









QUADRAX CONTACTS, CONNECTORS AND CABLES

Multi-Signal Contact Systems for High-Speed Applications

QUADRAX CONTACTS, CONNECTORS AND CABLES

Versatile Pin and Socket Multi-Signal Contact Systems



TE Connectivity (TE) offers the highly versatile Quadrax multi-signal contact system consisting of two differential pairs (matched impedance) used with quadraxial Ethernet and Fibre Channel cables.

Quadrax contacts are available in shell size 8 (keyed), 24 AWG pin and socket contacts, hex crimp, and pin PCB tail solderable versions. They are adaptable to a variety of connectors, including ARINC 600, 404, D-Subminiature and MIL-DTL-38999, and are designed for use in high-speed applications such as Gigabit Ethernet, IEEE 802.3Z and Fibre Channel X3T11.

CONVENIENT

- Adaptable to a variety of connectors
- Fits into keyed connector inserts for connectors such as: ARINC 404 and 600, general purpose rectangular, MIL-DTL-38999 style, BACC65/EPXB, and custom interconnects
- Rear release/rear remove cable versions and front release/front remove PCB versions

HIGH PERFORMANCE

- Meets ASTM E595 outgassing limits for spacecraft materials
- Multi-signal contact system designed for Gigabit Ethernet, IEEE 802.3Z and Fibre Channel X3T11.2

EASY TO USE

- Uses standard insertion/extraction tool
- Shells are keyed for proper orientation inside connector insert blocks
- Patented single-piece dielectric design simplifies termination and improves reliability

Performance Characteristics

ELECTRICAL

- **Bandwidth:** Up to 3 GHz
- **Data Rate:** >2 Gb/s
- **Characteristic Impedance:** 100 Ω (± 10 Ω)
- **Maximum Voltage Rating:** 500 V_{rms} @ 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

MATERIALS

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

MECHANICAL/ ENVIRONMENTAL

- **Maximum Mating Force:** 2.75 lbf.
- **Minimum Unmating Force:** 1.25 lbf.
- **Durability:** 500 mating cycles

APPLICATIONS

- Commercial Avionics Systems
- Aircraft Data Networks
- Military Communications
- In-Flight Entertainment
- Space

STANDARDS AND TEST REPORTS

- **TE Product Specifications:**
  108-2131: Quadrax Cable and PCB Connectors
  108-2199: Quadrax MIL-DTL-38999 Style Connectors
  108-2311: Quadrax D-Sub Style Connectors
- **TE 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 Connectors Qualified to Boeing Part Standard 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

TE Components . . . TE Technology . . . TE Know-how . . .

AMP | Agastat | CII | Hartman | Kilovac | Microdot | Nanonics | Polamco | Raychem | Rochester | DEUTSCH SEACON Phoenix | L.L. Rowe | Phoenix Optix | SEACON

Get your product to market faster with a smarter, better solution.

HIGH PERFORMANCE

- Signal integrity testing completed per SFF-8410
- Characteristic impedance: 100 Ω (±10 Ω nom.) (measured 102.85 Ω)
- Near-end cross talk in the time domain: 0.89% measured on Tek 11801C digital sampling oscilloscope
- Eye Patterns: Differential mode, 1 m and 11.2 m cable test lengths

EASY TO USE

- Designed for use with 100 Ω and 150 Ω characteristic impedance star quad cable
- 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

RELIABLE

- Minimum Output Eye Opening: 1 V launch, voltage measured at 50% of the period:
  1 m: 100 MHz Eye Opening 928.53 mV
  1 m: 1.25 GHz Eye Opening 839.77 mV
  11.2 m: 100 MHz Eye Opening 761.60 mV
  11.2 m: 1.25 GHz Eye Opening 315.20 mV

Electrical Characteristics

RETURN LOSS

1 Meter Cable Length

Frequency MHz	dB	VSWR*
50	34.33	1.039
62	36.03	1.032
102	40.21	1.020
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

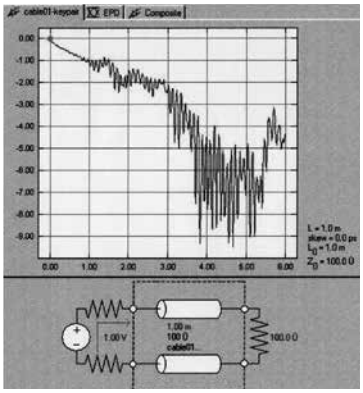
1 Meter Cable Length

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

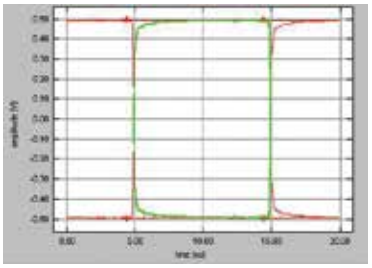
11.2 Meter Cable Length

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

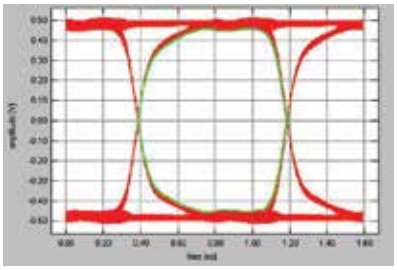
Typical Insertion Loss
1 Meter Length, 100 Ohm Cable



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

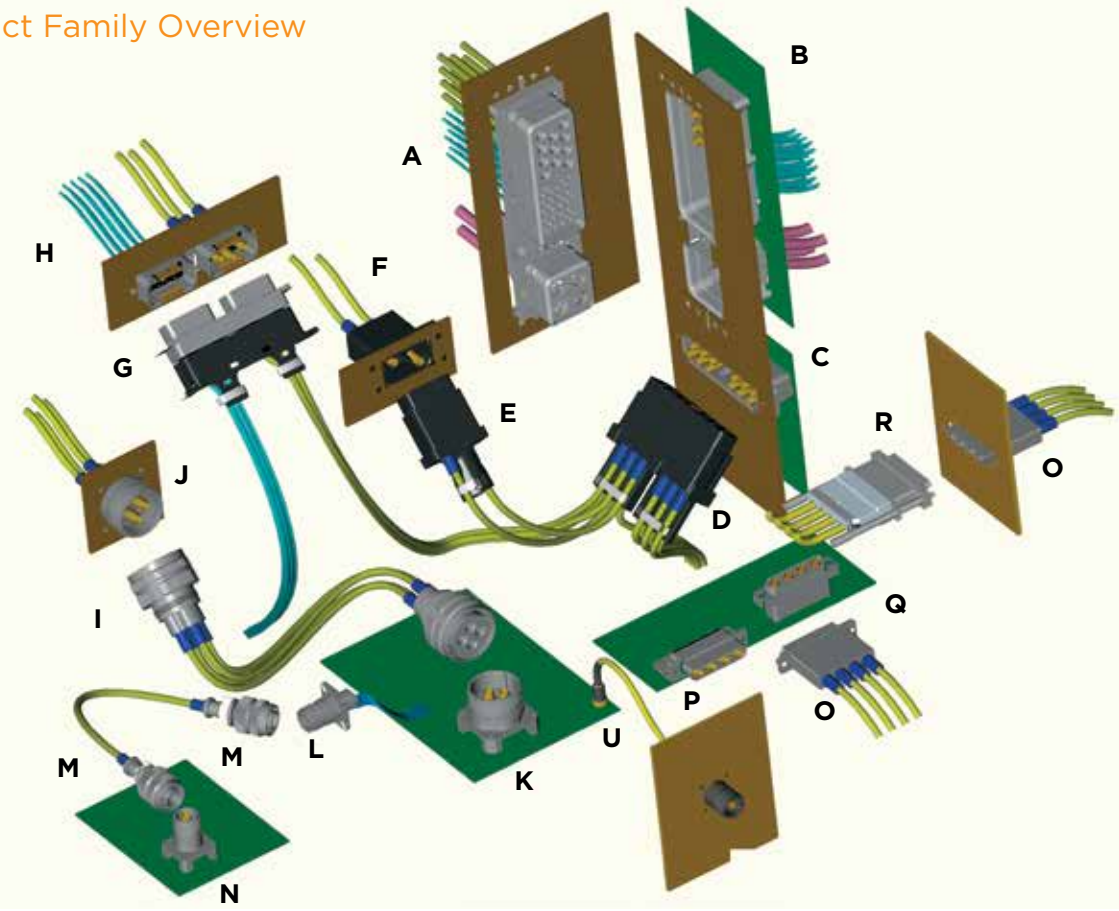


100 Mb/s Data Rate



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



FAST, EASY ASSEMBLY

- One-piece dielectric inserts for easy assembly and lowest applied cost
- Crimp type, screw machined, 24 AWG contacts
- Quadrax size 8 shells are keyed per ARINC 600 for correct orientation
- Asymmetric standoff leg provides built-in keying for direct attach to PC board

HIGH PERFORMANCE

- TE's Quadrax contacts support 100 Ω GbE and 150 Ω Fibre Channel
- Available silicone seal boots are rated for 50,000 ft. altitude immersion

VERSATILE

- Compatible with a wide range of rectangular and circular connectors
- Cable-applied crimp contacts and PC tail contacts for board-mount soldering

Quadrax Contacts

PC Tail Contacts, Pin

Part No.	Dim A	Notes
1445626-1	.228 [5.79]	
1445626-2	.422 [10.72]	
1445626-3	.181 [4.60]	
1445626-4	.297 [7.54]	
1445626-5	.297 [7.54]	Solder Dipped Tails

Crimp Contact Kits

Part No.		Hex Crimp	Wire Seal Boot
Pin	Socket		
1445692-1	1445693-1	.218	No
1445692-3	1445693-3	.218	Yes
1445692-4*	1445693-4*	—	Yes
Reference cables: Tensolite NF24Q100, NF26Q100, 24443/03130X-4(LD), 24443/9P025X-4(LD); Raychem CEC-RWC-18687, Raychem CEC-RWC-18664			
1445692-5	1445693-5	.218	Yes
1445692-6	1445693-6	.218	No
Reference cables: DRAKA F4703-3, F4704-4 (Insulation Diameter Is Larger)			
1877039-1	1877040-1	.231	No
1877039-2	1877040-2	.231	Yes
Reference cables: Tensolite 26473/02006X-4(LD); Raychem CEC-RWC-18684, Raychem CEC-RWC-18680			

* Qualified to Boeing BACC47GA1 (Pin) and BACC47GB1 (Socket)

Crimp Contacts with Heat-Shrink Tubing

Part No.		Hex Crimp
Pin	Socket	
1811269-1	1811010-1	.218

Direct Attach PCB Contacts

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

Differential Twinax Contacts

Part No.		Hex Crimp
Pin	Socket	
1811865-1	1811866-1	.218

DEUTSCH Quadrax Contacts

PC Tail Contacts

Part No.	Type	Dim A	Notes
187-0095-01	Pin	0.276 [7.00]	ARINC 600, FAST
187-0095-06		0.319 [8.10]	
187-0095-21		0.276 [7.00]	
187-0095-26		0.319 [8.10]	
187-0178-08	Pin	0.449 [11.40]	FDBA 50, FAST
187-0121-01	Pin	0.250 [6.35]	ARINC 600, FAST, FDBA
187-0121-08		0.293 [7.45]	
187-0121-21		0.250 [6.35]	
187-0121-26		0.293 [7.45]	
187-0136-08	Socket	0.287 [7.30]	ARINC 600, FAST, FDBA
187-0206-08	Pin	0.492 [12.50]	MIL-DTL-38999 Series I, II, and III
187-0281-08	Pin	0.268 [6.80]	983 Series (Arrangement 20-04)

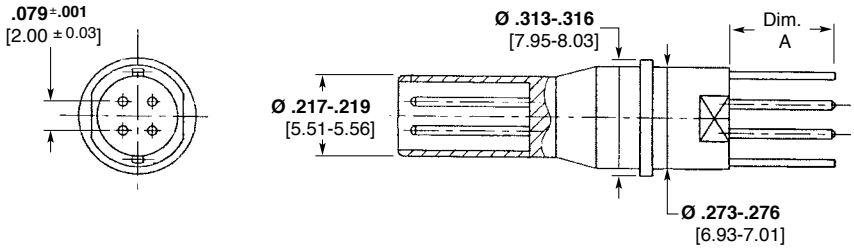
Crimp Contacts

Part No.	Type	Standard	Notes
187-0205-08A*	Socket	EN3155-075F	DMC-M
187-0204-08A*	Pin	EN3155-074M	DMC-M
187-0109-08	Socket	ABS 0974	ARINC 600, FAST, FDBA, 983 Series
187-0108-08	Pin	ABS 0973	ARINC 600, FAST, FDBA, 983 Series
187-0110-08	Pin	GSC-01-31869-00**	—
187-0191-08	Socket	HDDS 105 Specific	ARINC 600, FAST

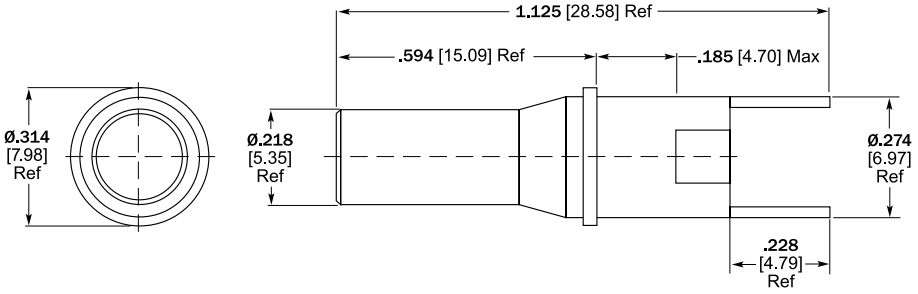
*"A" suffix indicates sealing sleeve
** Gore cable specific

Quadrax Contacts (continued)

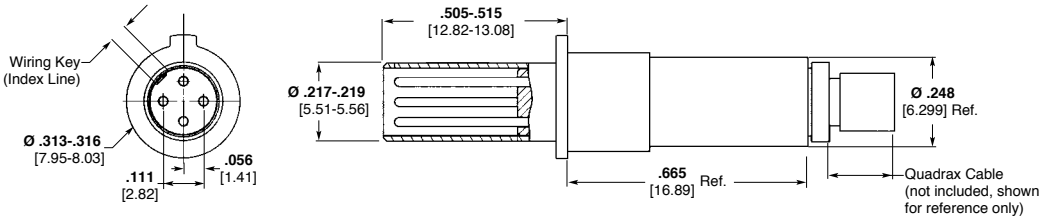
Size 8 Quadrax
PCB Pin Contact
Front Release/
Front Remove Design
Part No. 1445626-1**
** various tail lengths



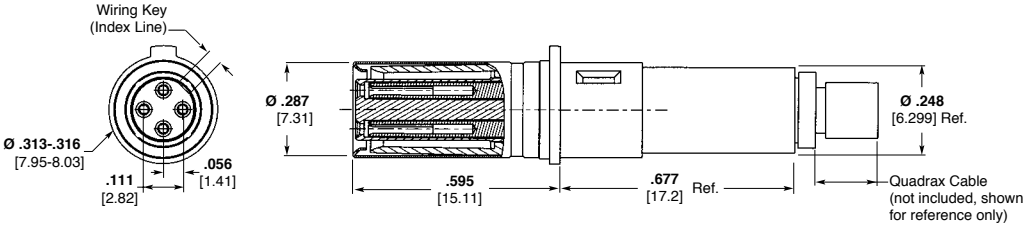
Blank
Front Release/
Front Remove Design
Part No. 1604940-2



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

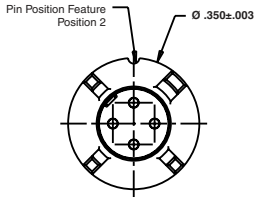


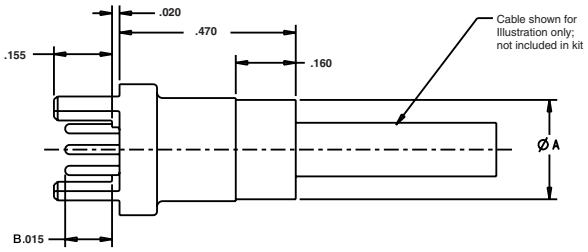
Size 8 Quadrax
Socket Contact —
Crimp Style
Rear Release/
Rear Remove Design
Part No. 1445693-1*
* -3 with boot



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

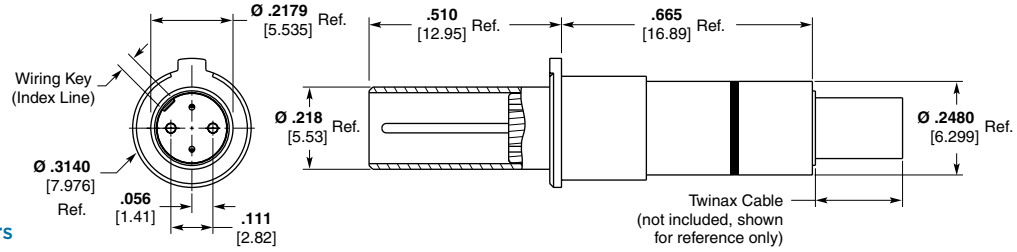
Part Number 1954576-1, -2: B = .125
Part Number 1954576-3: B = .205

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)

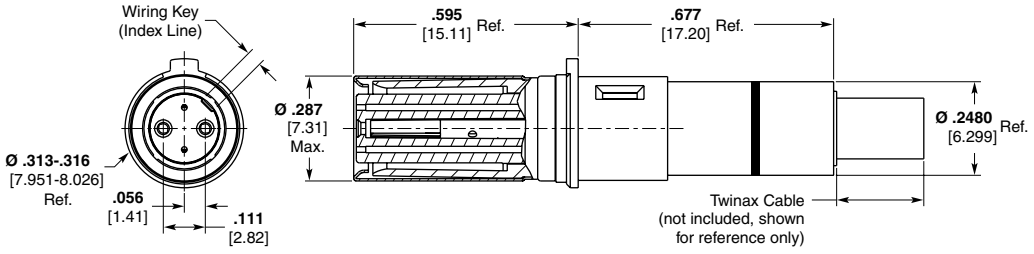
Size 8 Differential Twinax Contacts

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



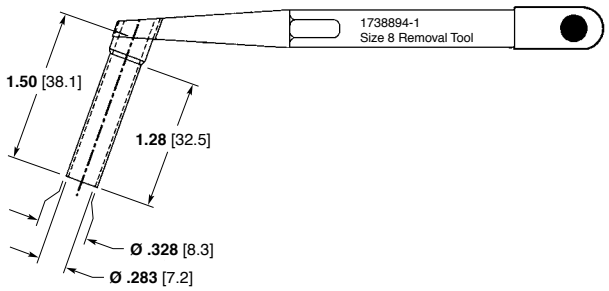
Part No. 1811865-1



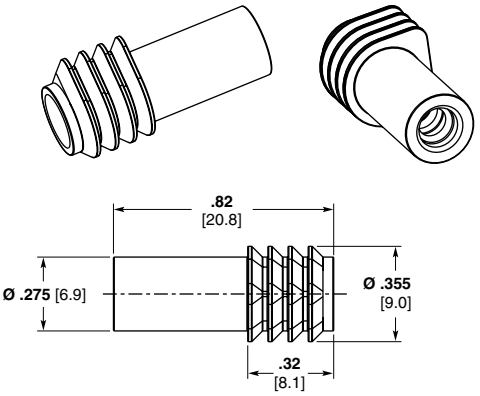
Part No. 1811866-1

Quadrax/Twinax Contact Accessories

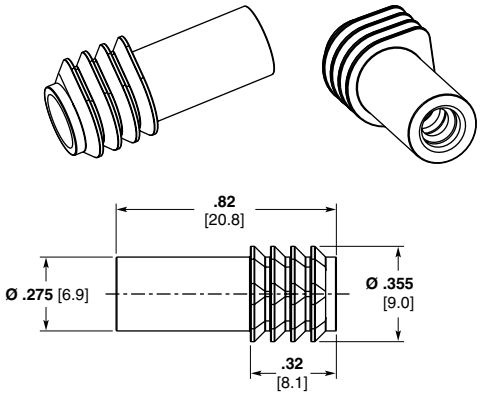
Size 8 Quadrax Extraction Tool
Part No. 1738894-1



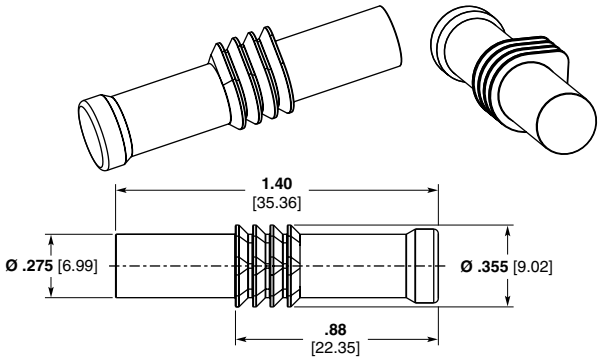
Seal Boots



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



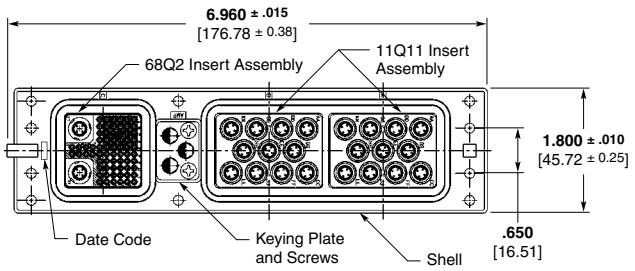
Wire Seal Boot
Part No. 1811943-1
Cable O.D. .170–.200
.231 Hex Crimp



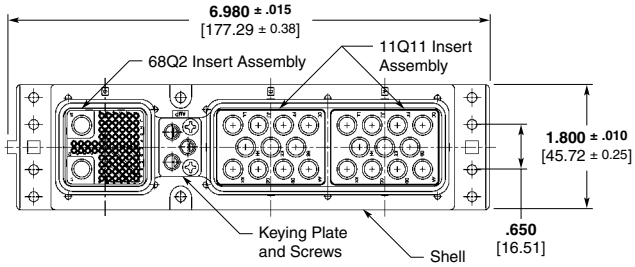
Solid Seal Boot
Part No. 1811633-1



ARINC Connectors



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

FLEXIBLE CONFIGURATIONS

- 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 and receptacles

SIMPLE MATING/UNMATING

- 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 No. 1738894-1

ARINC Size 2 Connectors

Part No.	Type	Insert Arrangement			Style	Shell Features	Contacts
		A	B	C			
1484406-2	Receptacle	Q11	Q11	68Q2	FR-FR	Electroless Nickel Plated, no clinch nuts	PC tail = 0.25 [6.35]
1484407-2	Plug	Q11	Q11	68Q2	RR-RR	Electroless Nickel Plated, no clinch nuts	Crimp contacts
1663032-1	Receptacle	150	150	11Q2	FR-FR	Chromate with six 4-40 clinch nuts	PC tail = 0.25 [6.35]
1663900-1	Receptacle	Q11	Q11	85	FR-FR	Chromate, no clinch nuts	PC tail = 0.25 [6.35]
1484620-1	Receptacle	Q11	Q11	85	FR-FR	Electroless Nickel Plated, with ten 4-40 clinch nuts	PC tail = 0.15 [3.81]
1484621-1	Plug	Q11	Q11	85	RR-RR	Electroless Nickel Plated, no clinch nuts	Crimp contacts

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

ARINC Size 3 Connectors

Part No.	Type	Insert Arrangement			Style	Shell Features	Contacts
		A	B	C			
1663018-1	Receptacle	150	150	11Q2	FR	Electroless Nickel Plated	No contacts
		150	150	11Q2	FR		
1663018-2	Receptacle	150	150	11Q2	FR	Electroless Nickel Plated	PC tail = 0.25 [6.35] (Sig/Pwr), 0.200 [5.08] Quadrax
		150	150	11Q2	FR		
1663018-3	Receptacle	150	150	11Q2	FR	Chromate with fourteen 6-32 clinch nuts	PC tail = 0.25 [6.35]
		150	150	11Q2	FR		
1663019-1	Plug	150	150	11Q2	RR	Electroless Nickel Plated	No contacts
		150	150	11Q2	RR		
1663019-2	Plug	150	150	11Q2	RR	Electroless Nickel Plated	Crimp contacts
		150	150	11Q2	RR		
1663019-3	Plug	150	150	11Q2	RR	Chromate	Crimp contacts
		150	150	11Q2	RR		

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

ARINC Connectors (continued)

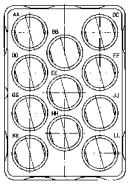
Contact Inserts & Arrangement Codes — Shell Size 2 or 3

Notes:

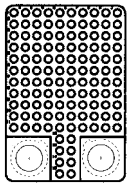
1. Available for plug or receptacle with rear release/remove contacts.
2. Available for receptacle only with all contacts front release/remove.
3. Standard size 8 contacts will not fit in Quadrax size 8 inserts. Also, Quadrax size 8 contacts will not fit into standard size 8 inserts.
4. Available for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

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

Shell Module A, B, D or E

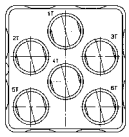


Q11 [1, 2, 3]
11 Size 8 Quadrax
Metal

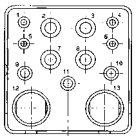


118Q2 [2,3, 4]
118 Size 22
2 Size 8 Quadrax

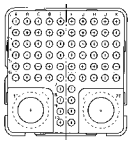
Shell Module C or F



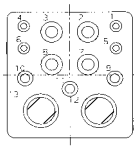
Q6 [1, 2, 3]
6 Size 8 Quadrax
Metal



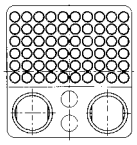
11Q2 [1, 2, 3]
4 Size 20
4 Size 12
3 Size 16
2 Size 8 Quadrax



68Q2 [2, 3, 4]
68 Size 22
2 Size 8 Quadrax

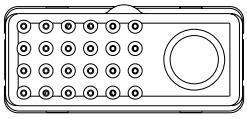


13CQ2 [2, 3]
4 Size 20
3 Size 16
4 Size 12
2 Size 8 Quadrax

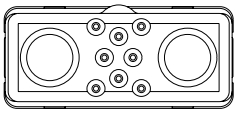


62Q2 [2, 3, 4]
60 Size 22
2 Size 16
2 Size 8 Quadrax

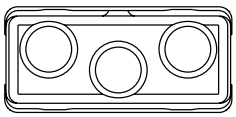
GPRB Insert Arrangements[1,2]



25QI[3]

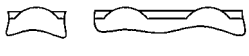


10Q2[3]



3Q3[3]

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.



VERSATILE

- Available in 2, 4, and 12 positions
- Designed for use with wire seal boots

SPACE AND WEIGHT SAVINGS

- Provides excellent density in a rectangular profile for packaging flexibility
- Lightweight aluminum shells are keyed and polarized
- Available with lightweight plastic backshell strain reliefs

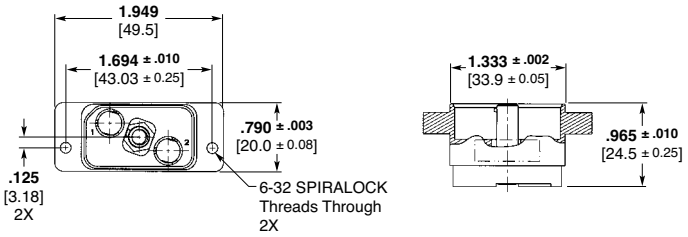
HIGH PERFORMANCE

- Center jackscrew design for fast, reliable mating
- Rated for use up to 50,000 ft. altitude
- Qualified to Boeing Part Standard BPS-C-193

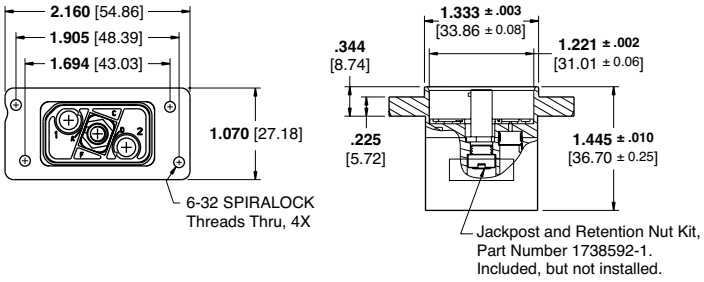
Rectangular Connectors

2 Position

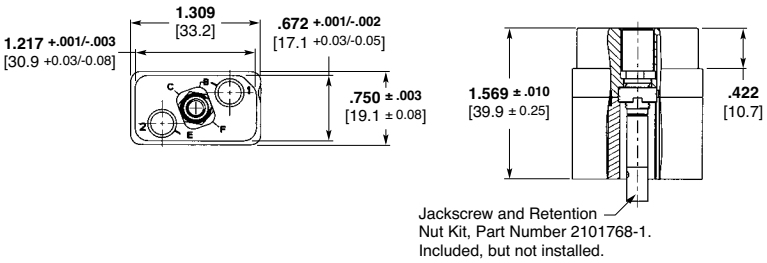
PCB Mount Receptacle (Part No. 1604896)



Panel Mount Receptacle (Part No. 1604897)



Free-Hanging Plug (Part No. 1604898)



Position	Part No.	Type	Mounting Style	Style	Seal Retainer/Backshell
2	1604896-2	Receptacle	PCB	FR-FR	
	1604897-5*	Receptacle	Panel Mount	RR-RR	2101752-2
	1604898-5*	Plug	Free-Hanging	RR-RR	2101752-2
4	1738949-2	Receptacle	PCB	FR-FR	
	1738950-2*	Receptacle	Panel Mount	RR-RR	1738955-1
	1738951-2*	Plug	Free-Hanging	RR-RR	1738955-1
12	1604798-2	Receptacle	PCB	FR-FR	
	1604799-5*	Receptacle	Panel Mount	RR-RR	1996373-1**
	1604800-5*	Plug	Free-Hanging	RR-RR	1996373-2**

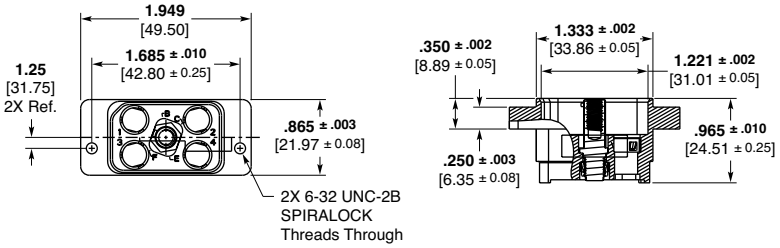
*Jackscrew/Jackpost hardware included but not installed
**Use 1996544-2 backshell for low-profile applications

SPIRALOCK is a trademark of Detroit Tool Industries Corporation.

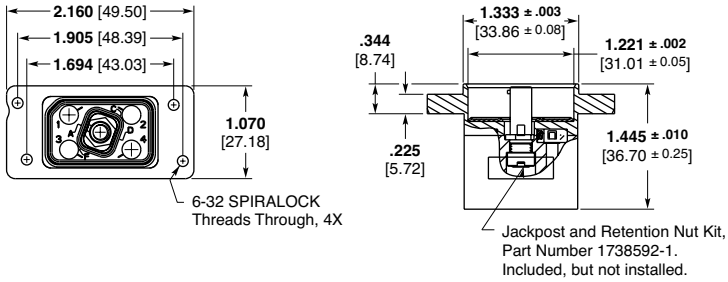
Rectangular Connectors (continued)

4 Position

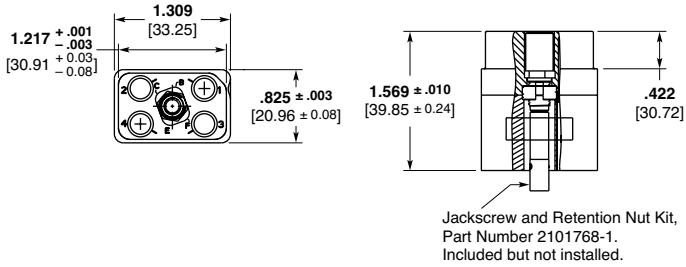
PCB Mount Receptacle (Part No. 1738949)



Panel Mount Receptacle (Part No. 1738950)

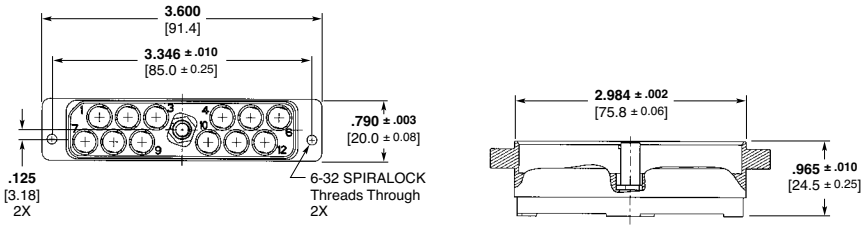


Free-Hanging Plug (Part No. 1738951)

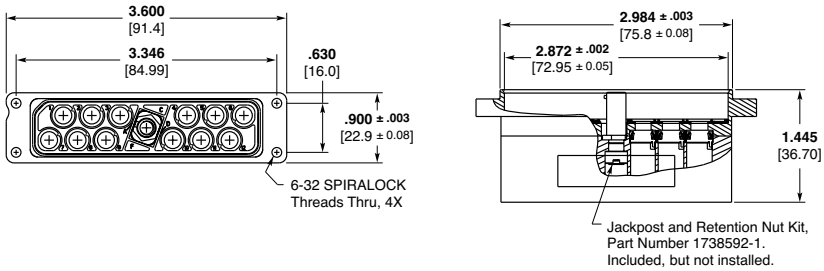


12 Position

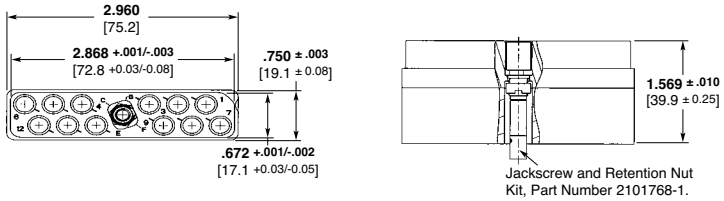
PCB Mount Receptacle (Part No. 1604798)



Panel Mount Receptacle (Part No. 1604799)



Free-Hanging Plug (Part No. 1604800)

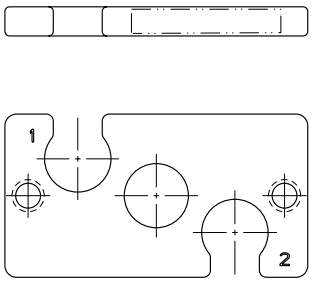


SPIRALOCK is a trademark of Detroit Tool Industries Corporation.

Rectangular Connectors (continued)

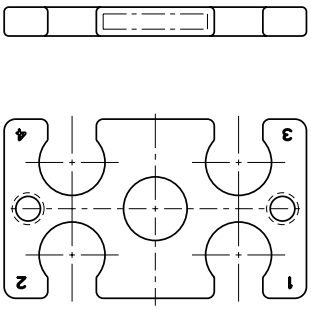
Accessories

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



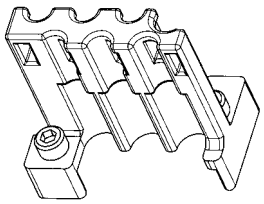
ORIENTATION OF BOOT SEAL PLATE FOR PLUG APPLICATION

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

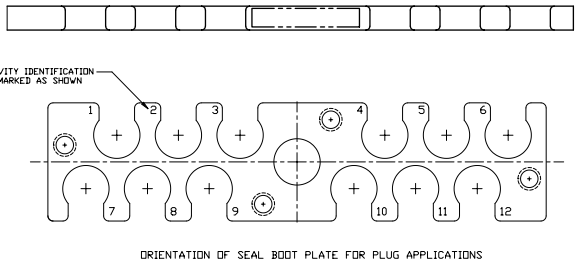


ORIENTATION OF BOOT SEAL PLATE FOR PLUG APPLICATION

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

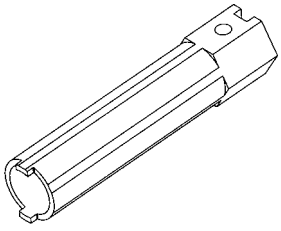


12 Position Low Profile Seal Retainer Part No. 1996544-2



ORIENTATION OF SEAL BOOT PLATE FOR PLUG APPLICATIONS

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





WELL ESTABLISHED TECHNOLOGY

- Provides excellent performance in harsh military and aerospace applications
- Enables Gigabit Ethernet speeds with excellent shielding effectiveness
- Rugged metal shell construction
- Contacts ground directly to connector shell

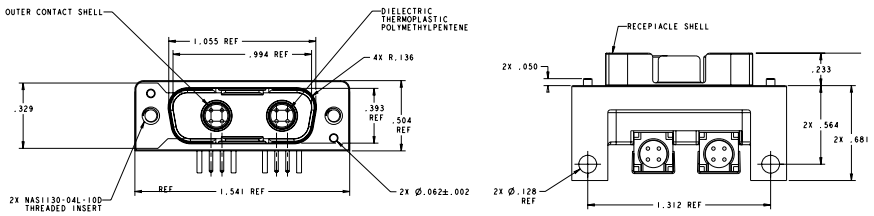
VERSATILE

- Cable-to-cable and cable-to-board configurations
- Four Quadrax contacts in a size 3 shell
- Easy to assemble
- Uses standard AMPLIMITE connector hardware

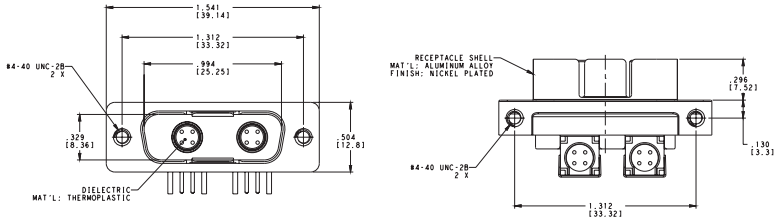
D-Subminiature Connectors

2Q2

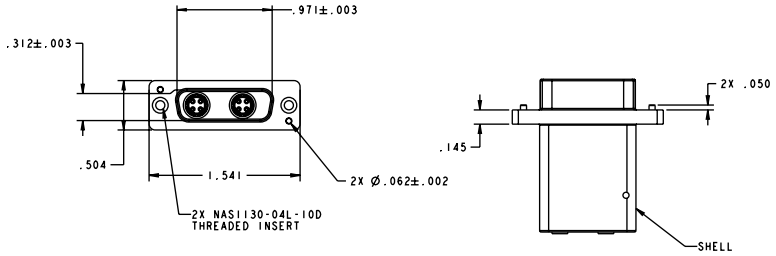
Right-Angle PCB Mount Receptacle (Part No. 2157447)
Accepts standard AMPLIMITE Boardlock Hardware (sold separately).



Right-Angle PCB Mount Receptacle (Part No. 2221310)
Accepts standard AMPLIMITE Boardlock Hardware (sold separately).



Panel-Mount or Free-Hanging Plug (Part No. 2157449)
Socket Contacts included in Kit. Accepts standard AMPLIMITE Screwlock Hardware (sold separately).



Female Screwlock
Part No. 212447-1

Nut Driver
Part No. 811262-1

For assembling female screwlocks to connector flange.

Male Screw Retainer Kit
Part No. 211883-5
Each Kit contains two screws and retainers

D-Subminiature Connectors (continued)

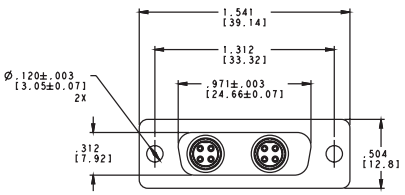
Panel-Mount or Free-Hanging Plug
(Part No. 2221312)
Socket Contacts included in Kit.
Accepts standard AMPLIMITE
Screwlock Hardware
(sold separately).

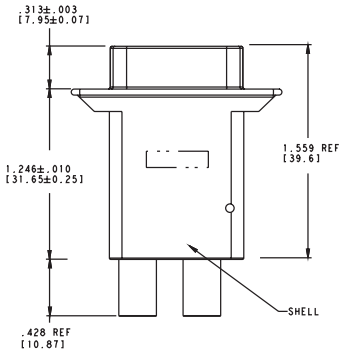
Female Screwlock
Part No. 212447-1

Nut Driver
Part No. 811262-1

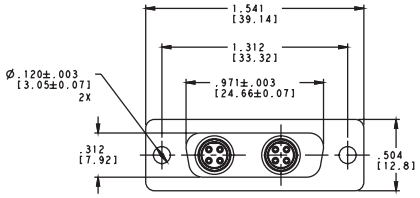
For assembling female screwlocks
to connector flange.

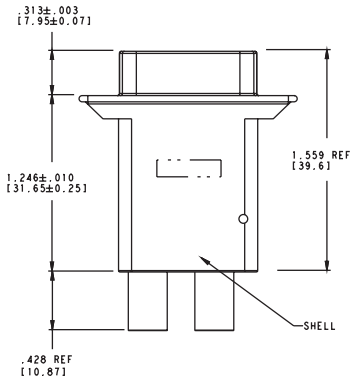
Male Screw Retainer Kit
Part No. 211883-5
Each Kit contains two screws
and retainers



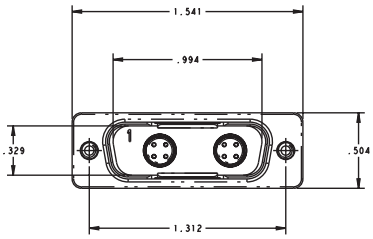


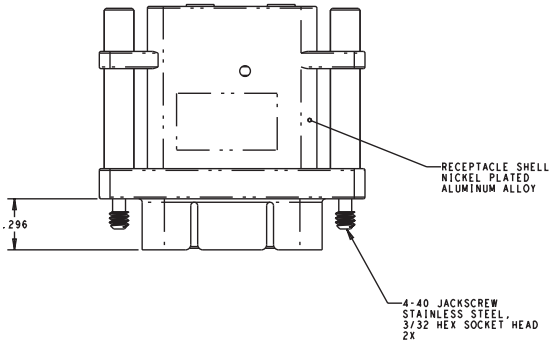
Panel-Mount or Free-Hanging Plug
(Part No. 2294317)
Kit includes Socket Contacts,
Seal Boot Retention Plate, and
Screwlock Hardware



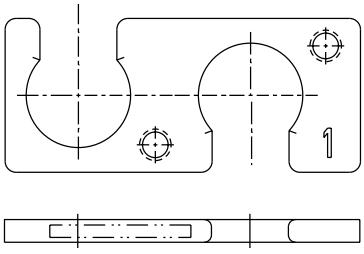


Free-Hanging Receptacle Kit
(Part No. 2293403)
Kit includes Pin Contacts,
Jackscrews, and Strain Relief

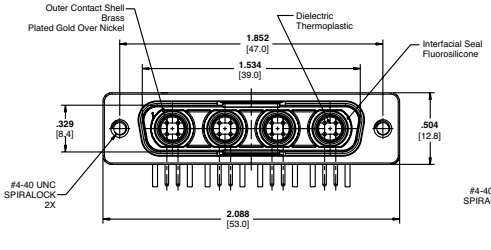


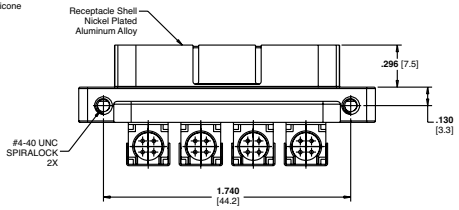


Low-Profile Seal Boot
Retention Plate
(Part No. 2157789)



4Q4
Right-Angle PCB Mount Receptacle
(Part No. 2000314)
Accepts standard AMPLIMITE
Boardlock Hardware
(sold separately).





D-Subminiature Connectors (continued)

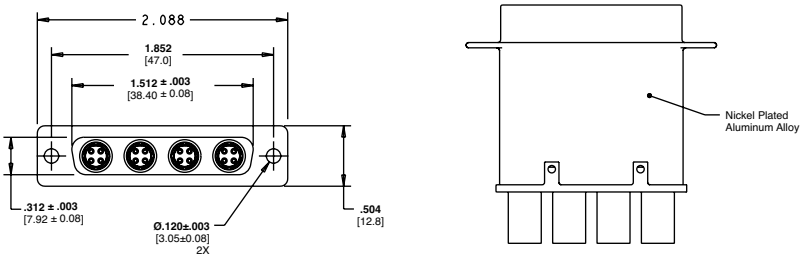
Panel-Mount or Free-Hanging Plug (Part No. 2000317)
Socket Contacts included in Kit.
Accepts standard AMPLIMITE Screwlock Hardware (sold separately).

Female Screwlock
Part No. 212447-1

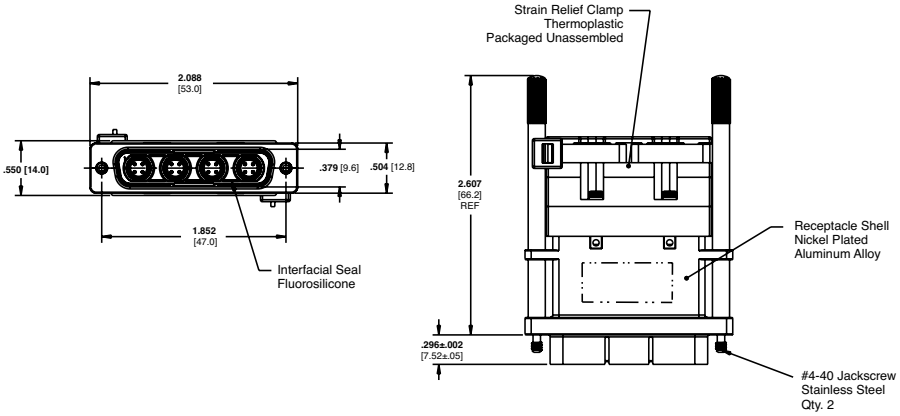
Nut Driver
Part No. 811262-1

For assembling female screwlocks to connector flange.

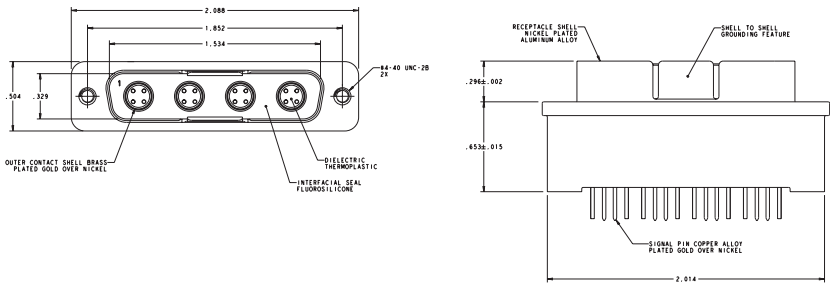
Male Screw Retainer Kit
Part No. 211883-5
Each Kit contains two screws and retainers



Free-Hanging Receptacle Kit (Part No. 2000263)
Jackscrews, Strain Relief, and Crimp Pin Contacts included in kit.

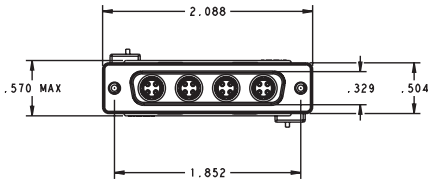


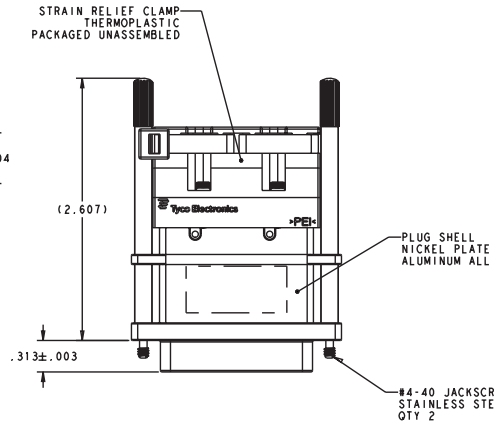
Vertical PCB Mount Receptacle (Part No. 2102995)



D-Subminiature Connectors (continued)

Free-Hanging Plug Kit
(Part No.2221668)
Kit Includes Socket Contacts,
Jackscrews, and Strain Relief







APPLICATION FLEXIBILITY

- Available in various shell sizes: 9 (1Q1), 17 (2Q2), 19 (4Q4) and 25 (8Q8)
- Accepts standard backshells

RUGGED

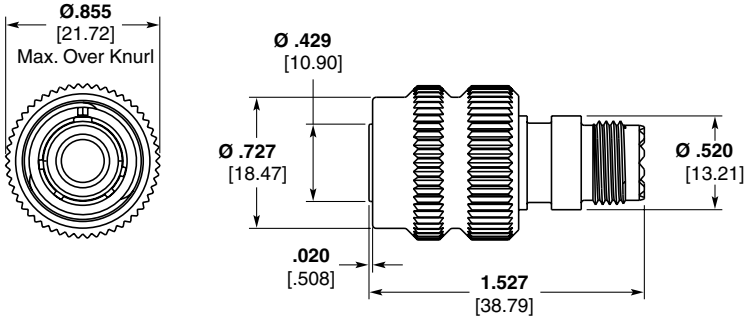
- Designed for use with wire seal boots for sealing and optimized alignment
- Front metal-shell design provides a full ground plane

SAVES WEIGHT

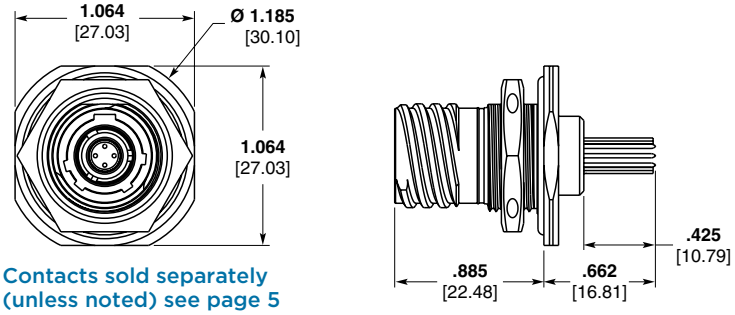
- Lightweight composite rear shell available in size 19

Custom MIL-DTL-38999 Series III Style Circular Connectors

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



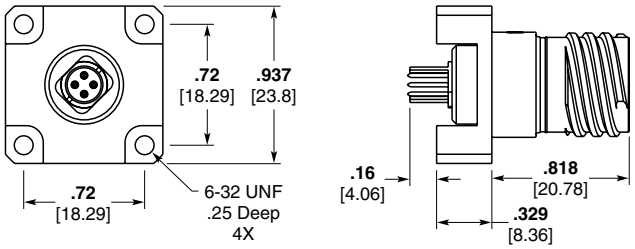
Contacts sold separately (unless noted) see page 5

Shell Size	Part No.	Type	Description
9	1738916	Receptacle	1Q1, FR-FR, Jam Nut Style, with PC Tail Contacts
	1811184	Receptacle	1Q1, FR-FR, PCB Mount with Stand-offs and PC Tail Contacts
	2157694	Receptacle	1Q1, RR-RR, Jam Nut Style
	1877384	Plug	1Q1, RR-RR
17	1877774	Receptacle	2Q2, RR-RR
	2157455	Receptacle	2Q2, FR-FR, PCB Mount
	2157695	Receptacle	2Q2, RR-RR, Jam Nut Style
	1877775	Plug	2Q2, RR-RR
19	1738974	Receptacle	4Q4, FR-FR, without PC Tail Contacts
	1877732	Receptacle	4Q4, FR-FR, with PC Tail Contacts
	1811901	Receptacle	4Q4, RR-RR
	2157696	Receptacle	4Q4, RR-RR, Jam Nut Style
	1811902	Plug	4Q4, RR-RR
	2221849	Receptacle	4Q4, With Threaded Mounting Holes
21	1954355	Plug	4Q4, RR-RR
	1954353	Receptacle	4Q4, FR-FR, with PC Tail Contacts
	2101633	Receptacle	4Q4, RR-RR, Flange Mount
23	1877921	Plug	6Q6, RR-RR
	1954577	Receptacle	6Q6, RR-RR
	2221366	Receptacle	6Q6, FR-FR, with PC Tail Contacts
25	1811928	Plug	8Q8, RR-RR
	1811927	Receptacle	8Q8, RR-RR
	2157628	Receptacle	8Q8, RR-RR, Jam Nut Style
	2101395	Receptacle	8Q8, FR-FR, with PC Tail Contacts
	1996625	Receptacle	8Q8, FR-FR, PCB Mount with Stand-offs and PC Tail Contacts

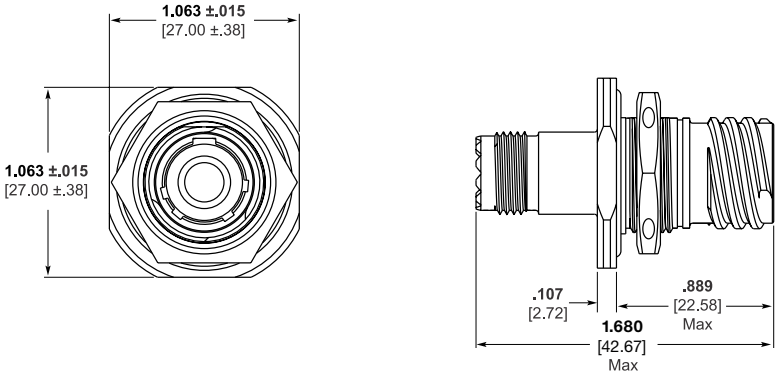
See TE Customer Drawing for finish options

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

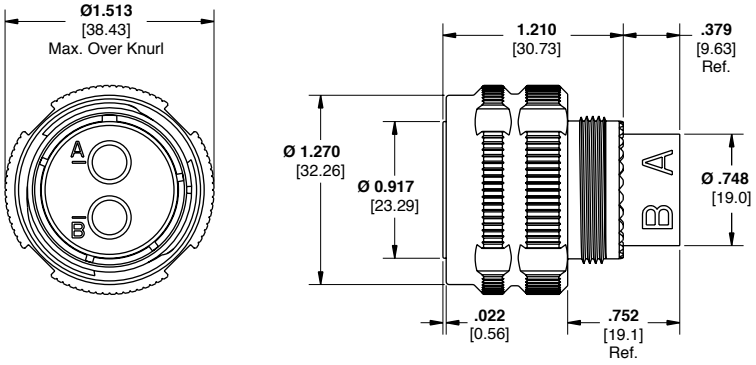
Receptacle, Shell Size 9,
Single Quadrax, FR-FR
PCB Mount with Stand-offs
Part No. 1811184
(with PC tail contacts)



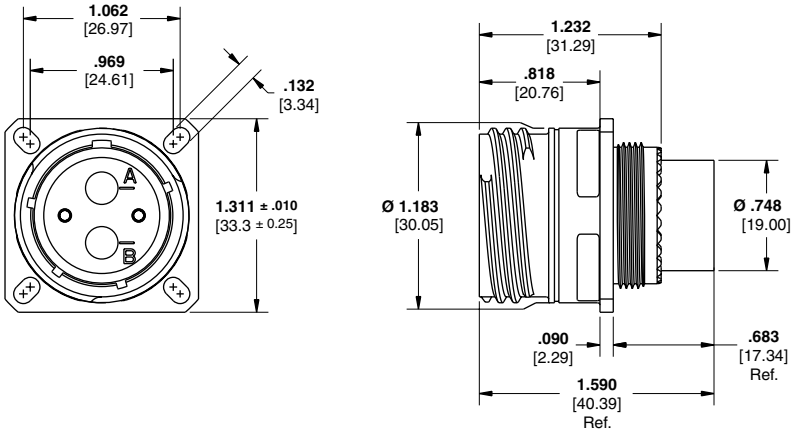
Receptacle, Shell Size 9
Single Quadrax, RR-RR
Jam Nut Style
Part No. 2157694



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



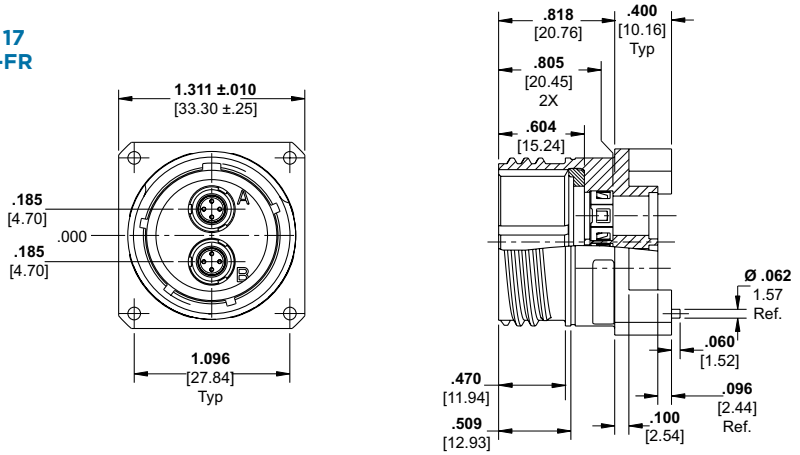
Receptacle, Shell Size 17
Arrangement 2Q2, RR-RR
Part No. 1877774



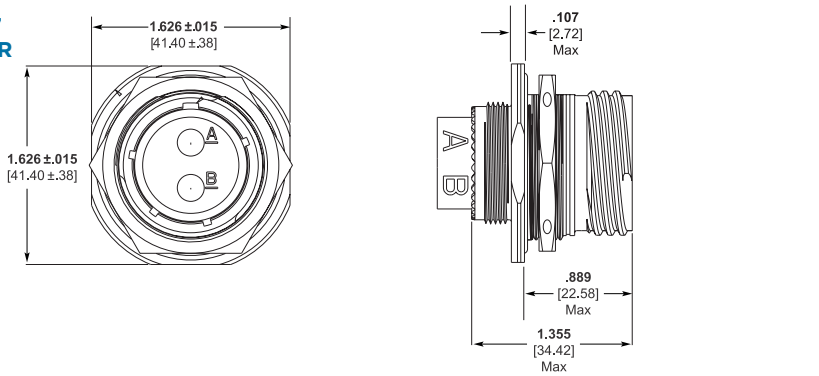
Contacts sold separately
(unless noted) see page 5

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

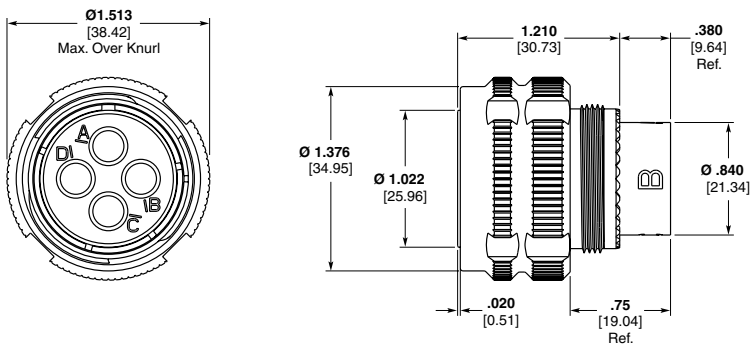
Receptacle, Shell Size 17
Arrangement 2Q2, FR-FR
Part No. 2157455



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



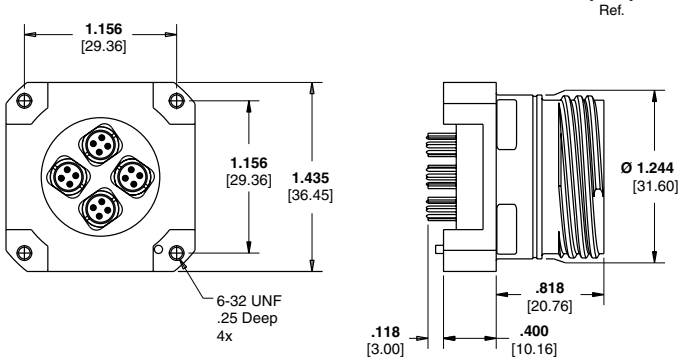
Plug, Shell Size 19
Arrangement 4Q4, RR-RR
Part No. 1811902



Receptacle, Shell Size 19,
Arrangement 4Q4, RR-RR

Part No. 1877732
(w/ PC Tail Contacts)

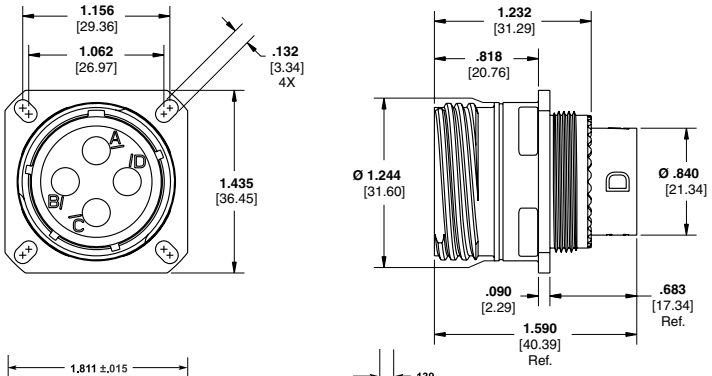
Part No. 1738974
(connector only)



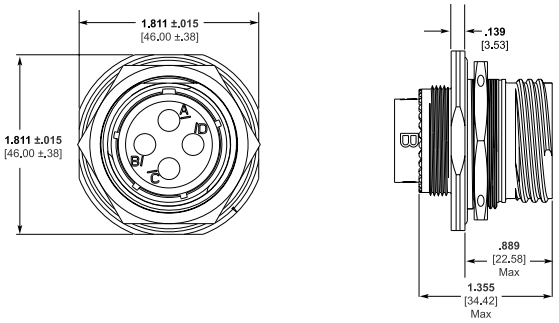
Contacts sold separately
(unless noted) see page 5

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

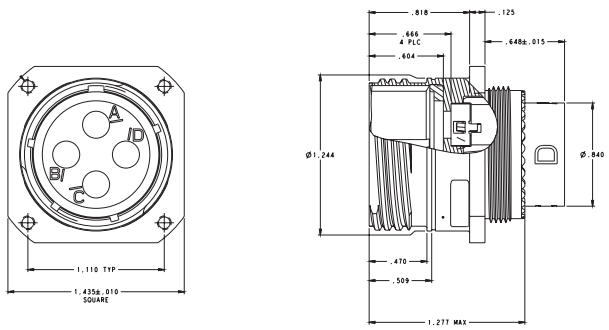
Receptacle, Shell Size 19,
Arrangement 4Q4, RR-RR
Part No. 1811901



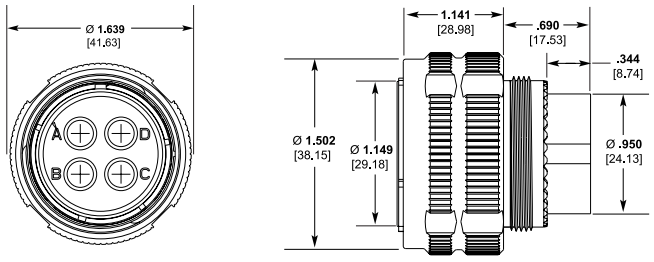
Receptacle, Shell Size 19
Arrangement 4Q4, RR-RR
Jam Nut Style
Part No. 2157696



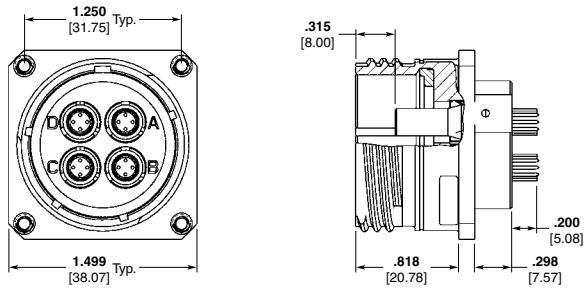
Receptacle, Shell Size 19
Arrangement 4Q4
With Threaded
Mounting Holes
Part No. 2221849



Plug, Shell Size 21,
Arrangement 4Q4, FR-FR
Part No. 1954354

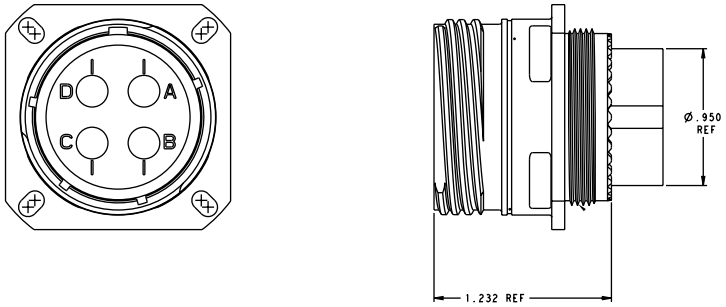


Receptacle, Shell Size 21,
Arrangement 4Q4, FR-FR
Part No. 1954353



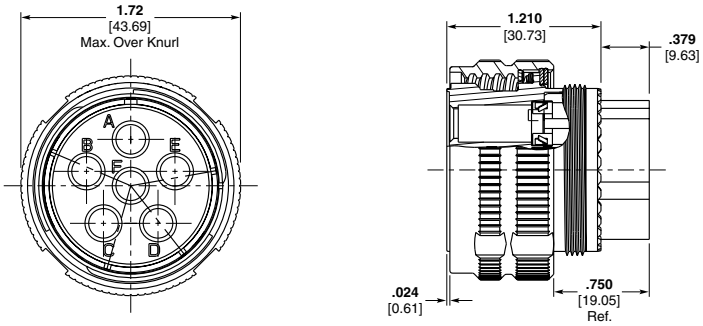
Custom MIL-DTL-38999 Series III Style Circular Connectors (continued)

Receptacle, Shell Size 21
38999 Style Arrangement
4Q4, RR-RR Flange Mount
Part No. 2101633

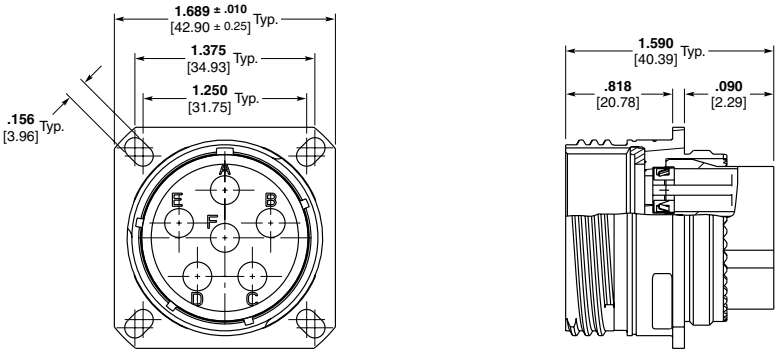


Plug, Shell Size 23,
Arrangement 6Q6,
Part No. 1877921

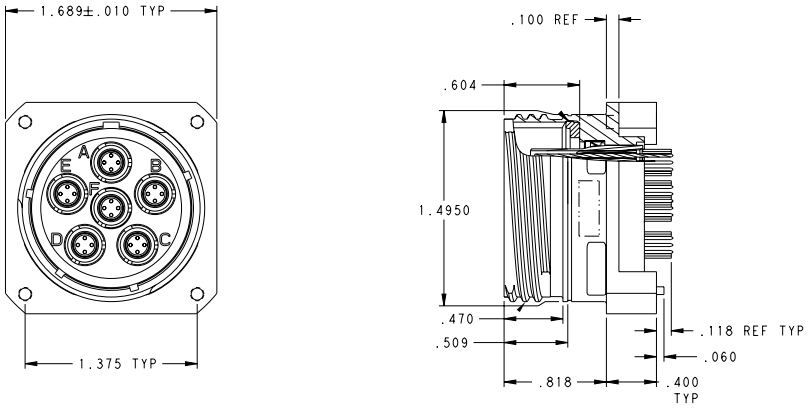
Contacts sold separately (unless noted) see page 5



Receptacle, Shell Size 23,
Arrangement 6Q6,
Part No. 1954577

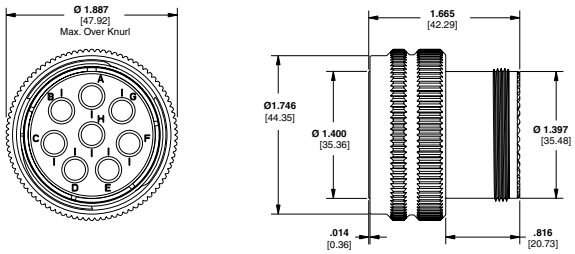


Receptacle, Shell Size 23
38999 Style
Arrangement 6Q6
PCB Mount
Part No. 2221366

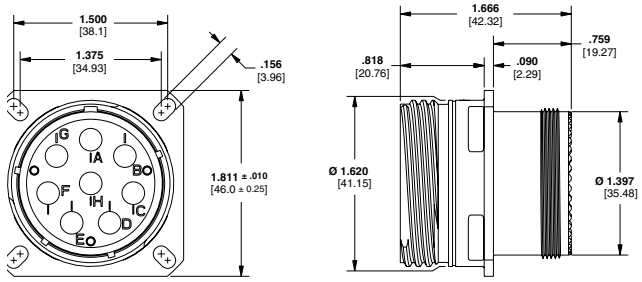


Custom MIL-DTL-38999 Series III Style Circular Connectors (continued)

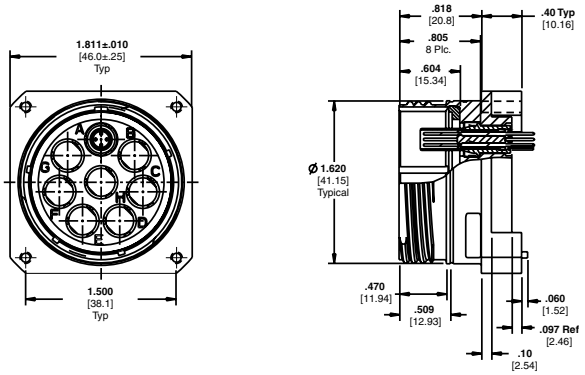
Plug, Shell Size 25
Arrangement 8Q8, RR-RR
Part No. 1811928



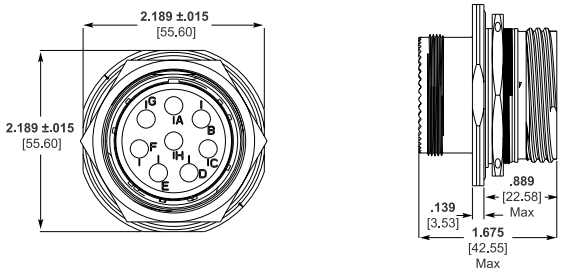
Receptacle, Shell Size 25
Arrangement 8Q8, RR-RR
Part No. 1811927



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

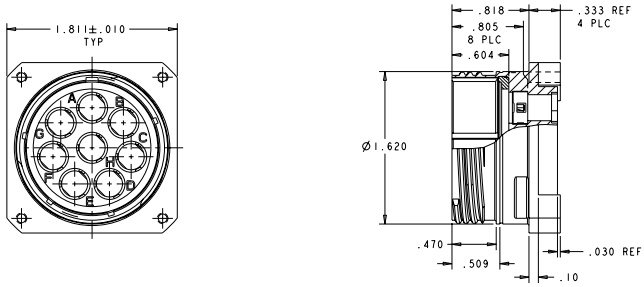


Receptacle, Shell Size 25
38999 Style
Arrangement 8Q8, RR-RR
Jam Nut
Part No. 2157628



Contacts sold separately
(unless noted) see page 5

Receptacle, Shell Size 25
Arrangement 8Q8, FR-FR
Part No. 1996625





DEUTSCH 983 Series Connectors

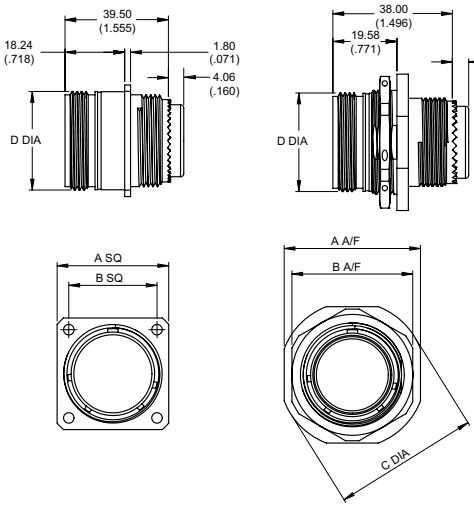
1, 2, 4, or 6 Quadrax contacts

VERSATILE
- Aluminum or stainless steel shells

HIGH TEMPERATURE
- 150°C

RELIABLE
- Threaded coupling
- Triple seal for environmental protection
- Shell to shell metal bottoming (Plug and receptacle mated)
- Self-locking system

COMPATIBLE
- ABS 1628



Square Flange Receptacle | Jam Nut Receptacle | Plug

Insert Arrangements



08-01
1 Quadrax Contact



18-02
2 Quadrax Contacts



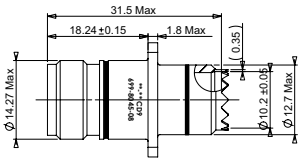
20-04
4 Quadrax Contacts



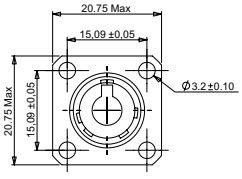
28-06
6 Quadrax Contacts

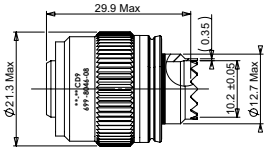
Shell Size	Square Flange Receptacle			Jam Nut Receptacle				Plug
	A Sq.	B Sq.	D Dia.	A A/F	B A/F	C Dia.	D Dia.	A Dia.
18	34.24 (1.348)	26.97 (1.062)	30.18 (1.188)	41.68 (1.641)	36.96 (1.455)	44.86 (1.759)	30.18 (1.188)	37.34 (1.470)
20	36.63 (1.442)	29.36 (1.156)	33.32 (1.312)	44.86 (1.759)	40.11 (1.579)	49.63 (1.954)	33.32 (1.312)	41.91 (1.650)
28	50.93 (2.005)	39.67 (1.562)	46.02 (1.812)	59.21 (2.331)	54.41 (2.080)	61.82 (2.434)	46.02 (1.812)	55.24 (2.175)

Shell Size 08: 1-Position Connector

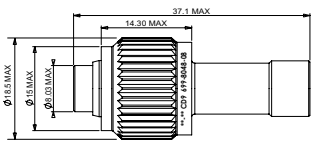


Receptacle





Plug



Backshell Accessory
(for Both Plug and Receptacle)



LIGHTWEIGHT
- Thermoplasitc shell

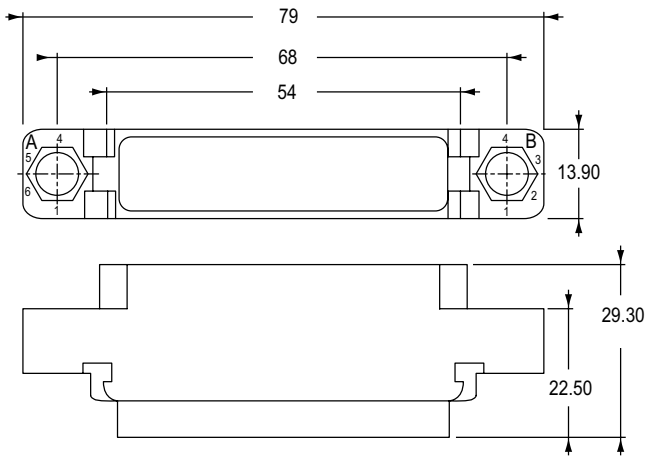
ROBUST
- 150°C
- 100-mating-cycle durability

COMPATIBLE
- EN3545

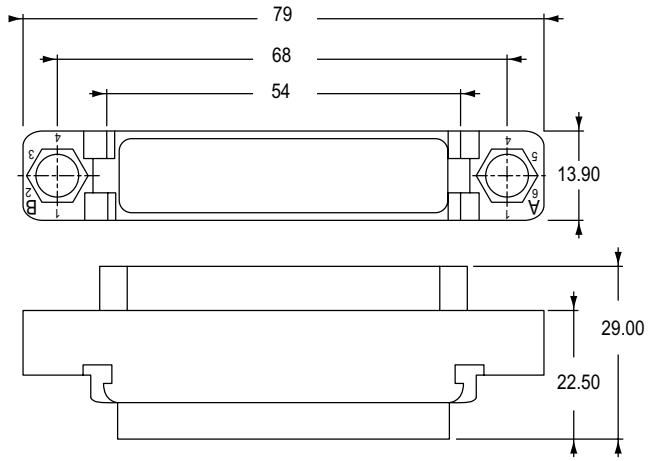
DEUTSCH FAST Connectors

3 or 5 Quadrax contacts

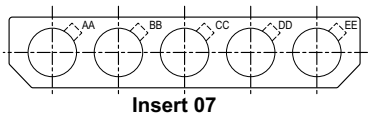
Shell for Pin Contacts



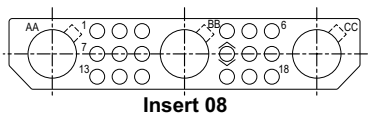
Shell for Socket Contacts



Insert Arrangements for Quadrax Contacts



Insert 07
5 Quadrax Contacts



Insert 08
3 Quadrax Contacts
18 Size 20 Contacts



VERSATILE

- Single Quadrax contact inserts
- Compact rectangular connectors with interchangeable modules
- Wide range of configurations for signal and power
- High-speed module supports 10 Gb/s
- Choice of standard and shielded versions
- Wide range of backshells and accessories

SAVE WEIGHT

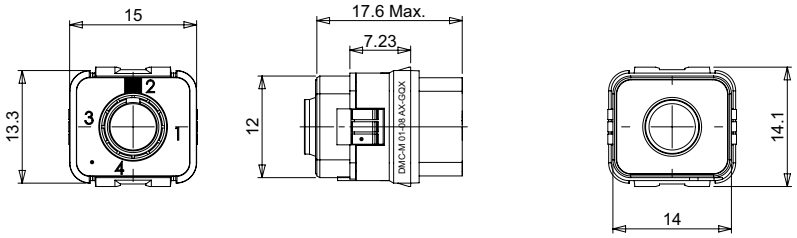
- Robust composite shell for monomodule connectors
- Lightweight aluminum and composite multimodule shells
- Excellent EMI performance

COMPATIBLE

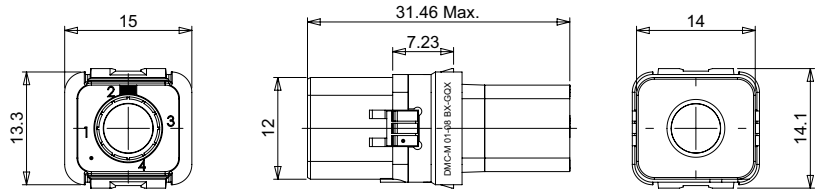
- EN4165
- ARINC 809
- BACC65

Quadrax Inserts for DEUTSCH DMC-M Connectors

Pin Contact Module



Socket Contact Module





SPACE AND WEIGHT SAVINGS

- Black anodized nickel-plated aluminum alloy shell
- 25% lighter and 23% smaller than comparable NAS 1599 connectors

ENVIRONMENTALLY ROBUST

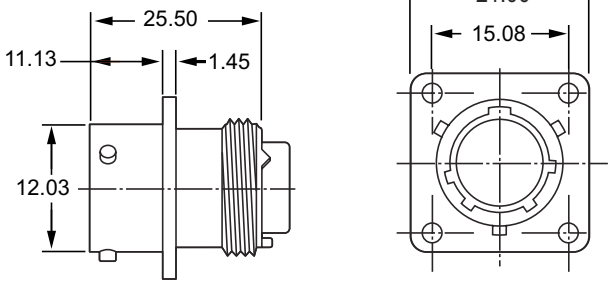
- Triple wiring sealing
- 150°C
- 500-mating-cycle durability

COMPATIBLE

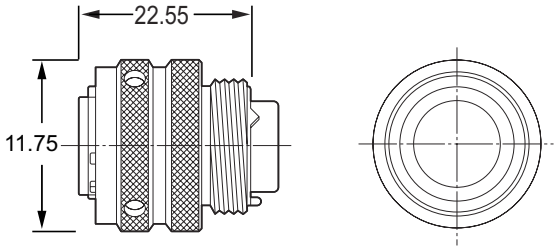
- UTE C 93422 models HE 302 and HE 303
- NF L 54130
- ABS 1054

DEUTSCH FDBA Connectors

Square Flange Receptacle



Plug



Insert Arrangement



Insert 8-E1
1 Quadrax Contact



ROBUST

- Proven technologies and materials
- Designed for high-speed, high-bandwidth applications: 100Base-T, Gigabit Ethernet, IEEE 1394 and Fibre Channel
- Materials rated from -65˚C to +200˚C
- Available in 150˚C and 200˚C rated construction

RELIABLE PERFORMANCE

- 100 and 150 Ω cables
- Low outgassing materials (PTFE, FEP)
- Low smoke and low toxicity
- Custom design capabilities
- Lightweight

APPLICATIONS

- In-flight entertainment systems
- Satellite TV
- Flight subsystems
- Military communications

Quadlite High-Speed Data Cables

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.

Quadlite cables, for use with Quadrax contacts and connectors, 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.

Performance Characteristics

MATERIALS

- **Dielectrics:** Foamed FEP
- **Jacket:** Laser-Markable FEP

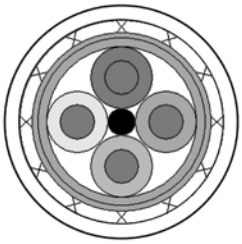
STANDARDS AND SPECIFICATIONS

- **TE Specification:** 1200 and 1400
- **ANSI/TIA-568-C.2**
- **IEEE 1394**
- **ARINC 664**

Quadlite High-Speed Data Cables (continued)

100Base-T Ethernet Cables
100 Ohms - 150˚C

TE Part No.	THX-26C422-814		THX-24C422-814	
Conductor AWG Size (19 Strand)	26		24	
Conductor Material:	SCHSCA		SCHSCA	
Nom. Conductor Diameter (in.):	0.0185		0.0235	
Insulation Material:	Formed FEP		Formed FEP	
Nom. Insulation OD ± 0.002 (in.):	0.035		0.044	
Nom. Cable OD (in.):	0.145		0.157	
Nom. Cable Weight (lb/1 kft):	17.41		21.75	
Shield Material:	TCC		TCC	
Jacket Material:	FEP		FEP	
Impedance ± 10% (Ω):	100		100	
Temp. Rating:	150˚C		150˚C	
Nom. Capacitance (pF/ft):	13.0		13.0	
Max. Attenuation (dB/100 m):				
1 MHz	3.3		2.8	
10 MHz	10.7		8.7	
100 MHz	36.1		29.7	
	10 MHz	100 MHz	10 MHz	100 MHz
Min. NEXT (dB)	50	35	50	35
Min. SRL (dB)	25	19	25	19



100Base-T Ethernet

Quadlite High-Speed Data Cables (continued)

100Base-T Ethernet Cables
100 Ohms - 200˚C

TE Part No.	THX-26C422-424		THX-24C422-424	
Conductor AWG Size (19 Strand)	26		24	
Conductor Material:	SCHSCA		SCHSCA	
Nom. Conductor Diameter (in.):	0.0185		0.0235	
Insulation Material:	Formed FEP		Formed FEP	
Nom. Insulation OD ± 0.002 (in.):	0.037		0.044	
Nom. Cable OD (in.):	0.142		0.156	
Nom. Cable Weight (lb/1 kft):	17.85		23.8	
Shield Material:	SCC		SCC	
Jacket Material:	FEP		FEP	
Impedance ± 10% (Ω):	100		100	
Temp. Rating:	200˚C		200˚C	
Nom. Capacitance (pF/ft):	13.0		13.0	
Max. Attenuation (dB/100 m):				
1 MHz	3.3		2.8	
10 MHz	10.7		8.7	
100 MHz	36.1		29.7	
	10 MHz	100 MHz	10 MHz	100 MHz
Min. NEXT (dB)	50	35	50	35
Min. SRL (dB)	25	19	25	19

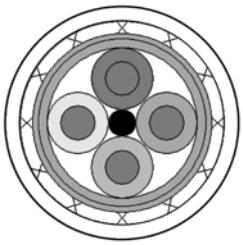
Quadlite High-Speed Data Cables (continued)

Fibre Channel Cables
150 Ohms - 150˚C

TE Part No.	FBC-26C422-814	FBC-24C422-414
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.):	0.061	0.083
Nom. Cable OD (in.):	0.200	0.261
Nom. Cable Weight (lb/1 kft):	25.37	45.5
Shield Material:	TCC	TCC
Jacket Material:	FEP	FEP
Impedance ± 10% (Ω):	150	150
Temp. Rating:	150˚C	150˚C
Nom. Capacitance (pF/ft):	6.0	6.0
Nom. Attenuation (dB/100 m):		
531 MHz	13	11
1062 MHz	21	17

150 Ohms - 200˚C

TE Part No.	FBC-26C422-424	FBC-24C422-424
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.):	0.061	0.083
Nom. Cable OD (in.):	0.200	0.261
Nom. Cable Weight (lb/1 kft):	27.7	45.5
Shield Material:	SCC	SCC
Jacket Material:	FEP	FEP
Impedance ± 10% (Ω):	150	150
Temp. Rating:	200˚C	200˚C
Nom. Capacitance (pF/ft):	6.0	6.0
Nom. Attenuation (dB/100 m):		
531 MHz	13	11
1062 MHz	21	17



Fibre Channel

High-Speed Ethernet Copper Cables

Cat 5E Constructions
100 Ohms - 150˚C/200˚C

TE Part No.	C5E-24C424-814		C5E-24C424-B24	
Conductor AWG Size (19 Strand)	24		24	
Conductor Material:	SCHSCA		SCC	
Nom. Conductor Diameter (in.):	0.0235		0.0235	
Insulation Material:	Formed FEP		Formed FEP	
Nom. Insulation OD ± 0.002 (in.):	0.046		0.046	
Nom. Cable OD (in.):	0.257		0.255	
Nom. Cable Weight (lb/1 kft):	44.14		42.9	
Shield Material:	TCC		SC	
Jacket Material:	FEP		FEP	
Nom. Impedance:	100		100	
Temp. Rating:	150˚C		200˚C	
Nom. Capacitance (pF/ft):	13.5		13.5	
Max. Attenuation (dB/100 m):				
1 MHz	2.64		2.64	
10 MHz	8.6		8.6	
100 MHz	29.0		29.0	
	10 MHz	100 MHz	10 MHz	100 MHz
Min. NEXT (dB)	50.3	35.3	50.3	35.3
Min. SRL (dB)	25	19	25	19

Cat 6A Constructions
100 Ohms - 150˚C/200˚C

TE Part No.	C6A-24C444-814		C6A-24C444-B24	
Conductor AWG Size (19 Strand)	24		24	
Conductor Material:	SCHSCA		SCHSCA	
Nom. Conductor Diameter (in.):	0.235		0.235	
Insulation Material:	Foamed FEP		Foamed FEP	
Nom. Insulation OD ± 0.002 (in.):	0.049		0.049	
Nom. Cable OD (in.):	0.282		0.282	
Nom. Cable Weight (lb/1 kft):	52.32		52.32	
Shield Material:	TCC		SCC	
Jacket Material:	FEP		FEP	
Nom. Impedance:	100		100	
Temp. Rating:	150˚C		200˚C	
Nom. Capacitance (pF/ft):	13.5		13.5	
Max. Attenuation (dB/100 m):				
10 MHz	7.1		7.1	
100 MHz	22.9		22.9	
250 MHz	37.3		37.3	
500 MHz	54.4		54.4	
	10 MHz	100 MHz	10 MHz	100 MHz
Min. NEXT (dB)	70	52	70	52
Min. SRL (dB)	36	24	36	24



Custom Solutions

Spacecraft Applications

Product Facts

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



Custom Cable and Flex Assemblies

Product Facts

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



General Purpose Rectangular (GPR) Connector Assemblies

(See Catalog 1654763)

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

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



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.

Ordering Information

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.

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