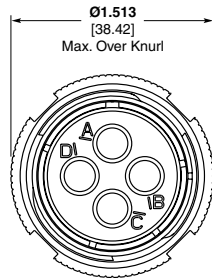
**Receptacle, Shell Size 17
38999 Style
Arrangement 2Q2, FR-FR
Part No. 2157455**



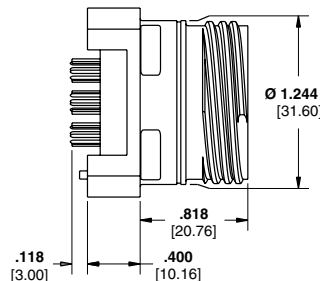
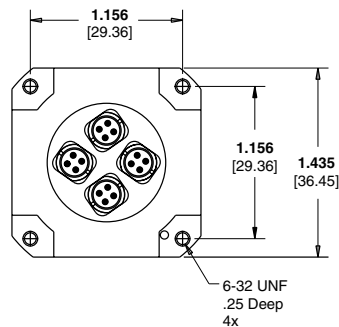
**Receptacle, Shell Size 17
38999 Style
Arrangement 2Q2, FR-FR
Jam Nut Style
Part No. 2157695**



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



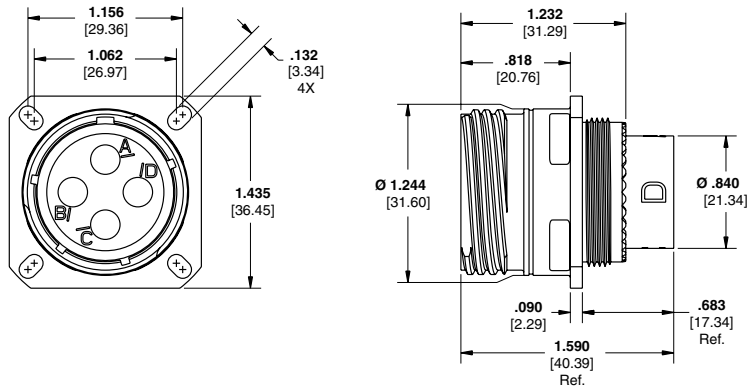
**Receptacle, Shell Size 19,
38999 Style w/4 Quadrax
Contacts, FR-FR
Part No. 1877732
(w/ PC Tail Contacts)
Part No. 1738974
(connector only)**



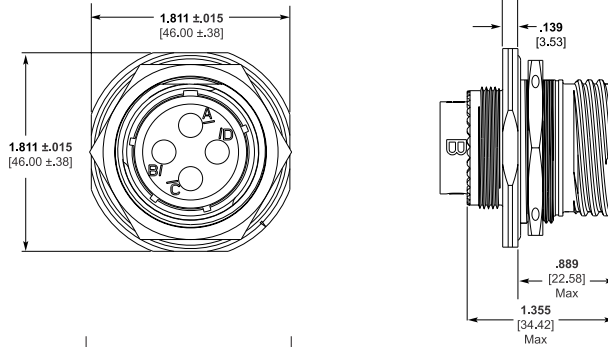
**Contacts sold separately
(unless noted) see page 5**

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

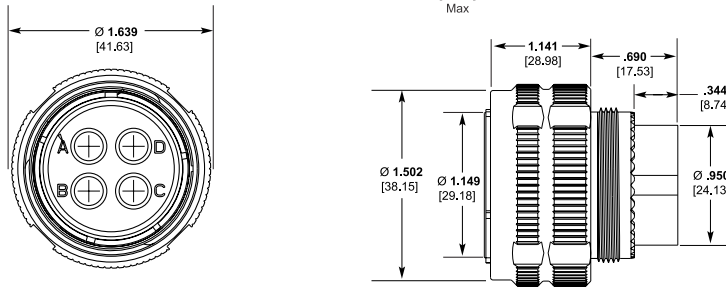
**Receptacle, Shell Size 19,
38999 Style
Arrangement 4Q4, RR-RR
Part No. 1811901**



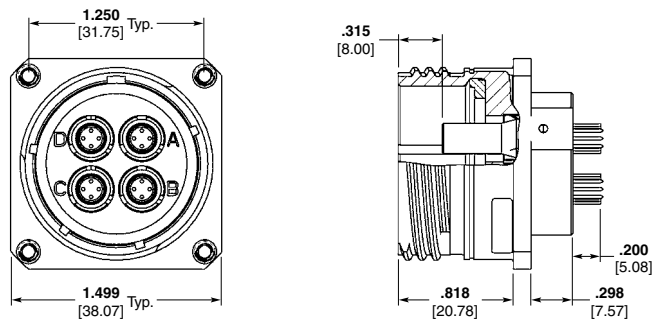
**Receptacle, Shell Size 19
38999 Style
Arrangement 4Q4, FR-FR
Jam Nut Style
Part No. 2157696**



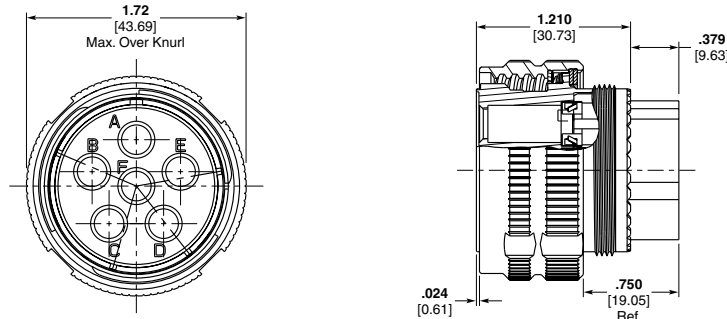
**Plug, Shell Size 21,
38999 Style
Arrangement 4Q4, FR-FR
Series III
Part No. 1954355**



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



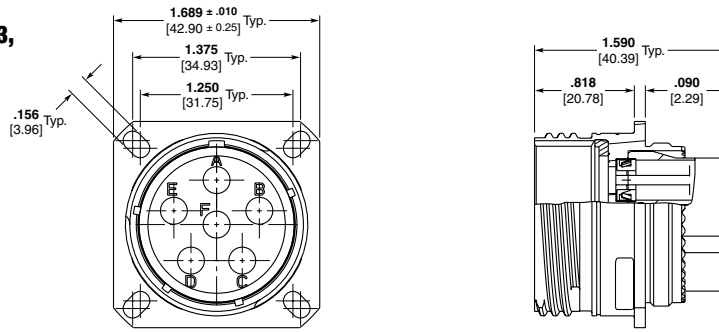
**Plug, Shell Size 23,
38999 Style
Arrangement 6Q6,
Series III
Part No. 1877921**



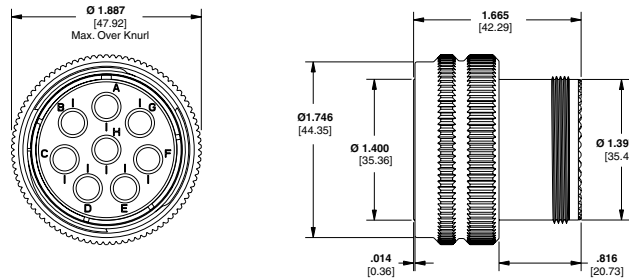
**Contacts sold separately
(unless noted) see page 5**

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

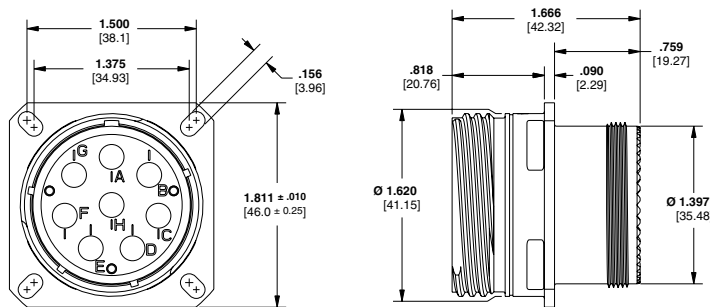
**Receptacle, Shell Size 23,
M38999 Style
Arrangement 6Q6,
Series III
Part No. 1954577**



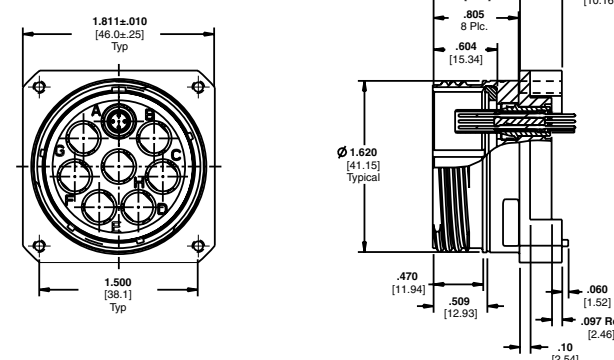
**Plug, Shell Size 25
38999 Style
Arrangement 8Q8, RR-RR
Part No. 1811928**



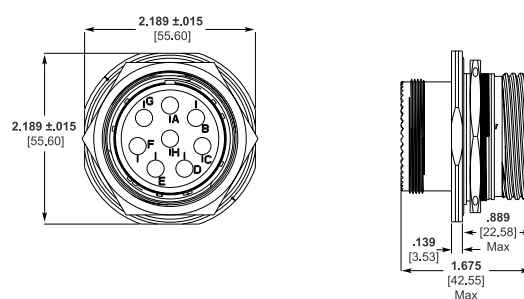
**Receptacle, Shell Size 25
38999 Style
Arrangement 8Q8, RR-RR
Part No. 1811927**



**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**

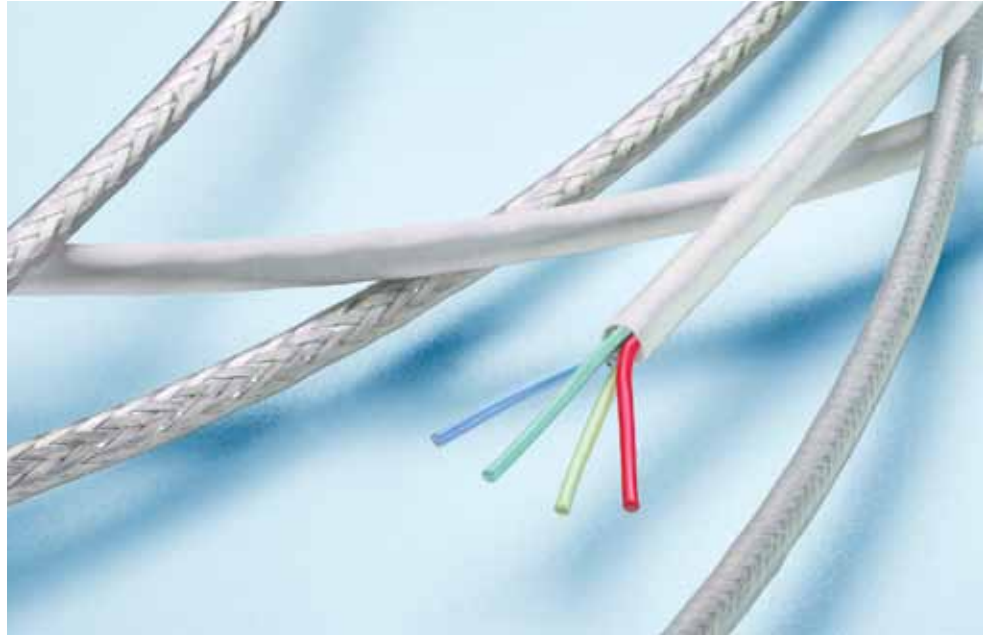


**Contacts sold separately
(unless noted) see page 5**

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

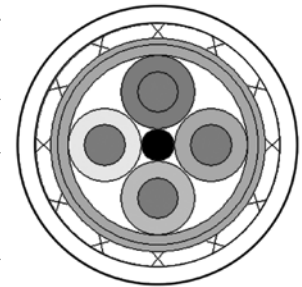
TE Specification 1200
 ANSI/TIA-568-B.2
 IEEE 1394
 ARINC 664

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 | |
| | | | | | | |
| | | | | | | |
| Min. NEXT (dB) | 10 MHz 100 MHz | | 10 MHz 100 MHz | | 10 MHz 100 MHz | |
| Min. SRL (dB) | 50 35 | | 50 35 | | 50 35 | |
| | 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 | |
| | | | | |
| | | | | |
| | | | | |
| Min. NEXT (dB) | 10 MHz 100 MHz | | 10 MHz 100 MHz | |
| Min. SRL (dB) | 50 35 | | 50 35 | |
| | 23 16 | | 23 16 | |



100Base-T Ethernet

QUADLITE Quad coaxial Cables(Continued)

**100Base-T Ethernet Cables
100 Ohms - 200°C**

| TE Part No. | CEC-RWC-18658 | | CEC-RWC-18687 | | CEC-RWC-18665 | |
|--|----------------------|----------------|----------------------|----------------|----------------------|----------------|
| 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.): | 0.144 | | 0.153 | | 0.194 | |
| Nom. Cable Weight (lb/1 kft): | 18.7 | | 22.2 | | 34.3 | |
| Shield Material: | SCC | | SCC | | SCC | |
| Jacket Material: | FEP | | FEP | | FEP | |
| Impedance ± 10% (Ω): | 100 | | 100 | | 100 | |
| Temp. Rating: | 200°C | | 200°C | | 200°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 | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| Min. NEXT (dB) | 10 MHz | 100 MHz | 10 MHz | 100 MHz | 10 MHz | 100 MHz |
| Min. SRL (dB) | 50 | 35 | 50 | 35 | 50 | 35 |
| | 23 | 16 | 23 | 16 | 23 | 16 |

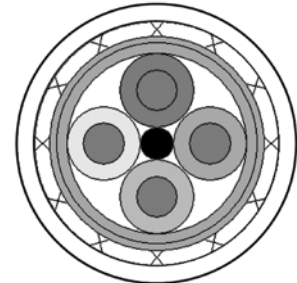
QUADLITE Quad coaxial Cables (Continued)

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 \pm 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 \pm 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 \pm 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 \pm 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

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

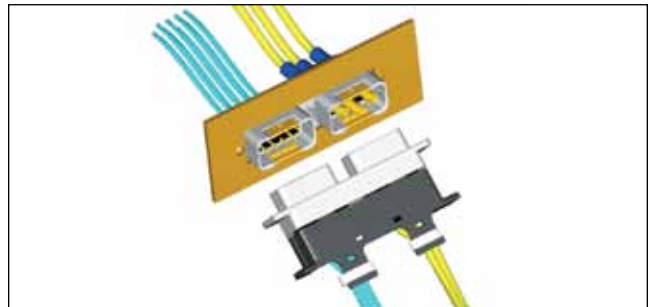


General Purpose Rectangular (GPR) Connector Assemblies (See Catalog 1654763)

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.

Part Number Index

| Part No. | Page |
|----------|------|
|----------|------|

Note: This index lists all cataloged parts by base no. only. Complete part nos. (with prefixes and/or suffixes) are shown on the page(s) indicated.

| Part No. | Page |
|---------------|--------|
| CEC-RWC-18634 | 22 |
| CEC-RWC-18664 | 22 |
| CEC-RWC-18666 | 22 |
| CEC-RWC-20555 | 22 |
| CEC-RWC-20333 | 22 |
| CEC-RWC-18658 | 23 |
| CEC-RWC-18687 | 23 |
| CEC-RWC-18665 | 23 |
| CEC-RWC-18680 | 24 |
| CEC-RWC-18681 | 24 |
| CEC-RWC-18682 | 24 |
| CEC-RWC-18684 | 24 |
| CEC-RWC-18685 | 24 |
| CEC-RWC-18686 | 24 |
| CEC-RWC-20412 | 25 |
| CEC-RWC-21064 | 25 |
| CEC-RWC-20638 | 25 |
| CEC-RWC-20837 | 25 |
| CEC-RWC-21088 | 25 |
| 1445626 | 5, 7 |
| 1445692 | 5, 7 |
| 1445693 | 5, 7 |
| 1484406 | 10 |
| 1484407 | 10 |
| 1484620 | 10 |
| 1484621 | 10 |
| 1604798 | 12, 13 |
| 1604799 | 12, 15 |
| 1604800 | 12, 13 |
| 1604874 | 12 |
| 1604896 | 12 |
| 1604897 | 12 |
| 1604898 | 12 |
| 1604905 | 16 |

| Part No. | Page |
|----------|--------|
| 1604940 | 7 |
| 1604972 | 14 |
| 1663018 | 10 |
| 1663019 | 10 |
| 1663032 | 10 |
| 1663900 | 10 |
| 1738592 | 12, 13 |
| 1738894 | 9 |
| 1738916 | 16 |
| 1738949 | 12, 13 |
| 1738950 | 12, 13 |
| 1738951 | 12, 13 |
| 1738955 | 12 |
| 1738974 | 16, 18 |
| 1811010 | 6 |
| 1811184 | 16, 17 |
| 1811269 | 6 |
| 1811481 | 9 |
| 1811633 | 9 |
| 1811865 | 6, 8 |
| 1811866 | 6, 8 |
| 1811901 | 16, 19 |
| 1811902 | 16, 18 |
| 1811927 | 16, 20 |
| 1811928 | 16, 20 |
| 1811943 | 9 |
| 1877039 | 5 |
| 1877040 | 5 |
| 1877384 | 16 |
| 1877732 | 16, 18 |
| 1877774 | 16, 17 |
| 1877775 | 16, 17 |
| 1877921 | 16, 19 |
| 1950030 | 14 |

| Part No. | Page |
|----------|--------|
| 1954353 | 16, 19 |
| 1954355 | 16, 19 |
| 1954576 | 6, 8 |
| 1954577 | 16, 20 |
| 1996373 | 14 |
| 1996500 | 26 |
| 1996544 | 14 |
| 2000314 | 15 |
| 2000317 | 15 |
| 2000263 | 15 |
| 2101395 | 16, 20 |
| 2101752 | 14 |
| 212447 | 15 |
| 2157322 | 14 |
| 2157455 | 16, 18 |
| 2157694 | 16, 17 |
| 2157695 | 16, 18 |
| 2157696 | 16, 19 |
| 811262 | 14 |

FOR MORE INFORMATION

Technical Support

| | |
|----------------|--|
| Internet: | www.te.com/ADM |
| USA: | +1 (800) 522-6752 |
| Canada: | +1 (905) 470-4425 |
| Mexico: | +52 (0) 55-1106-0814 |
| C. America: | +52 (0) 55-1106-0814 |
| South America: | +55 (0) 11-2103-6000 |
| Germany: | +49 (0) 6251-133-1999 |
| Great Britain: | +44 (0) 8706-080208 |
| France: | +33 (0) 1-3420-8686 |
| Netherlands: | +31 (0) 73-6246-999 |
| China: | +86 (0) 400-820-6015 |

Follow us on Twitter for all the latest product news @TEConnectivity, and on Facebook, TEConnectivity.

www.te.com/ADM

© 2012 Tyco Electronics Corporation. All Rights Reserved.

1654012 ADM 5M 02/2012

TE Connectivity, and the TE connectivity (logo) are trademarks of the TE Connectivity Ltd. family of companies.

Other products, logos, and company names mentioned herein may be trademarks of their respective owners.

While TE has made every reasonable effort to ensure the accuracy of the information herein, nothing herein constitutes any guarantee that such information is error-free, or any other representation, warranty or guarantee that the information is accurate, correct, reliable current. The TE entity issuing this publication reserves the right to make any adjustments to the information contained herein at any time without notice. All implied warranties regarding the information contained herein, including, but not limited to, any implied warranties of merchantability or fitness for a particular purpose are expressly disclaimed. The dimensions herein are for reference purposes only and are subject to change without notice. Specifications are subject to change without notice. Consult TE for the latest dimensions and design specifications.

