



# Quadrax Contacts, Connectors and Cables

## Introduction

### Product Facts

- 2 mm centerlines
- Designed per ARINC 600 — Supplement 14
- 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
- Utilizes standard insertion/extraction tool

A multi-signal contact system consisting of two differential pairs (matched impedance) used with quadaxial Ethernet and Fiber 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 Fiber Channel X3T11.2 for use on Commercial Avionics Systems, Aircraft Data Networks, Military Communications and In-Flight Entertainment Systems.

### 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 Gigahertz (see characterization chart on page 3)

**Data Rate** — in excess of 2 Gigabits/sec

**Characteristic Impedance** — 100 Ohms  $\pm$  10 Ohms

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

**Dielectric Withstanding Voltage** — 1,000 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

#### Test Reports

502-1182 Quadrax Rectangular Connector

501-574 Quadrax Cable and PCB Connectors

501-660 Quadrax MIL-DTL-38999 Style Connectors

— Qualified to Boeing Spec. BPS-C-193

#### Application Specifications

114-13163 Quadrax Circular Connectors and Quadrax Contacts

114-13123 Quadrax Rectangular Connectors and Quadrax Contacts

114-13188 Non-Concentric Twinax Pin and Socket Assemblies

## 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 1V 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

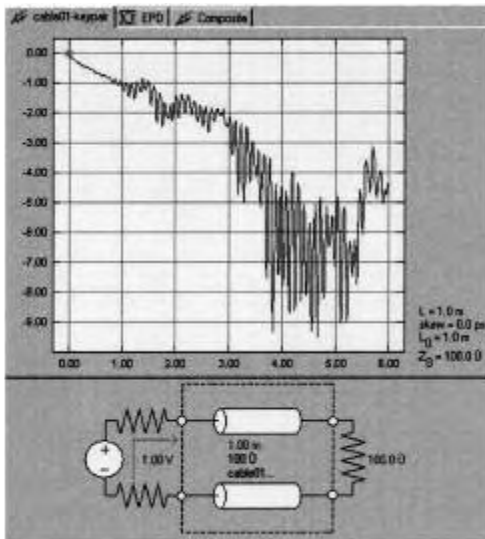
#### 1 Meter Cable Length

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

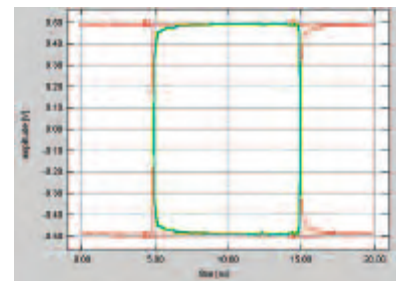
#### 11.2 Meter Cable Length

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

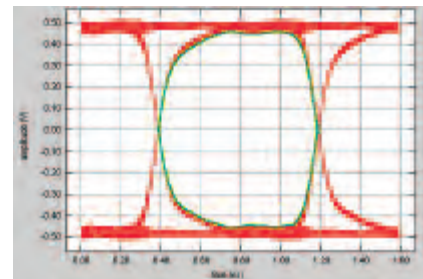
Typical Insertion Loss  
1 Meter Cable Length 0-6.0 GHz Sweep



Eye Pattern (Time Domain Measurement of Voltage vs. time)

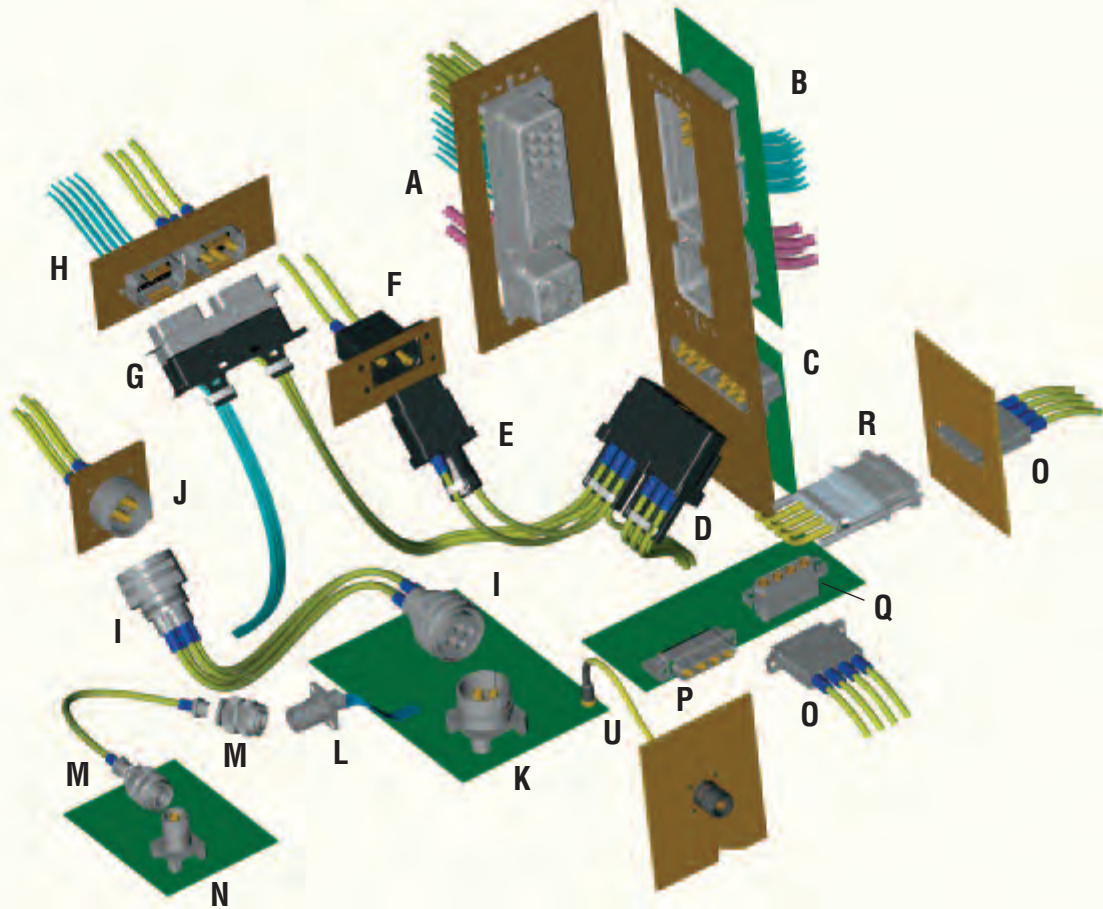


100 Mbps Data Rate



1 Gbps 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

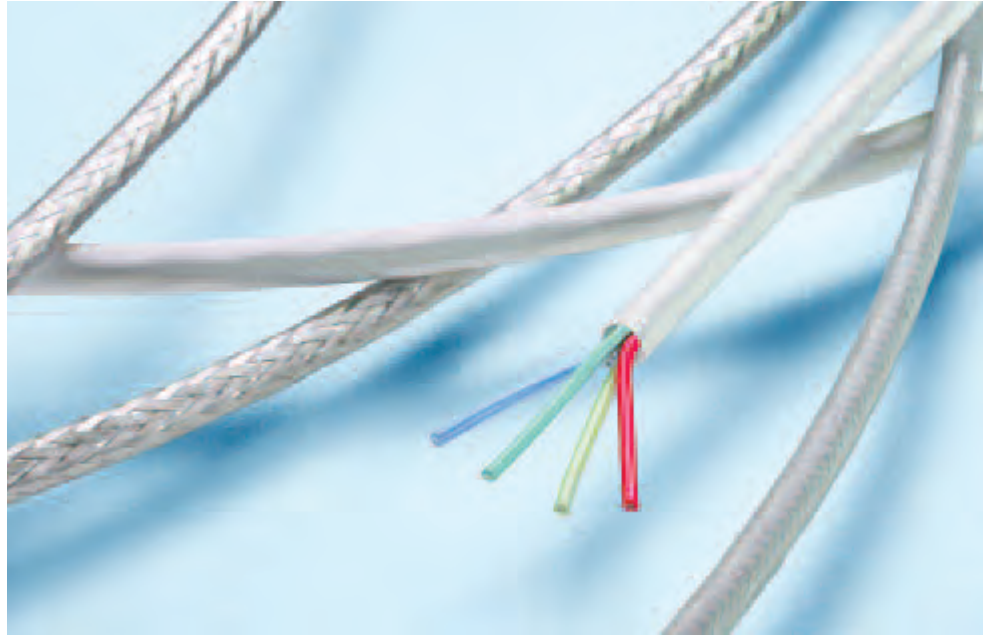
#### D-Sub Style Quadrax Rectangular Connectors:

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

## QUADLITE Quadraxial Cables

### Product Facts

- 100 Ohm and 150 Ohm cables
- Materials rated from -65°C to +200°C [ -85°F to +392°F]
- 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



Tyco Electronics Quadlite family of lightweight, fluoropolymer cables are for use in high speed, high bandwidth applications such as 100 Base T, Gigabit Ethernet, IEEE 1394 and Fiber 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

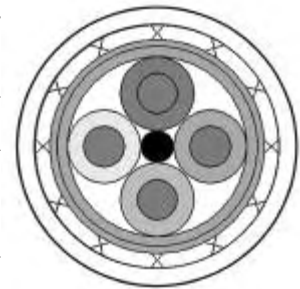
Tyco Electronics Specification 1200  
 ANSI/TIA-568-B.2  
 IEEE 1394  
 ARINC 664

**QUADLITE Quad coaxial Cables** (Continued)

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

Tyco Electronics Part Number	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 (lbs/1 kft):	17.7		20.3		32.0	
Shield Material:	TCC		TCC		TCC	
Jacket Material:	FEP		FEP		FEP	
Impedance ± 10% (Ω):	100 Ohms		100 Ohms		100 Ohms	
Temp. Rating:	150°C		150°C		150°C	
Nom. Capacitance (pF/ft):	13.5		13.0		12.9	
Nom. Attenuation (dB/100m):						
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
	50	35	50	35	50	35
Min. SRL (dB)	23	16	23	16	23	16

Tyco Electronics Part Number	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 (lbs/1 kft):	18.7		22.2	
Shield Material:	TCC		TCC	
Jacket Material:	FEP		FEP	
Impedance ± 10% (Ω):	100 Ohms		100 Ohms	
Temp. Rating:	150°C		150°C	
Nom. Capacitance (pF/ft):	13.5		13.0	
Nom. Attenuation (dB/100m):				
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
	50	35	50	35
Min. SRL (dB)	23	16	23	16


**100BASE-T Ethernet**



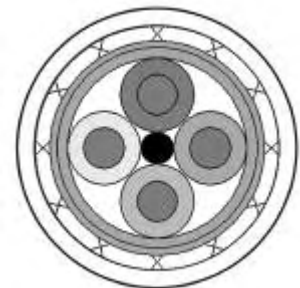
**QUADLITE Quad coaxial Cables** (Continued)

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

Tyco Electronics Part Number	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 (lbs/1 kft):	23.4	38.3	57.2
Shield Material:	TCC	TCC	TCC
Jacket Material:	FEP	FEP	FEP
Impedance ± 10% (Ω):	150 Ohms	150 Ohms	150 Ohms
Temp. Rating:	150°C	150°C	150°C
Nom. Capacitance (pF/ft):	6.0	6.0	6.0
Nom. Attenuation (dB/100m):			
531 MHz	13	11	9
1062 MHz	21	17	13

**150 Ohms - 200°C**

Tyco Electronics Part Number	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 (lbs/1 kft):	25.8	38.3	57.2
Shield Material:	SCC	SCC	SCC
Jacket Material:	FEP	FEP	FEP
Impedance ± 10% (Ω):	150 Ohms	150 Ohms	150 Ohms
Temp. Rating:	200°C	200°C	200°C
Nom. Capacitance (pF/ft):	6.0	6.0	6.0
Nom. Attenuation (dB/100m):			
531 MHz	13	11	9
1062 MHz	21	17	13


**Fiber Channel**

## QUADLITE Quad coaxial Cables (Continued)

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

Tyco Electronics Part Number	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 (lbs/1 kft):	46.2	39.5	29.8
Shield Material:	TCC	TCC	SCC
Jacket Material:	FEP	XL-ETFE	FEP
Impedance ± 10% (Ω):	100 Ohms	100 Ohms	100 Ohms
Temp. Rating:	150°C	150°C	200°C
Nom. Capacitance (pF/ft):	13.5	13.5	13.5
Nom. Attenuation (dB/100m):			
1 MHz	2.4	2.2	2.4
100 MHz	7.5	6.8	8.8
100 MHz	26.4	24.8	30.5
	<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)	25      19	25      19	23      16

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

Tyco Electronics Part Number	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 (lbs/1 kft):	52.6	39.5
Shield Material:	TCC	TCC
Jacket Material:	FDR-25	Raythane
Impedance ± 10% (Ω):	100 Ohms	100 Ohms
Temp. Rating:	100°C	90°C
Nom. Capacitance (pF/ft):	13.5	13.5
Nom. Attenuation (dB/100m):		
1 MHz	1.8	1.8
100 MHz	5.5	5.5
100 MHz	18.3	18.3
250 MHz	30.4	30.4
	<u>10 MHz</u> <u>250 MHz</u>	<u>10 MHz</u> <u>250 MHz</u>
Min. NEXT (dB)	70      52	70      52
Min. SRL (dB)	36      24	36      24

## 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 Number	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 Number	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), 2443/9P025X-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

		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

### Crimp Style Contacts - Internally Keyed for MIL-DTL-38999 Connectors

Part Number	Description
2000578	Contact Kit, Socket, Crimp
2000579	Contact Kit, Pin, Crimp

### PC Tail Contact – Direct Attach to PCB

Part Number	Description
1954576-1	150 Ohm
1954576-2	100 Ohm

\*Tails are solder dipped

\*\*Used with Quadrax rectangular and circular connectors

\*\*\*Qualified to Boeing BACC47GA/GB

(1) For other cables, contact Tyco Electronics.

### Size 8 Differential Twinax Contacts

Part Number	Description	Hex Crimp
1811865-1	Assembly, Pin, Twinax	.218
1811866-1	Assembly, Socket, Twinax	.218
1811010-1	Socket kit with heat-shrink tubing	
1811269-1	Pin kit with heat-shrink tubing	

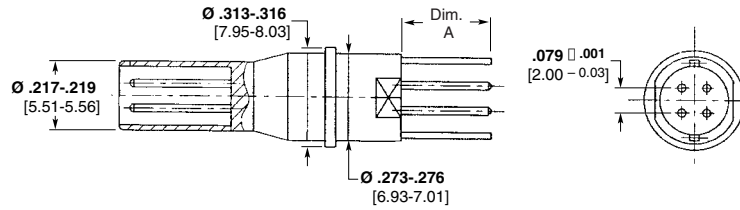


See page 2 for Application Specifications

### Quadrax Contacts (Continued)

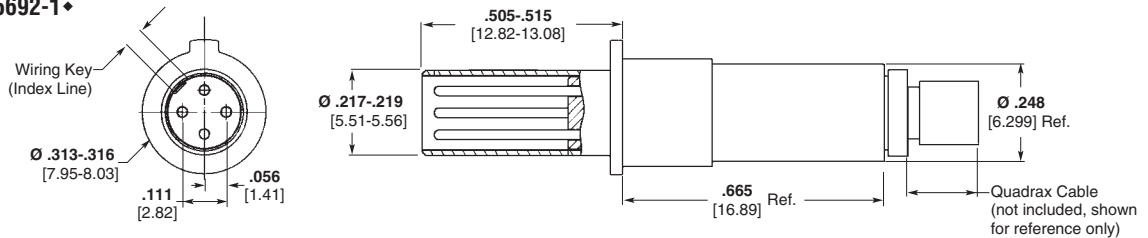
**Size 8 Quadrax PCB Pin Contact**  
**Front Release/  
 Front Remove Design**  
**Part Number 1445626-1 ♦♦**

♦♦ various tail lengths



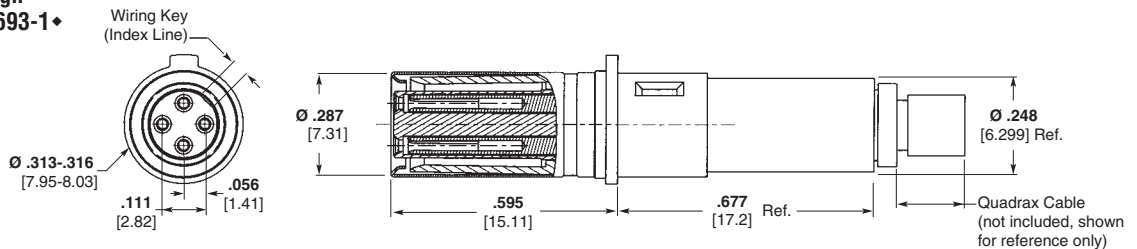
**Size 8 Quadrax Pin Contact —  
 Crimp Style**  
**Rear Release/  
 Rear Remove Design**  
**Part Number 1445692-1 ♦**

♦ -3 w/boot

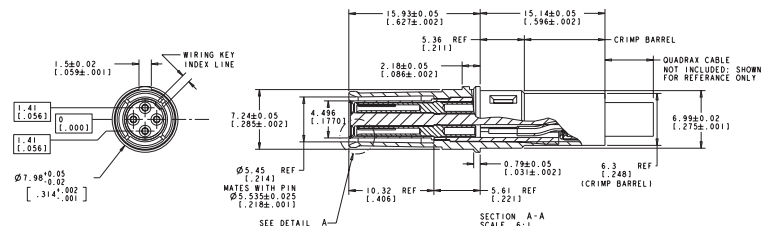


**Size 8 Quadrax Socket Contact —  
 Crimp Style**  
**Rear Release/  
 Rear Remove Design**  
**Part Number 1445693-1 ♦**

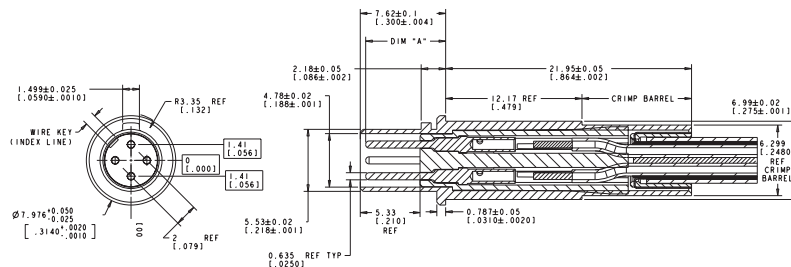
♦ -3 w/boot



**Size 8 Quadrax Socket Contact**  
**Crimp Style, Internally Keyed**  
**for MIL-DTL-38999 Connectors**  
**Part Number 2000578**



**Size 8 Quadrax Pin Contact**  
**Crimp Style, Internally Keyed**  
**for MIL-DTL-38999 Connectors**  
**Part Number 2000579**

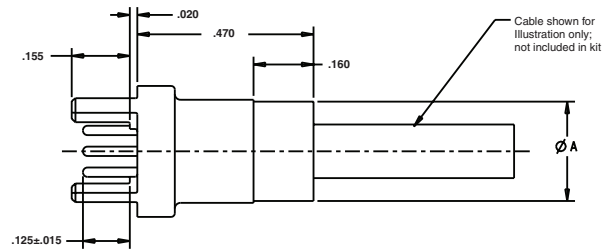
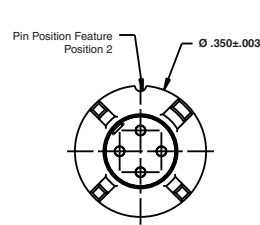


### Quadrax Contacts (Continued)



**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

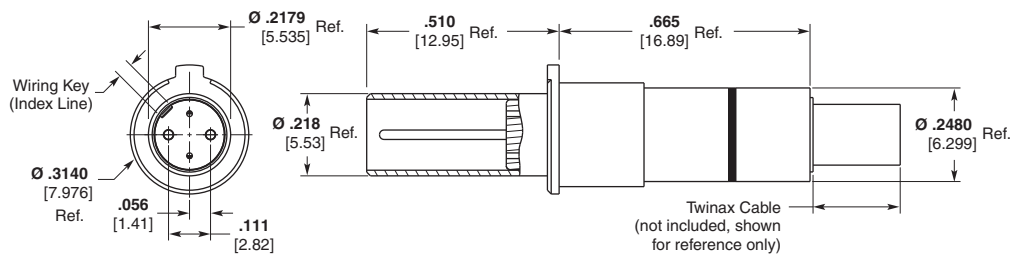


**Part Number 1954576**

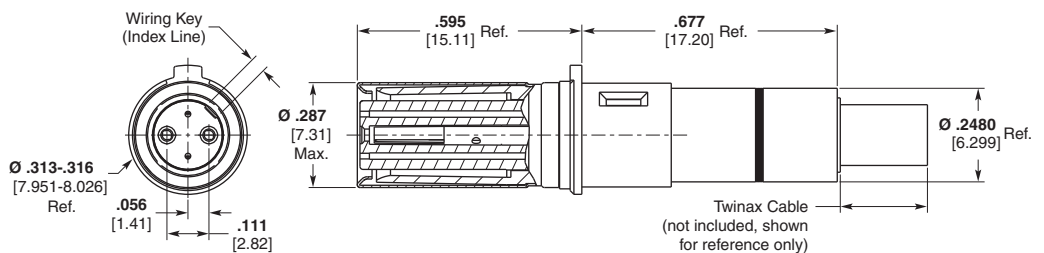
### Size 8 Differential Twinax Contacts

**100 Ohm Differential Pair Twin-axial 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



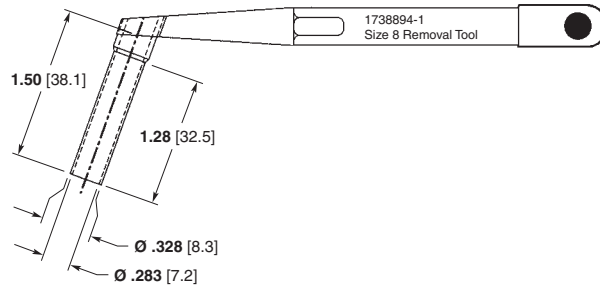
**Part Number 1811865-1**



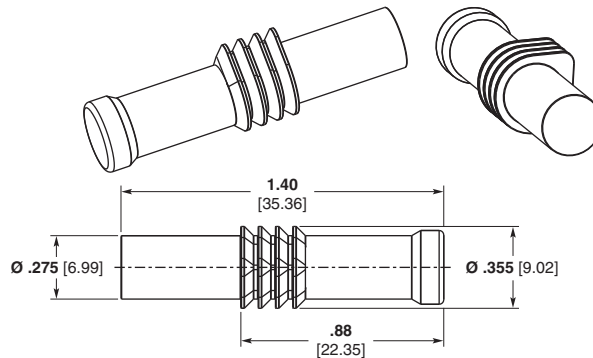
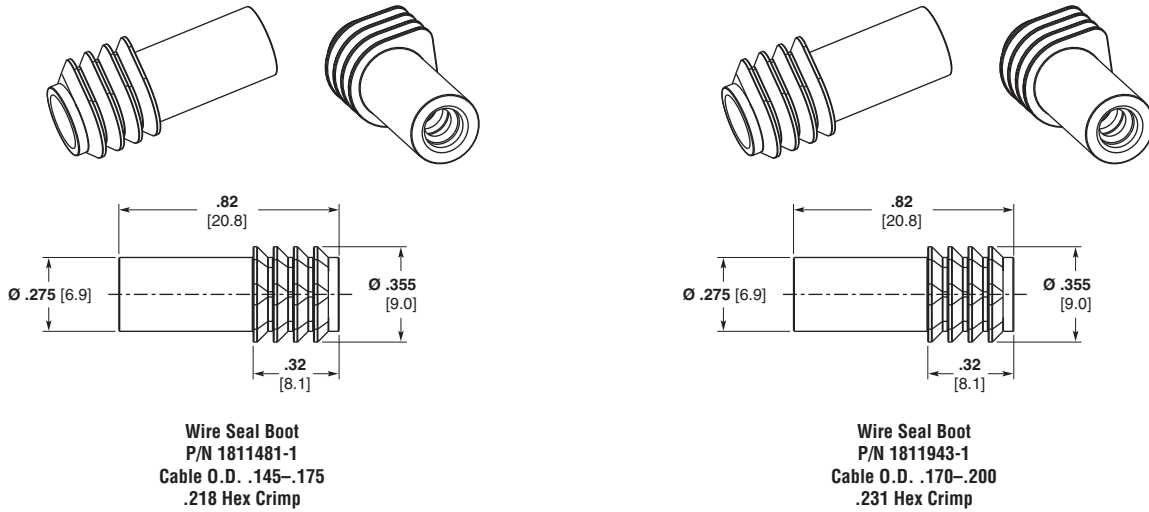
**Part Number 1811866-1**

**Quadrax/Twinax Contact Accessories**

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



**Seal Boots**



**Solid Seal Boot**  
**P/N 1811633-1**

## ARINC Size 8 Quadrx 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
- Quadrx housing is keyed to assure mating alignment
- Contacts are on 2 mm centerline per ARINC 600 specification
- To extract Quadrx contact from connector insert, use Extraction Tool Part Number 1738894-1
- Per Supplement 14 to ARINC Specification 600

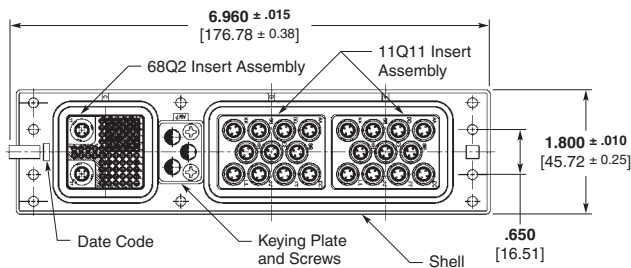


ARINC Size 2 Connectors		Insert Arrangement			Style	Shell Features	Contacts
Part No.	Type	A	B	C			
1484406-2	Receptacle	Q11	Q11	68Q2	Front Release Front Remove	Electroless Nickel Plated, no clinch nuts	Size 22 signal & Quadrx contacts supplied loaded in inserts; post extension = .25 [6.35]
1484407-2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

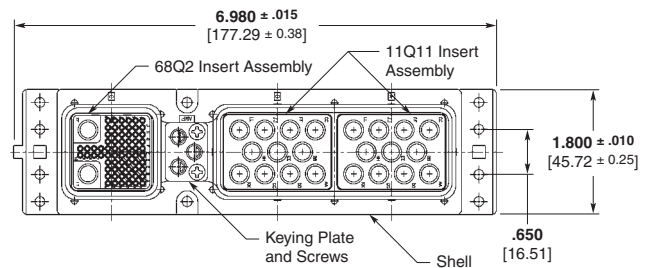
  

ARINC Size 3 Connectors		Insert Arrangement			Style	Shell Features	Contacts
Part No.	Type	A D	B E	C F			
1663018-1	Receptacle	150 150	150 150	11Q2 11Q2	Front Release/ Front Remove	Electroless Nickel Plated	No contacts
1663018-2	Receptacle	150 150	150 150	11Q2 11Q2	Front Release/ Front Remove	Electroless Nickel Plated	Signal, Power and Quadrx contacts supplied loaded in inserts; post extension signal and power = .25 [6.35]; Quadrx = .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 Quadrx 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 Tyco Electronics.



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

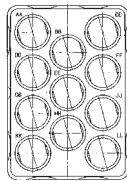


**Plug, Assembly Size 2  
Rear Release/Rear Remove  
Part No. 1484407-2 shown**

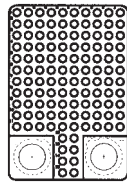
## ARINC Size 8 Quadrx Connectors (Continued)

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

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

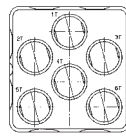


**Q11** 1, 2, 3  
11 Size 8 Quadrx  
Metal

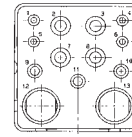


**118Q2** 2, 3, 4  
118 Size 22  
2 Size 8 Quadrx

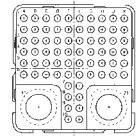
#### Shell Module C or F



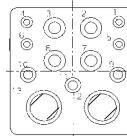
**Q6** 1, 2, 3  
6 Size 8 Quadrx  
Metal



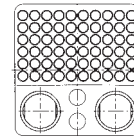
**11Q2** 1, 2, 3  
4 Size 20  
4 Size 12  
3 Size 16  
2 Size 8 Quadrx



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



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



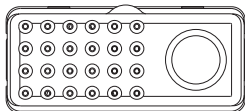
**62Q2** 2, 3, 4  
60 Size 22  
2 Size 16  
2 Size 8 Quadrx

#### Notes:

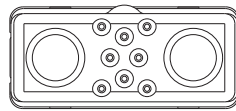
1. Available for plug or receptacle with rear release/remove contacts.
2. Available for receptacle only with all contacts front release/remove.
3. Standard size 8 contacts will not fit in Quadrx size 8 inserts. Also, Quadrx size 8 contacts will not fit into standard size 8 inserts.
4. Available for plug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

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

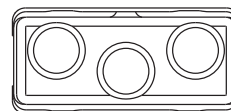
### GPRB Insert Arrangements<sup>1,2</sup>



**25Q1<sup>3</sup>**



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



**30Q3<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 Quadrx or Twinax contacts.

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

## Rectangular Connectors

### Product Facts

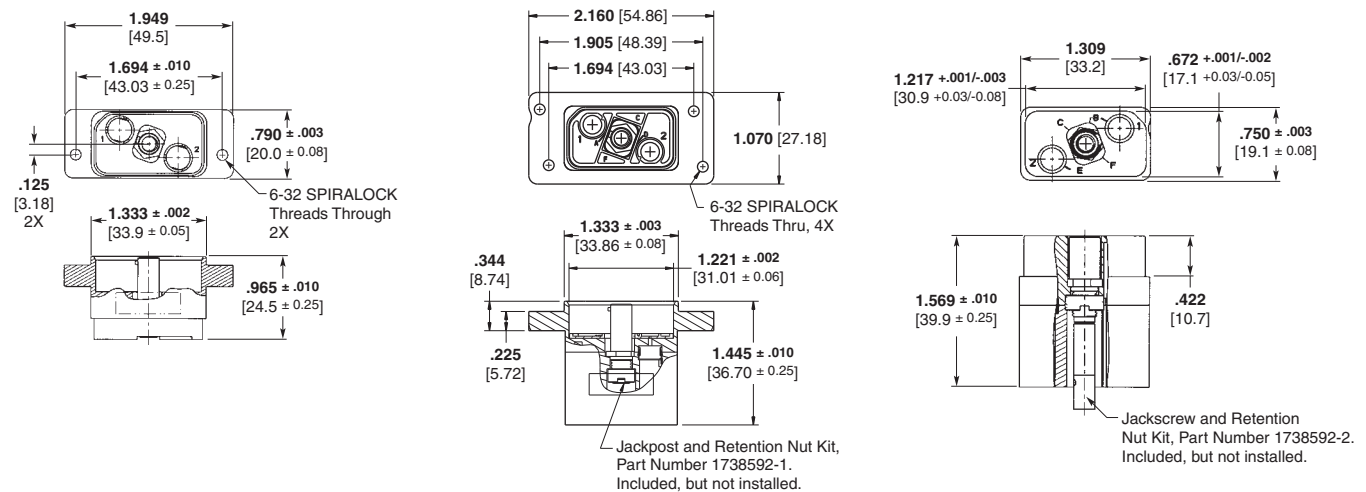
- High performance rectangular connector
- Available in 2, 4, and 12 positions
- Designed for use with wire seal boots and rated for use up to 50,000 ft. altitude
- Center jackscrew design for fast, reliable mating
- Aluminum shells are keyed and polarized, and are available with lightweight plastic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

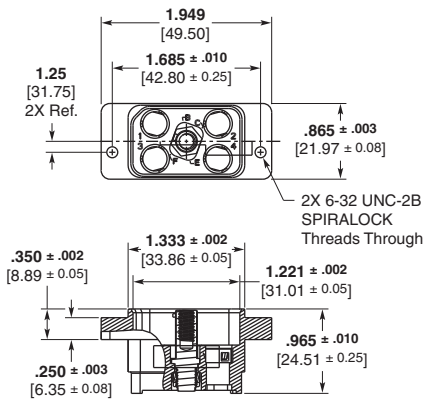
### 2 Position



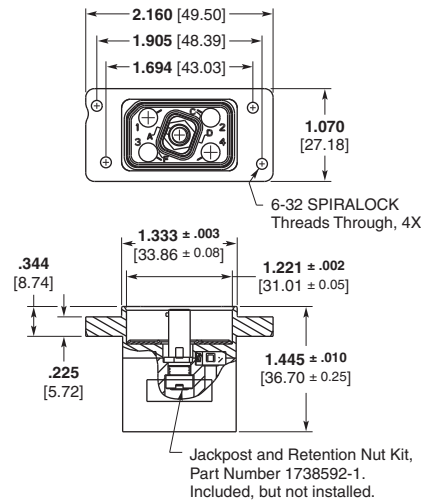
SPIRALOCK is a trademark of Detroit Tool Industries Corporation.

## Rectangular Connectors (Continued)

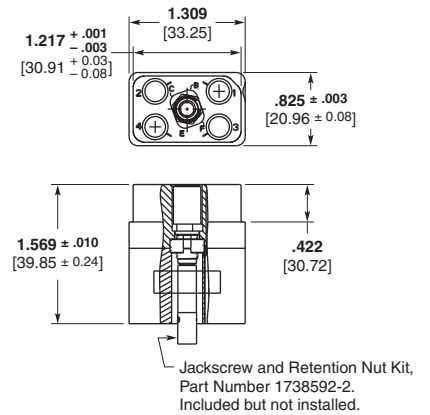
### 4 Position



PCB Mount Receptacle (Part No. 1738949)

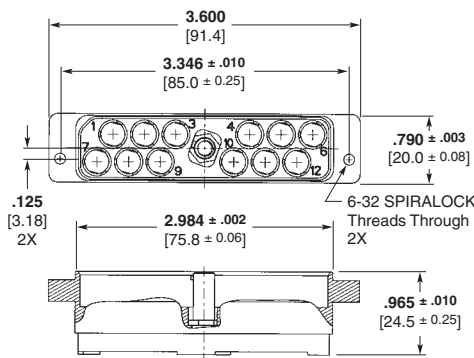


Panel Mount Receptacle (Part No. 1738950)

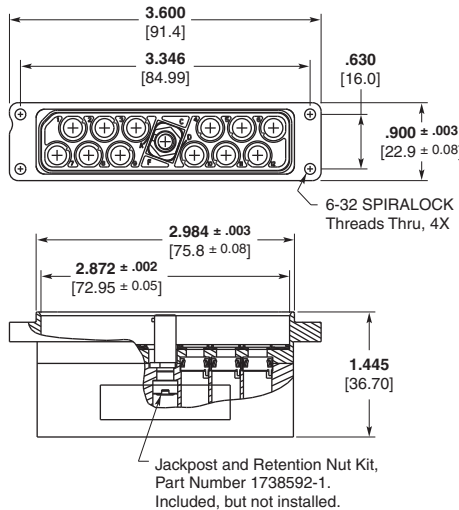


Free-Hanging Plug (Part No. 1738951)

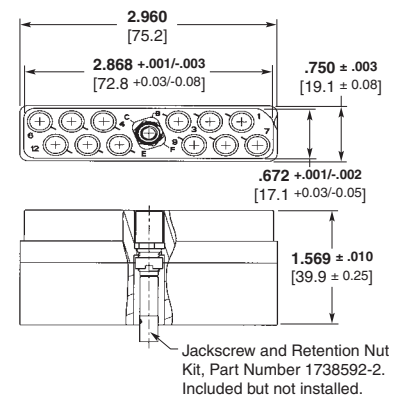
### 12 Position



PCB Mount Receptacle (Part No. 1604798)



Panel Mount Receptacle (Part No. 1604799)



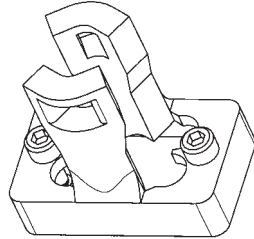
Free-Hanging Plug (Part No. 1604800)

SPIRALOCK is a trademark of Detroit Tool Industries Corporation.

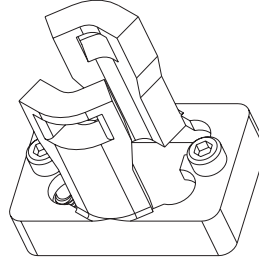
**Rectangular Connectors** (Continued)

**Accessories**

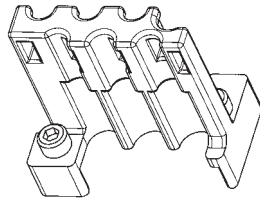
**2 Position Backshell/  
Strain Relief Kit**  
Part No. 1604905-1  
(for plug & receptacle)



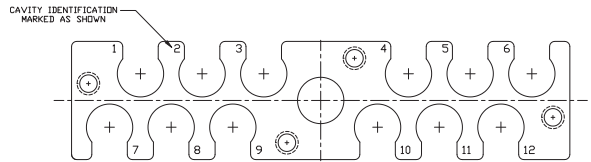
**4 Position Backshell/  
Strain Relief Kit**  
Part No. 1738955-1  
(for plug and receptacle)



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

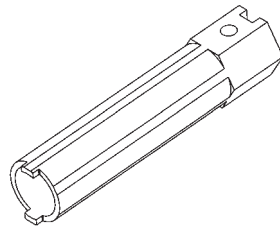


**12 Position Low Profile Seal Retainer**  
Part No. 1996544

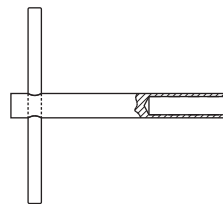


ORIENTATION OF SEAL BOOT PLATE FOR PLUG APPLICATIONS

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



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

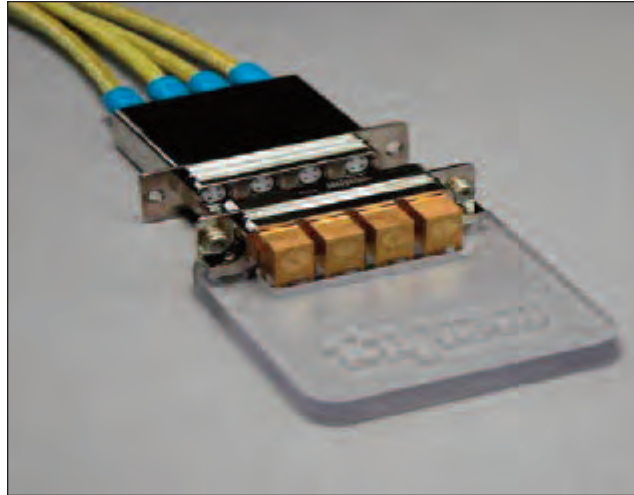


## Rectangular Connectors (Continued)

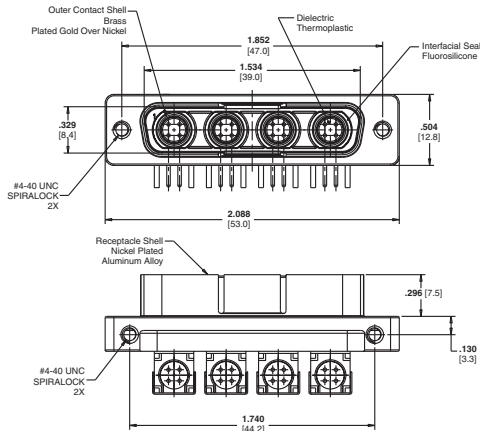
### D-Subminiature Connector Assemblies

#### Product Facts

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

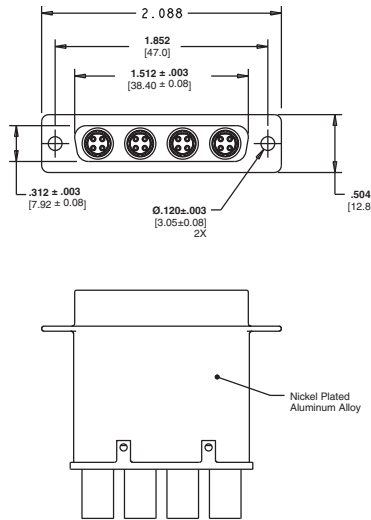


### 404



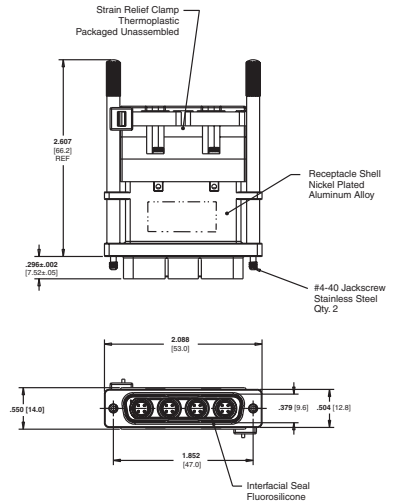
**Right Angle PCB Mount Receptacle**  
(Part No. 2000314)

Accepts standard AMPLIMITE Boardlock Hardware (sold separately).



**Plug Kit (Part No. 2000317)**

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



**Panel Mount Receptacle Kit**  
(Part No. 2000263)

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

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

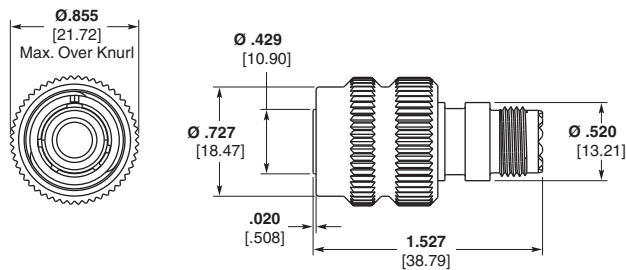
### Product Facts

- 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

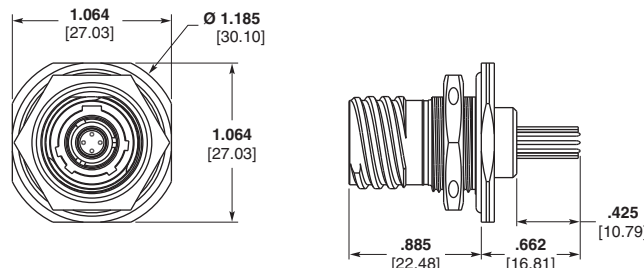


Shell Size	Part No.	Type	Description
9	1877384	Plug	Single Quadrax, RR-RR
	1738916	Receptacle	38999 Style, Single Quadrax, FR-FR, Jam Nut Style
	1811184	Receptacle	38999 Style, Single Quadrax, FR-FR, PCB Mount with Stand-offs and PC Tail Contacts
17	1877775	Plug	38999 Style, Arrangement 2Q2, RR-RR
	1877774	Receptacle	38999 Style, Arrangement 2Q2, RR-RR
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
21	1811901	Receptacle	38999 Style, Arrangement 4Q4, RR-RR
	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

**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**

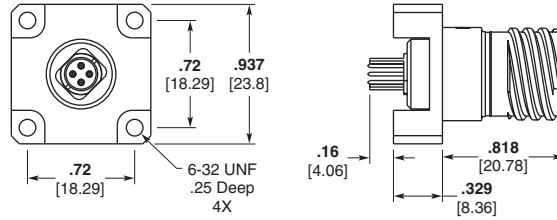


**Contacts sold separately  
(unless noted) see page 10**

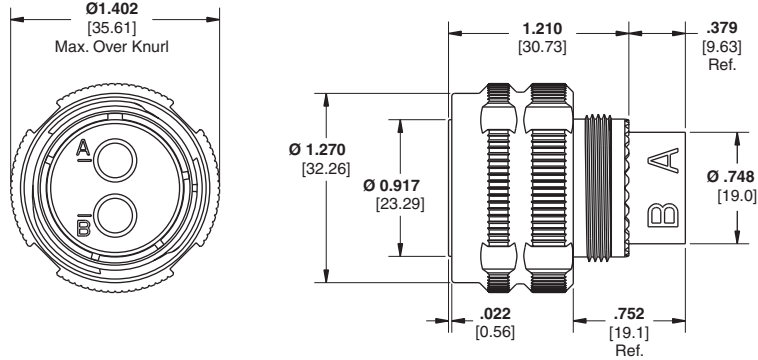
**Custom MIL-DTL-38999 Series III Style Circular Connectors** (Continued)

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

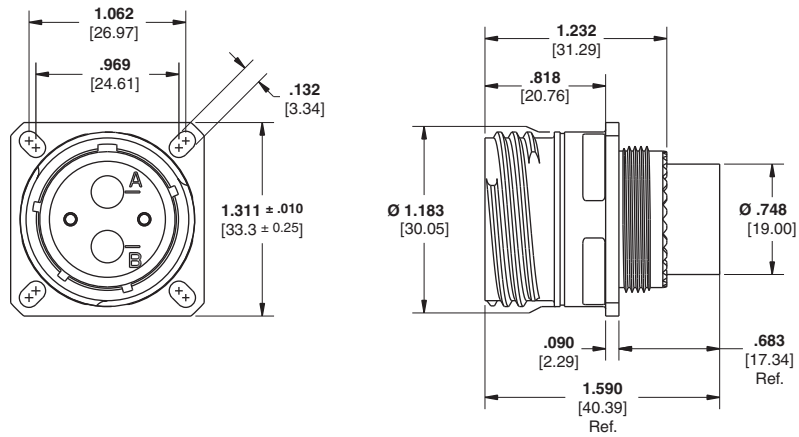
Part No. 1811184  
(with PC tail contacts)



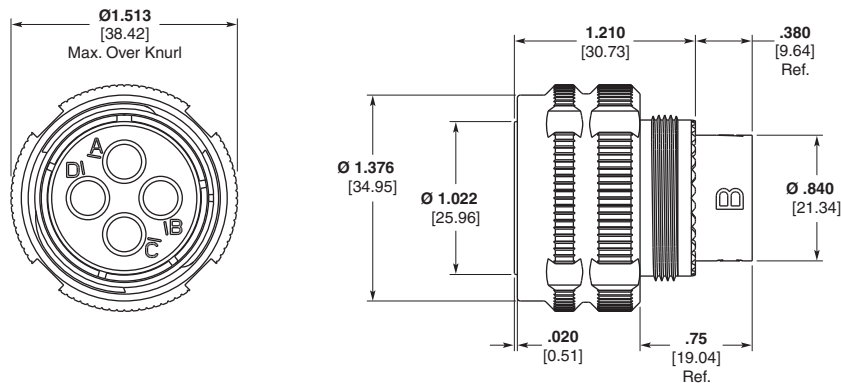
Plug, Shell Size 17,  
38999 Style  
Arrangement 2Q2, RR-RR  
Part No. 1877775



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



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



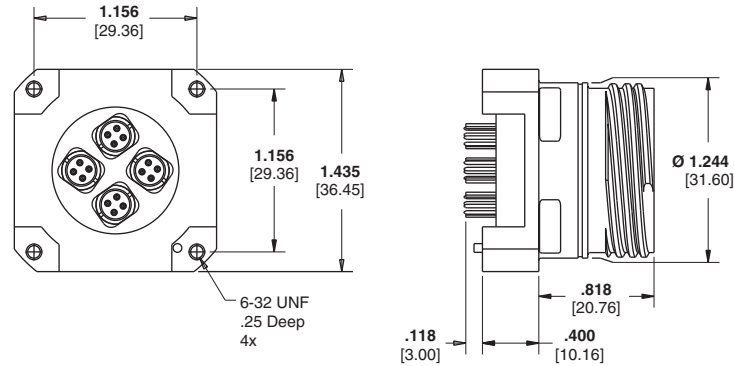
Contacts sold separately  
(unless noted) see page 10

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

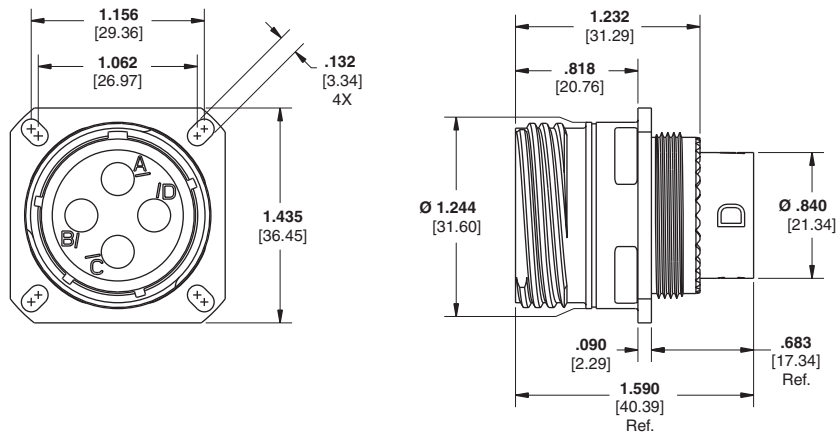
**Receptacle, Shell Size 19,  
38999 Style w/4 Quadrx  
Contacts, FR-FR**

**Part No. 1877732  
(w/ PC Tail Contacts)**

**Part No. 1738974  
(connector only)**

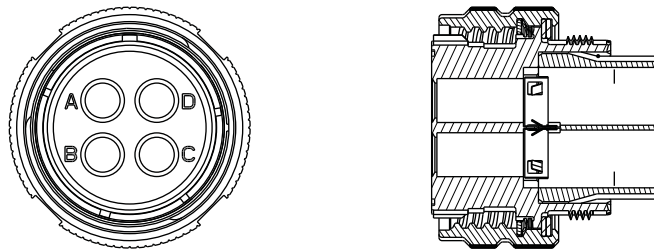


**Receptacle, Shell Size 19,  
38999 Style  
Arrangement 4Q4, RR-RR  
Part No. 1811901**

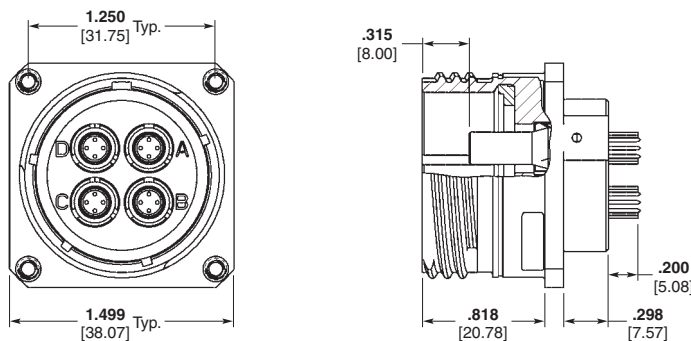


**Plug, Shell Size 21,  
38999 Style  
Arrangement 4Q4, FR-FR  
Series III**

**Part No. 1954355**



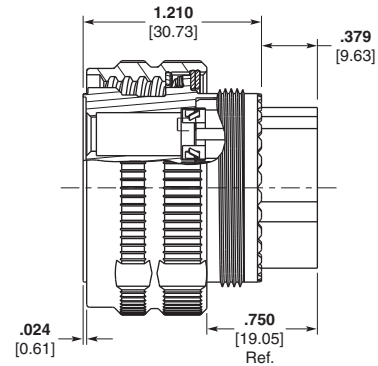
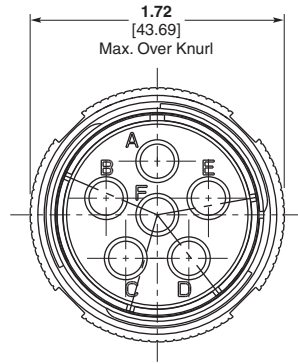
**Receptacle, Shell Size 21,  
38999 Style  
Arrangement 4Q4, FR-FR  
Series III  
Part No. 1954353**



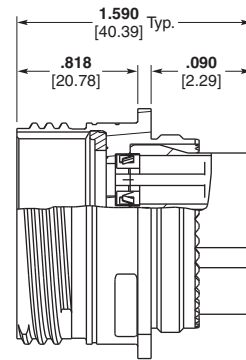
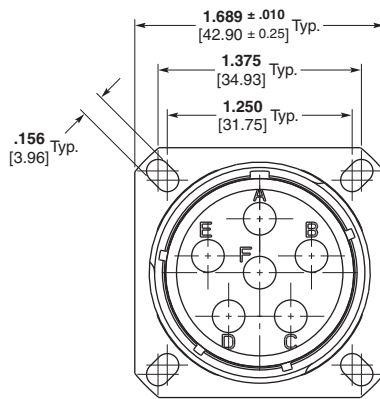
**Contacts sold separately  
(unless noted) see page 10**

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

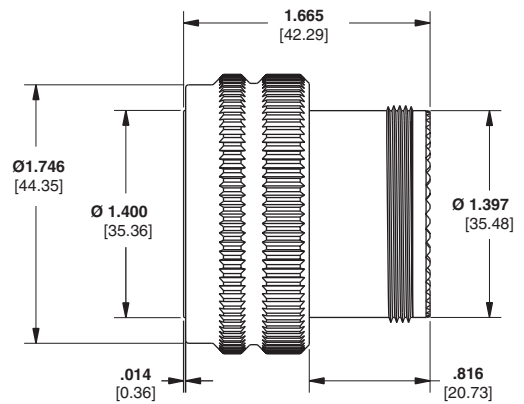
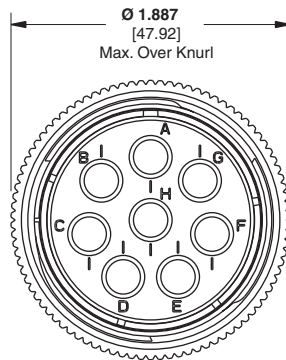
**Plug, Shell Size 23,  
38999 Style  
Arrangement 6Q6,  
Series III  
Part No. 1877921**



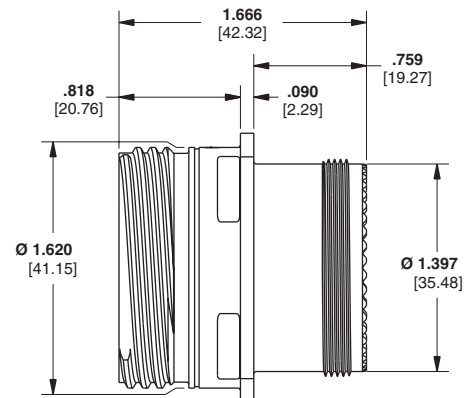
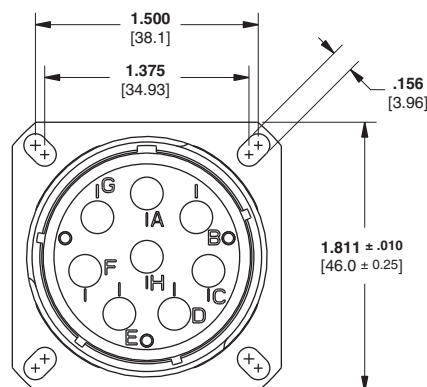
**Receptacle, Shell Size 23,  
M38999 Style  
Arrangement 6Q6,  
Series III  
Part No. 1954577**



**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**

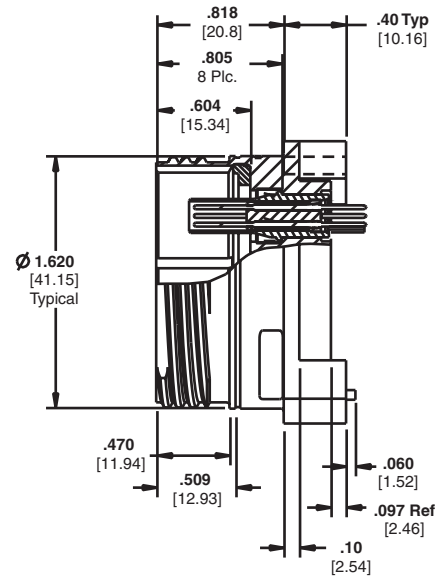
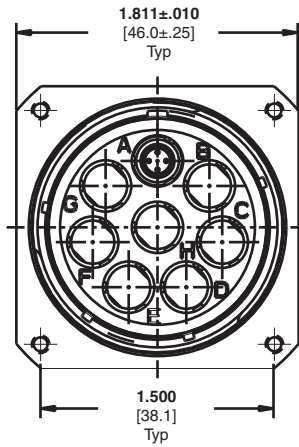


**Contacts sold separately  
(unless noted) see page 10**

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

Receptacle, Shell Size 25  
38999 Style  
Arrangement 8Q8, FR-FR

Part No. 2101395  
(w/ PC Tail Contacts)



**Contacts sold separately  
(unless noted) see page 10**

## Custom Solutions

### Custom Cable and Flex Assemblies

#### Product Facts

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

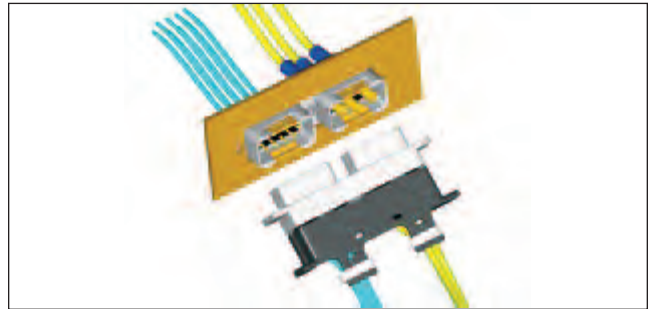


### General Purpose Rectangular (GPR) Connector Assemblies (See Catalog 1654763)

Manufactured under license with 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

#### Product Facts

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



Contact Tyco Electronics 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	6
CEC-RWC-18664	6
CEC-RWC-18666	6
CEC-RWC-20555	6
CEC-RWC-20333	6
CEC-RWC-18658	7
CEC-RWC-18687	7
CEC-RWC-18665	7
CEC-RWC-18680	8
CEC-RWC-18681	8
CEC-RWC-18682	8
CEC-RWC-18684	8
CEC-RWC-18685	8
CEC-RWC-18686	8
CEC-RWC-20412	9
CEC-RWC-21064	9
CEC-RWC-20638	9
CEC-RWC-20837	9
CEC-RWC-21088	9
1445626	10, 11
1445692	10, 11
1445693	10, 11
1484406	14
1484407	14
1484620	14
1484621	14
1604798	16, 17
1604799	16, 17

Part No.	Page
1604800	16, 17
1604874	16
1604896	16
1604897	16
1604898	16
1604905	16, 18
1604972	18
1663018	14
1663019	14
1663032	14
1663900	14
1738592	16, 17
1738894	13, 14
1738916	20
1738949	16, 17
1738950	16, 17
1738951	16, 17
1738955	16, 18
1738974	20, 22
1811010	10
1811184	20, 21
1811269	10
1811481	13
1811633	13
1811865	10, 12
1811866	10, 12
1811901	20, 22
1811902	20, 21

Part No.	Page
1811927	20, 23
1811928	20, 23
1811943	13
1877039	10
1877040	10
1877384	20
1877732	20, 22
1877774	20, 21
1877775	20, 21
1877921	20, 23
1950030	18
1954353	20, 22
1954355	20, 22
1954576	10, 12
1954577	20, 23
1996373	18
1996544	18
2000314	19
2000317	19
2000263	19
2000578	10, 11
2000579	10, 11
2101395	20, 24

## Technical Support

### Need more information?

Call Technical Support at the numbers shown on the bottom of the catalog pages.

Technical Support is staffed with specialists well versed in all Tyco Electronics products. They can provide you with:

- Technical Support
- Catalogs
- Technical Documents
- Product Samples
- Tyco Electronics Authorized Distributor Locations

### Web Site

Visit [www.tycoelectronics.com/ADM](http://www.tycoelectronics.com/ADM) for additional information on all our products and market segments for the Aerospace, Defense and Marine markets.



### Disclaimer

While Tyco Electronics Corporation and its affiliates referenced herein ("Tyco Electronics") have made every reasonable effort to ensure the accuracy of the information in this catalog, Tyco Electronics does not guarantee that it is error-free, nor does Tyco Electronics make any other representation, warranty or guarantee that the information is accurate, correct, reliable or current. Tyco Electronics reserves the right to make any adjustments to the information contained herein at any time without notice. Tyco Electronics expressly disclaims all implied warranties regarding the information contained herein, including, but not limited to, any implied warranties of merchantability or fitness for a particular purpose. Tyco Electronics' only obligations are those in the Tyco Electronics Standard Terms and Conditions of Sale, and in no case will Tyco Electronics be responsible for any

incidental, indirect, or consequential damages arising from the sale, resale, use, or misuse of its products. Users should independently evaluate the suitability of, and test each product for, their application.

The dimensions, specifications, designs, construction, materials and processes in this catalog are for reference purposes only and are subject to change without notice. Please consult Tyco Electronics for the most current product information.

The export of certain Tyco Electronics products is restricted by the Arms Export Control Act (Title 22, U.S.C. Sec 2751, et seq.) or the Export Administration Act of 1979, as amended (Title 50, U.S.C., App. 2401 et seq.). Orders may be subject to export approval by the U.S. Government. Buyer must comply with all applicable export laws of all applicable jurisdictions.

© Copyright 2009, 2008 and 2006 by Tyco Electronics Corporation. All International Rights Reserved.

AMPLIMITE, QUADLITE, TE LOGO and TYCO ELECTRONICS are trademarks of Tyco Electronics Corporation.

SPIRALOCK is a trademark of Detroit Tool Industries Corporation.

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

**Tyco Electronics Corporation**  
Harrisburg, PA

[tycoelectronics.com/ADM](http://tycoelectronics.com/ADM)

1654012-5M-ADM-FP-6-09

