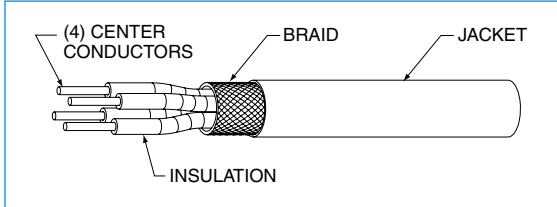


38999  
III  
HD  
Dualok  
II  
I  
SJT  
Accessories  
Aquacon  
Herm/Seal  
PCB

**Amphenol® Quadrax Contacts** - Offer several advantages for high data transfer rates, low power consumption and excellent EMI compatibility:

- Four strategically spaced inner contacts form two 100 or 150 Ohm matched impedance differential pairs
- Outer contact has rugged wall section for durability
- Available in size 8 crimp termination style
- Also available in size 8 with PC tails (see page 233)
- Requires modification of MIL-DTL-38999 connector to accommodate keyed contacts



Cable Illustration - Quadrax Contact



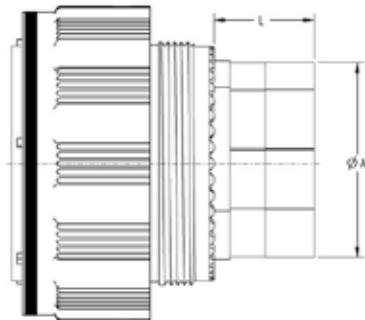
Quadrax Pin with 8P8C "RJ45" Jack



Quadrax Pin Size 8 and MIL-DTL-38999 Series III Connector

### Guide for selecting a Backshell:

When ordering backshells, to avoid interference between the piggyback grommets which are used on all size 8 cavities and the backshell the below keepout dimensions must be adhered to. (based on existing arrangements)

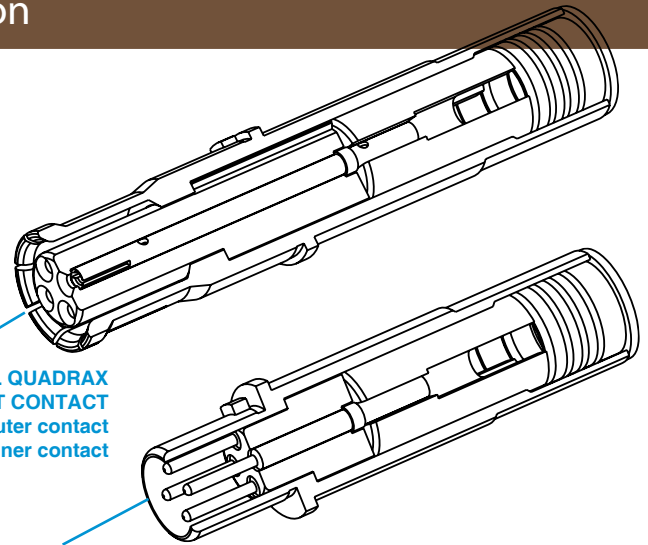


Size	A Dia Min	L Min
17	.734	.540
19	.869	.540
21	.869	.540
23	1.088	.540
25	1.234	.540

### Suggested Strain Relief - Insert Arrangements 9-5 or 19-18 with Quadrax Contacts

Due to the piggyback grommet interference with normal strain reliefs on the shell size 9 only, the recommended strain relief for the connector is: Amphenol part number TGW-R-5309-10 (OD Cad) or TGF-R-5309-10 (Electroless nickel) - shell size 9 only. For 19-18 insert pattern, recommended backshell: Glenair 367-221-NF. This is recommended due to the proximity of the size 8 contacts in relation to the shell.

Also see Quadrax contacts for ARINC 600 and R27 Rack and Panel Connectors on pages 265 and 266.



TYPICAL QUADRAX SOCKET CONTACT has socket outer contact with a socket inner contact

TYPICAL QUADRAX PIN CONTACT has pin outer contact with a pin inner contact

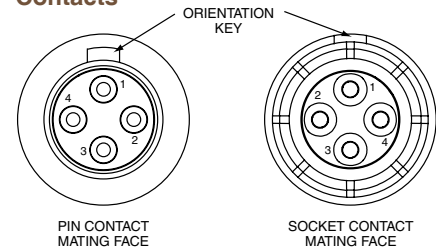
### Quadrax Contacts are gold plated, crimp termination

Finish of mating contact parts: supplied with 0.000050 min. gold over nickel on mating parts. Consult Amphenol for availability of other finishes.

#### Quadrax Size 8 Contact Performance:

- Bandwidth: Up to 1.25 GHz
- Data Rate: Exceeding 2.5 Gbps.
- Voltage Rating: 500 Vrms max. @ sea level
- Dielectric Withstanding Voltage: 1000 VAC rms between all inner contacts @ sea level, 500 VAC rms between inner and outer contacts @ sea level

### Suggested Numbering for Quadrax Contacts



Differential Pairs, contacts 1-3, 2-4.

See page 243 for part number ordering of popularly used 38999 Series III connectors with 100 ohm quadrax contacts.

Quadrax differential pairs are 1 and 3, 2 and 4.

HIGH SPEED

Fiber Optics

Contacts Connectors Cables

EMI Filter Transient

26482 Matrix 2

83723 III Matrix | Pyle

26500 Pyle

5015 Crimp Rear Release Matrix

22992 Class I

Back-Shells

Options Others

# Quadrax Contacts for MIL-DTL-38999

## Series III, Application Data



### TV-R Series, MIL-DTL-38999 Series III\* Connectors

38999

QUADRAX CONTACTS FOR USE IN TV-R CONNECTORS								
Cable	Contact Part Number (Termination Instruction Sheet)**		Impedance (Ohms)	Inner Conductor (AWG)	Contact Size	Electrical Protocol††	Crimping Tools	
	Pin	Socket					Inner Contact	Outer Contact
Draka Fileca F-4703-3, F4704-4, Filotex ET 2PC236, Filotex ET2PF870, PIC Wire E50424 ABS0972, Tensolite 23450/04090X-4(LD) Draka Fileca F-4704-5, ABS1503 KD 24	21-033384-021 (L-2119-A)	21-033385-021 (L-2119-A)	100	24	8	Ethernet, 1000 Base-T Gigabit Ethernet	M22520/2-01 with Positioner M22520/2-37 or with Daniels Positioner K709	M22520/5-01 with Die Set M22520/5-45 (Location A)
Tensolite NF24Q100, NF24Q100-01, 24443/9P025X-4(LD), S280W502-4, 24443/03130X-4(LD), 24443/C20714X-4(LD), 24450/0120X-4(LD), NF24-2Q100, TYCO CEC-RWC-18664, GORE GSC-01-81869-01, 24443/03166X-4(LD), Thermax T956-4T200, Pic Wire E51424, Thermax MX100Q-24, NF24Q100-01-200C (Space), BMS13-72T03C04G024	21-033384-051 (L-2119-D)	21-033385-051 (L-2119-D)		24		Ethernet, 1000 Base-T Gigabit Ethernet		
Tensolite NF22Q100, NF22Q100-01, Thermax 956-5, GORE RCN 7688	21-033384-061 (L-2119-H)	21-033385-061 (L-2119-H)		22		Ethernet (100 Mbps), 1000 Base-T Gigabit Ethernet (1 Gbps)		
Tensolite NF26Q100, NF26Q100-01, NF26-2Q100, PIC E51426, Wirenetics W-3714-379	21-033384-071 (L-2119-AB)	21-033385-071 (L-2119-AB)		26		Ethernet (100 Mbps), 1000 Base-T Gigabit Ethernet (1 Gbps)		
S280W502-4/BMS13-72T03C04G024	21-033384-141 (BACC47GM1)	21-033385-141 (BACC45GN1)		24				
Draka Fileca F-4704-6, Gore RCN 8672	21-033384-151 (L-2119-AW)	21-033385-151 (L-2119-AW)		26		Ethernet (100 Mbps), 1000 Base-T Gigabit Ethernet (1 Gbps)		
Tensolite NF24Q100-01 (same as 21-03338( ) -51, uses EMI Piggyback)	21-033384-161 (L-2119-BE)	21-033385-161 (L-2119-BE)		24		Ethernet (100 Mbps), 1000 Base-T Gigabit Ethernet (1 Gbps)		
Gore RCN8513, JSFY18-3	21-033384-171 (L-2119-BN)	21-033385-171 (L-2119-BN)		22		Ethernet (100 Mbps), 1000 Base-T Gigabit Ethernet (1 Gbps)		
Tensolite NF22Q100 Special Box pattern, only mates with 21-0333( )-181	21-033384-181 (L-2119-BP)	21-033385-181 (L-2119-BP)		22		Ethernet (100 Mbps), 1000 Base-T Gigabit Ethernet (1 Gbps)		
Tensolite NF24Q100, NF24Q100-01 for 2.5 Gbps applications	21-033384-191 (L-2119-BS)	21-033385-191 (L-2119-BS)		24		*Serial FPDP Applications (2.5 Gbps) (Typical app run at 150 Ohms) • HDMI 1.3		
Gore RCN 8647, RCN 8687	21-033384-301	21-033385-301	24					
USB2 (28433/02171LX-4)	21-033384-101†	21-033385-101†	90	USB2.0 (480 Mbps)				
Tensolite 24450/03089X-4(LD) Gore RCN8647	21-033384-211	21-033385-211	24	IEEE 1394B Firewire				
JSFY02-1, JSFY18	21-033384-221	21-033385-221	24	IEEE 1394B Firewire				
Gore RCN8487, JSFY18	21-033384-231	21-033385-231	110	IEEE 1394B Firewire				
Tensolite 24450/03089X-4(LD) Same as 21-03338( )-211 but Box pattern, mates with 21-03338( )-241 only	21-033384-241†	21-033385-241†	24	IEEE 1394B Firewire				
F-4703, ABS1503KD24	21-033384-281	21-033385-281	100	Meets EN3155-074				
Tensolite 26473/02006X-4(LD)/Gore RCN8328 (not for new designs, use 21-033450/1 series)	21-033384-31 (L-2119-B)	21-033385-031 (L-2119-B)	150	26				

CHART CONTINUES ON NEXT PAGE

QUADRAX CONTACT DATA

Contacts are inserted by hand. Refer to termination instructions listed. Contacts are removed with a removal tool. Recommended tool is MIL-I-81969/14-06, Daniels DRK-264-8. Refer to termination instructions listed. Finish of mating contact parts: Contact part numbers shown in the chart above are supplied gold plated per ASTM B488 Type II, Code C, .000050 min. thick over nickel plate per AMS-QQ-N-290, Class 2, .000030/.000150 thick.

Daniels crimping tools available from Daniels Mfg. Corp. 6103 Anno Ave., Orlando, FL 32809

\* Requires modified connector to accommodate keyed contacts.

\*\*Termination instructions are packaged with each contact and can be found on-line at: [www.amphenol-aerospace.com/serviceinstructions.asp](http://www.amphenol-aerospace.com/serviceinstructions.asp)

† Consult Amphenol for current release of this contact or instruction sheet if applicable.

†† Test reports available for indicated protocols. Consult Amphenol Aerospace. Typical applications run at 150 Ohms

III
HD
Dualok
II
I
SJT
Accessories
Aquacon
Herm/Seal
PCB

HIGH SPEED
Fiber Optics
Contacts Connectors Cables

EMI Filter
Transient

26482
Matrix 2

83723 III
Matrix   Pyle

26500
Pyle

5015
Crimp Rear Release Matrix

22992
Class 1

Back-Shell's
--------------

Options
Others

38999

## TV-R Series, MIL-DTL-38999 Series III\* Connectors

### QUADRAX CONTACTS FOR USE IN TV-R CONNECTORS

Cable	Contact Part Number (Termination Instruction Sheet)**		Impedance (Ohms)	Inner Conductor (AWG)	Contact Size	Electrical Protocol††	Crimping Tools	
	Pin	Socket					Inner Contact	Outer Contact
Tensolite 26473/02006X-4(LD) Same as 21-033384/5-31 but box pattern (not for new designs, use 21-033450/1 series) Gore RCN8328	21-033384-201†	21-033385-201†	150	26	8	Fibre-Channel (1 GBPS, 2 GBPS, 1G/2G), 1000 Base-CX (1.25 GBPS), SCSI-2 (3.2 GBPS)	M22520/2-01 with Positioner M22520/2-37 or with Daniels Positioner K709	M22520/5-01 with Die Set M22520/5-45 (Location A)
Gore RCN7625	21-033384-271	21-033385-271						
Tensolite 26473/02006X-4(LD), Gore RCN8328	21-033450-001 (L-2119-BW)	21-033451-001 (L-2119-BW)		26				
Tensolite 26473/02006X-4(LD), Gore RCN8328 (same as 21-033450/1-1 except box pattern. Mates with 21-033450/1-11 only.	21-033450-011†	21-033451-011†		26				

#### Quadrax PCB Contacts

Contact Part Number		Impedance (Ohms)	L Dim	Pretinned
Pin	Socket			
21-033398-021	21-033397-021	100 Ohm	1.035	X
21-033398-031	21-033397-031	100 Ohm	0.866	
21-033398-061	21-033397-061	150 Ohm	1.035	
21-033398-071	21-033397-071	150 Ohm	0.494	X
21-033398-081	21-033397-081	150 Ohm	0.780	X
21-033398-091	21-033397-091	100 Ohm	0.840	X
21-033398-111	21-033397-111	100 Ohm	0.708	
21-033398-121	21-033397-121	100 Ohm	0.859	
21-033398-131	21-033397-131	150 Ohm	0.780	X
21-033398-141	21-033397-141	100 Ohm	0.615	
21-033398-151	21-033397-151	150 Ohm	0.815	
21-033398-191	21-033397-191	100 Ohm	0.605	
21-033398-211	21-033397-211	150 Ohm	0.815	X
21-033398-221	21-033397-221	100 Ohm	0.775	
21-033398-231	21-033397-231	100 Ohm	0.494	
21-033398-241	21-033397-241	100 Ohm	0.741	
21-033398-251	21-033397-251	100 Ohm	0.788	
21-033398-271	21-033397-271	100 Ohm	0.741	
21-033398-281	21-033397-281	100 Ohm	0.806	
21-033398-291	21-033397-291	100 Ohm	1.035	
21-033398-301	21-033397-301	100 Ohm	0.836	
21-033398-311	21-033397-311	100 Ohm	0.940	
21-033398-341	21-033397-341	100 Ohm	0.901	
21-033398-351	21-033397-351	100 Ohm	0.871	
21-033398-361	21-033397-361	100 Ohm	0.939	
21-033398-371	21-033397-371	100 Ohm	0.672	
21-033398-381	21-033397-381	100 Ohm	0.914	
21-033398-391	21-033397-391	100 Ohm	0.360	
21-033398-401	21-033397-401	100 Ohm	1.009	
21-033398-411	21-033397-411	150 Ohm	0.866	
21-033398-421	21-033397-421	100 Ohm	1.169	
21-033398-431	21-033397-431	100 Ohm	0.819	
21-033398-451	21-033397-451	150 Ohm	0.494	
21-033398-461	21-033397-461	100 Ohm	0.761	
21-033398-471	21-033397-471	100 Ohm	0.889	
21-033398-481	21-033397-481	100 Ohm	0.971	
21-033398-491	21-033397-491	100 Ohm	0.418	
21-033398-501	21-033397-501	100 Ohm	0.875	
21-033398-511	21-033397-511	100/150 Ohm	0.699	
21-033398-521	21-033397-521	100 Ohm	0.582	
21-033398-531	21-033397-531	100 Ohm	0.666	
21-033398-541	21-033397-541	100 Ohm	0.946	
21-033398-551	21-033397-551	100 Ohm	0.788	X
21-033398-561	21-033397-561	100 Ohm	0.815	

#### Quadrax PCB Contacts

Contact Part Number		Impedance (Ohms)	L Dim	Pretinned
Pin	Socket			
21-033398-581	21-033397-581	100 Ohm	0.721	
21-033398-591	21-033397-591	100/150 Ohm	0.939	
21-033398-601	21-033397-601	100 Ohm	0.939	
21-033398-611	21-033397-611	100 Ohm	1.366	
21-033452-011	21-033453-011	150 Ohm	1.035 (mates to 21-033450/51 series)	
21-033452-021	21-033453-021	150 Ohm	0.815 (mates to 21-033450/51 series)	
21-033452-031	21-033453-031	150 Ohm	0.815 (mates to 21-033450/51 series)	X
21-033452-041	21-033453-041	150 Ohm	0.866 (mates to 21-033450/51 series)	
21-033452-051	21-033453-051	150 Ohm	0.494 (mates to 21-033450/51 series)	
21-033452-061	21-033453-061	150 Ohm	0.582 (mates to 21-033450/51 series)	
21-033452-071	21-033453-071	150 Ohm	0.939 (mates to 21-033450/51 series)	

Daniels crimping tools are available from Daniels Mfg. Corp. 6103 Anno Ave., Orlando, FL 32809

\* Requires modified connector to accommodate keyed contacts.

\*\* Termination instructions are packaged with each contact and can be found on-line at [www.amphenol-aerospace.com/serviceinstructions.asp](http://www.amphenol-aerospace.com/serviceinstructions.asp)

† Consult Amphenol Aerospace for current release of this contact or instruction sheet if applicable.

†† Test reports available for indicated protocols. Consult Amphenol Aerospace.

\*\*\* Must be used with 21-033321-005 piggyback grommet seal.

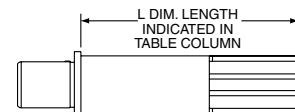
#### SEALING PLUGS

Sealing Plugs for use with D38999 Connectors using Quadrax Contacts - Size 8 Cavities	Part Number
***Standard Plastic	T3-4008-59P
Standard Plastic to be used with PCB tails (shorter tail length)	T3-4008-59P1
***Metal sealing plug - can be used when mating with contacts on mating half	21-033899-8Q1
Metal sealing plug used with PCB's and mating contact on mating half	21-033899-8Q2

#### PIGGYBACK GROMMET

Grommet for use with D38999 Connectors using Quadrax Contacts	Part Number
Metallized piggyback grommet	21-033321-023

Indicated length given in chart at left is the distance from the rear of the contact retention shoulder to the tip of the PCB tails.



Note: It does not indicate stickout length when installed in D38999 connector.