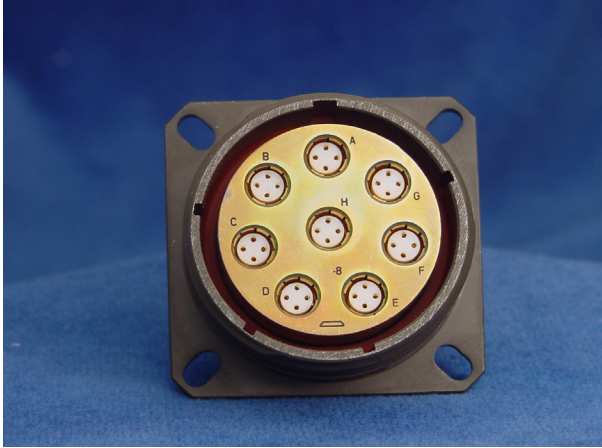
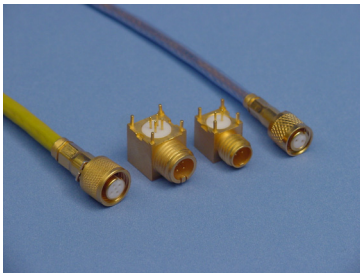


Amphenol Aerospace

Size 8 High Speed Quadrax and Differential Twinax Contacts
For use in MIL-DTL-38999 Subminiature Cylindrical and
Arinc 600 Rectangular Connectors.



D38999 Series III Groundplane
Connector with Quadrax PCB
Sockets Installed



**Quadrax and
Twinax
Transition plugs
and receptacle
adapters**

- Quadrax contacts consist of an outer contact with four strategically spaced inner contacts forming two 100 or 150 Ohm matched impedance differential pairs.
- Differential Twinax consist of an outer contact with two inner contacts spaced to form one 100 or 150 Ohm matched impedance differential pair.

**Contacts can be used in connectors for
Ethernet 100 Base-T- 100 Ohm
Gigabit Ethernet 1000 Base-T- 100 Ohm
Fibre-Channel -150 Ohm
IEEE 1394B FireWire- 110 Ohm
applications.**

Typical Electrical Performance:

Bandwidth: Up to 3 Gigahertz.

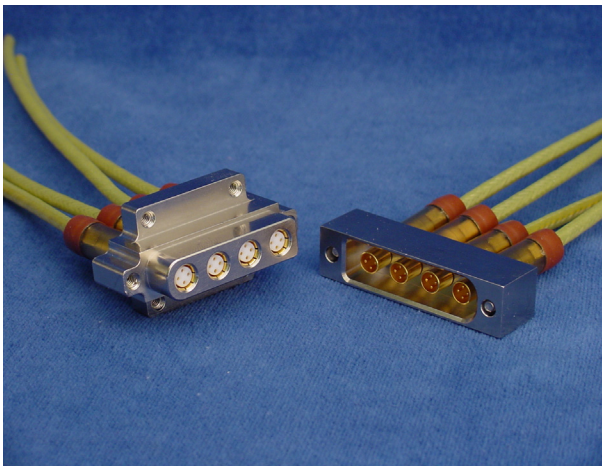
Data Rate: Exceeding 2 Gbits/sec

Voltage Rating: 500 Vrms max. @ sea level

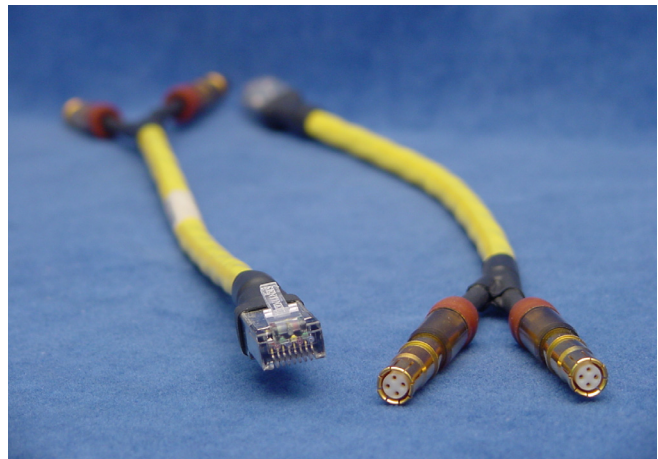
Dielectric Withstanding Voltage:

1000 VAC rms between all inner contacts @
sea level

500 VAC rms between inner and outer
contacts @ sea level.



Four bay Rectangular with Quadrax



Eight wire Gigabit Ethernet Assembly

Below is a list of contact part numbers available but not limited to the cables listed. All contacts are available kitted with or installed into ARINC 600 and specially modified MIL-DTL-38999 connectors. Consult factory for cables not listed.

D38999			
Description	Part Number	Cable Part Number	Impedance
Quadrax Socket	21-33385-21	Draka Fileca F-4703-3, F4704-4, Filotex ET 2PC236, Filotex ET2PF870, PIC Wire E50424	100 Ohm
	21-33385-31	Tensolite 26473/02006X-4(LD)/ Gore RCN8328	150 Ohm
	21-33385-51	Tensolite NF24Q100, NF24Q100-01, 24443/9P025X-4(LD), S280W502-4, 24443/03130X-4(LD), Thermax 956-4TN, Tensolite 24450/01201X-4(LD), NF24-2Q100	100 Ohm
	21-33385-61	Tensolite NF22Q100, NF22Q100-01, Thermax 956-5, Draka Fileca F-4704-5, GORE RCN 7688	100 Ohm
	21-33385-61	Tensolite 24450/03089X-4(LD)	110 Ohm
	21-33385-71	Tensolite NF26Q100, NF26Q100-01, NF26-2Q100	100 Ohm
	21-33385-91	JSFY02-1	110 Ohm
	21-33385-111	Gore RCN8487, JSFY18	110 Ohm
	21-33385-141 Ref Boeing BACC47GN1	S280W502-4	100 ohm
	21-33385-151	Draka Fileca F-4704-6	100 Ohm
PCB Socket	21-33397-21	PCB (1.035 Length)	100 Ohm
	21-33397-31	PCB (.866 Length)	100 Ohm
	21-33397-61	PCB (1.035 Length)	150 Ohm
Quadrax Pin	21-33384-21	Draka Fileca F-4703-3, F4704-4, Filotex ET 2PC236, PIC Wire E50424	100 Ohm
	21-33384-31	Tensolite 26473/02006X-4(LD)/ Gore RCN8328	150 Ohm
	21-33384-51	Tensolite NF24Q100, NF24Q100-01, 24443/9P025X-4(LD), S280W502-4, 24443/03130X-4(LD), Thermax 956-4TN, Tensolite 24450/01201X-4(LD), NF24-2Q100	100 Ohm
	21-33384-61	Tensolite NF22Q100 , NF22Q100-01, Thermax 956-5, Draka Fileca F-4704-5	100 Ohm
	21-33384-61	Tensolite 24450/03089X-4(LD)	110 Ohm
	21-33384-71	Tensolite NF26Q100, NF26Q100-01, NF26-2Q100	100 Ohm
	21-33384-91	JSFY02-1	110 Ohm
	21-33384-111	Gore RCN8487, JSFY18	110 Ohm
	21-33384-141 Ref Boeing BACC47GM1	S280W502-4	100 ohm
	21-33384-151	Draka Fileca F-4704-6	100 Ohm
PCB Pin	21-33398-21	PCB (1.035 Length)	100 Ohm
	21-33398-31	PCB (.866 Length)	100 Ohm
	21-33398-61	PCB (1.035 Length)	150 Ohm
	21-33425-1	Right Angle Special PCB	100 Ohm
	21-33398-271	PCb Special (.430 Length)	100 Ohm

Description	Part Number	Cable Part Number	Impedance
Transition Adapters	21-33836-21	Plug contact, Tensolite 26473/02006X-4(LD)/ Gore RCN8328	150 Ohm
	21-33837-31	PCB Receptacle Straight	150 Ohm
	21-33837-21	PCB receptacle 90 degree	150 Ohm
	21-33836-31	Plug contact, Tensolite NF24Q100	100 Ohm
	21-33836-41	Plug contact ,Tensolite NF22Q100, NF22Q100-01, Thermax 956-5	100 Ohm
	21-33836-51	Plug contact Draka Fileca F-4703-3, F-4704-4	100 Ohm
	21-33836-61	Plug contact, NF26Q100 cable	100 Ohm
	21-33837-41	PCB receptacle 90 degree	100 Ohm
	21-33837-51	PCB receptacle straight	100 Ohm
	21-33837-61	PCB receptacle straight , special tail length (.200)	100 Ohm
	21-33837-71	Cable to board 90 degree adapter	150 Ohm
	21-33837-91	Straight in line recept (threaded) NF24Q100 cable	100 Ohm
	21-33837-101	Straight PCB cable to board adapter NF24Q100 cable	100 Ohm
	21-33837-111	Straight PCB cable to board adapter 26473/02006X-4(LD) cable	150 Ohm
	21-33837-141	Cable to board 90 degree adapter	100 Ohm
Sealing Plugs	T3-4008-59P	Standard Plastic	
	T3-4008-59P1	Standard Plastic to be used with PCB tails (shorter tail length)	
	21-33899-8	Metal sealing plug (same as T3-4008-59P)	
	21-33899-8Q1	Metal sealing plug can be used when mating with contacts on mating half	
	21-33899-8Q2	Metal sealing plug used with PCB's and mating contact on mating half	
	21-33321-23	Metalized piggyback grommet	
Differential Twinax Socket	21-33388-21	Tensolite 24463/9P025X-2(LD), Thermax 12814, ST5M1284-003 (98 Ohm), 26463/70460X-2 (98 Ohm), PIC E10224	100 Ohm
	21-33388-31	Tensolite 26483/03071X-2(LD)	150 Ohm
	21-33388-41	Tensolite 26453/03184X-2(LD), Thermax 956-626Z, GORE GSC-05-827300-00	100 Ohm
	21-33388-51	GORE GSC-05-827300-00 Vacuum Degassed	100 Ohm
	21-33388-61	23460/05114X-2LD	100 Ohm
	21-03388-71	Raychem 0026A0024	100 Ohm
Twinax Socket PCB	21-33835-1	PCB (1.035 Length)	100 Ohm
	21-33835-21	PCB (1.035 Length)	150 Ohm
Differential Twinax Pin	21-33387-21	Tensolite 24463/9P025X-2(LD), Thermax 12814, ST5M1284-003 (98 Ohm), 26463/70460X-2 (98 Ohm), PIC E10224	100 Ohm
	21-33387-31	Tensolite 26483/03071X-2(LD)	150 Ohm

Differential Twinax Pin (Con't)	21-33387-41	Tensolite 26453/03184X-2(LD), Thermax 956-626Z, GORE GSC-05-827300-00	100 Ohm
	21-33387-51	GORE GSC-05-827300-00 Vacuum Degassed	
	21-33387-61	23460/05114X-2LD	100 Ohm
	21-03388-71	Raychem 0026A0024	100 Ohm
Twinax Pin PCB	21-33834-1	PCB (1.035 Length)	100 Ohm
	21-33834-21	PCB (1.035 Length)	150 Ohm
Transition Adapters-Twinax	21-33833-31	Straight receptacle	100 Ohm
	21-33833-21	90 degree Receptacle	100 Ohm
	21-33833-91	90 degree Receptacle (smaller profile)	100 Ohm
	21-33833-51	90 degree PCB cable to board, cable 224463/9P025X-2	100 Ohm
	21-33833-121	90 degree Receptacle (small profile .310)	150 Ohm
	21-33832-21	Plug for 24463/9P025X-2(LD)	100 Ohm
	21-33832-81	Plug for M17/176-00002	78 Ohm
	21-33833-101	90 degree PCB cable to board , cable 26483/03071X-2	150 Ohm
	21-33832-91	Plug for 26483/03071X-2	150 Ohm
	21-33833-111	90 degree Receptacle	150 Ohm
	21-33832-101	Plug for 26483/03071X-2 (mates to 21-33833-121)	150 Ohm
ARINC 600			
Quadrax Socket	21-33383-21	Tensolite NF24Q100, 24443/9P025X-4(LD), S280W502-4, 24443/03130X-4(LD)	100 Ohm
	21-33383-31	Draka Fileca F-4703-3	100 Ohm
	21-33383-61	Tensolite 26473/02006X-4(LD), Gore RCN8328	150 Ohm
	21-33383-71	JSFY02-1	110 Ohm
	21-33383-101	Draka Fileca F-4704-5, NF22Q100	100 Ohm
Socket PCB	21-33397-1	PCB (1.037 Length)	100 Ohm
Quadrax Pin	21-33382-21	Tensolite NF24Q100, 24443/9P025X-4(LD), S280W502-4, 24443/03130X-4(LD)	100 Ohm
	21-33382-31	Draka Fileca F-4703-3	100 Ohm
	21-33382-61	Tensolite 26473/02006X-4(LD), Gore RCN8328	150 Ohm
	21-33382-71	JSFY02-1	
	21-33382-101	Draka Fileca F-4704-5, NF22Q100	100 Ohm
Pin PCB	21-33398-41	PCB (.296 Length)	100 Ohm
	21-33398-1	PCB (1.037 Length)	100 Ohm
	21-33398-51	PCB (.296 Length)	100 Ohm
Differential Twinax Socket	21-33379-21	ABS0386WF24	100 Ohm
	21-33379-31	ASNE0272TK22	100 Ohm
	21-33379-41	ASNE0272TK24	100 Ohm
	21-33379-51	Tensolite 24463/9P025X-2(LD)	100 Ohm
Differential Twinax Pin	21-33378-21	ABS0386WF24	100 Ohm
	21-33378-31	ASNE0272TK22	100 Ohm
	21-33378-41	ASNE0272TK24	100 Ohm
	21-33378-51	Tensolite 24463/9P025X-2(LD)	100 Ohm

How to Order

Amphenol Quadrax Connectors can be ordered by coded part number. The below connectors are kitted with the 100 Ohm Quadrax 21-033385-051 Socket and 21-033384-051 Pin contacts only. For contacts other than the above please consult factory for part numbers.

Example **TVP00RQW21-75P**

Connector Type

TV designates Tri-Start Series Connector
TVP designates back panel mounted receptacle

Shell Style

00 designates wall mount receptacle
02 designates box mount receptacle available only with PCB tails and epoxy backfilled (non-removable)
06 designates straight plug
07 designates jam nut receptacle

Service Class

RQF electroless nickel plated aluminum
RGQF electroless nickel plated ground plane aluminum
RQW olive drab cadmium plate
RGQW olive drab cadmium plated ground plane aluminum
RQB NiAlBronze
RGQB NiAlBronze ground plane
RQK corrosion resistance stainless steel
RGQK stainless steel ground plane

Shell Size / Insert arrangement available

MIL-DTL-38999, Sizes 9-25 (see attached page 4 with specific inserts available)

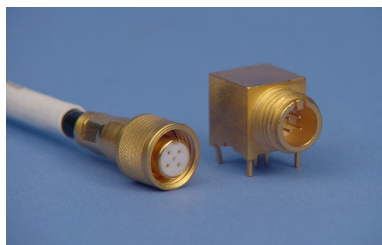
Contact Type

P designates pin contacts
S designates socket contacts

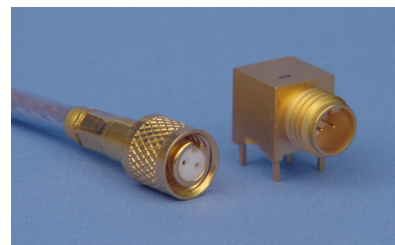
Also available are matched impedance Quadrax and Twinax Transition Adapters, which provide a method of launching from the High Speed connectors to the PCB boards. Non-threaded adapters for launching direct from the cable end to the board are also available. Part numbers vary depending on cable. Consult factory for more information.



Straight Quadrax
Receptacle Contact




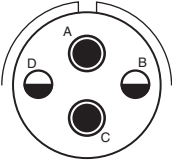
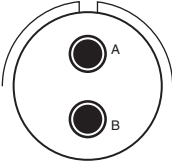
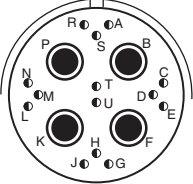
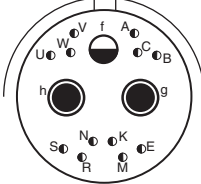
90 Degree Quadrax
receptacle contact and
transition plug

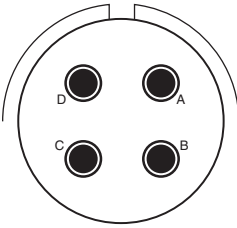
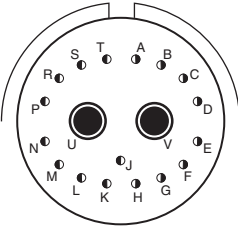
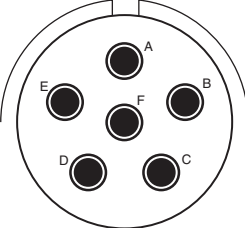
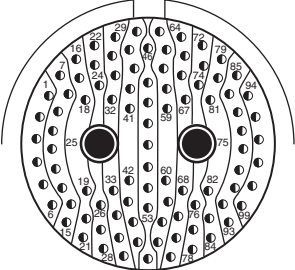


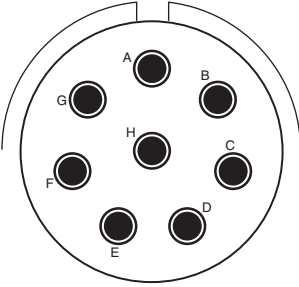
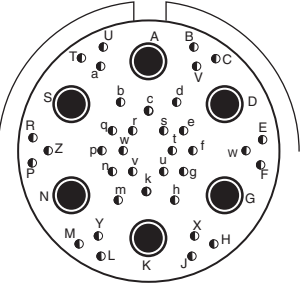
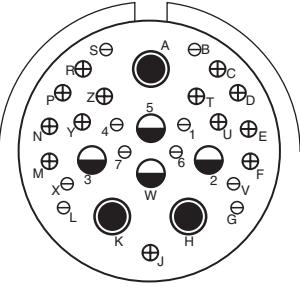
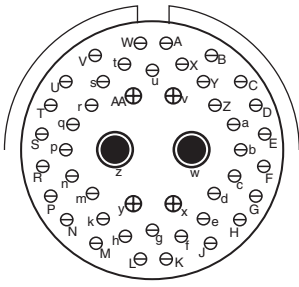
90 Degree Twinax
receptacle contact and
transition plug

Quadrax & Differential Twinax Contact insert arrangements for MIL-DTL-38999

front face of pin inserts illustrated

					
Insert Arrangement	9-5	17-22	17-52	19-18	19-31
Number of Contacts	1	2 2	2	14 4	2 1 12
Contact Size	8	12 8	8	22D 8	8 12 22D
	Grounded		Meets Boeing 17-82 Specification		

				
Insert Arrangement	21-75	21-79	23-6	25-7
Number of Contacts	4	17 2	6	97 2
Contact Size	8	22D 8	8	22D 8

				
Insert Arrangement	25.8	25-17	25-20	25-46
Number of Contacts	8	36 6	10 13 3 4	40 4 2
Contact Size	8	22D 8	20 16 8 12	20 16 8

CONTACT LEGEND

 8

 10

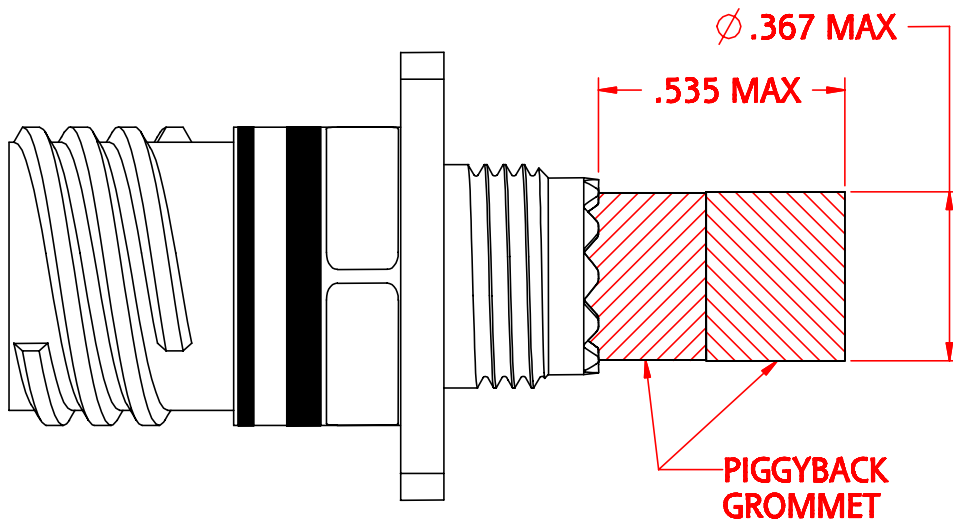
 12

 16

 20

 22D

Suggested Strain Relief



Due to the piggyback grommet interference with normal strain reliefs on the shell size 9 only, the recommended strain relief for the connector is :
Glenair Part number G65217 –Size 9 only
Sunbank S5430 Series . This series is recommended for all shell sizes.

Suggested Numbering for Quadrax and Twinax Contacts

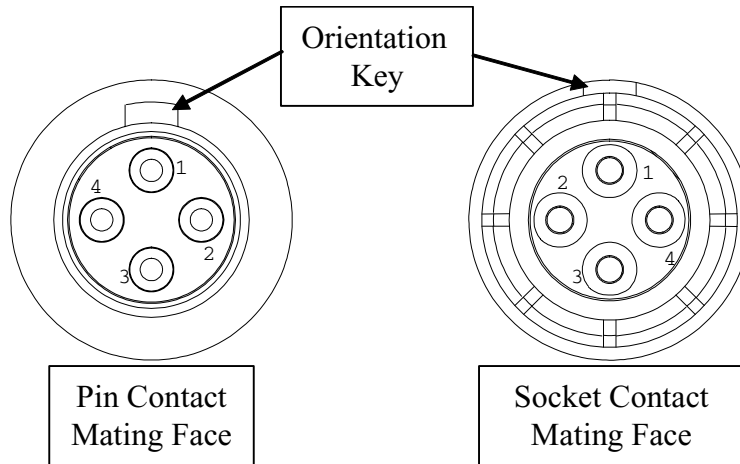


Figure 1 - Inner Contact Numbering, Quadrax

Differential pairs

1&3

2&4

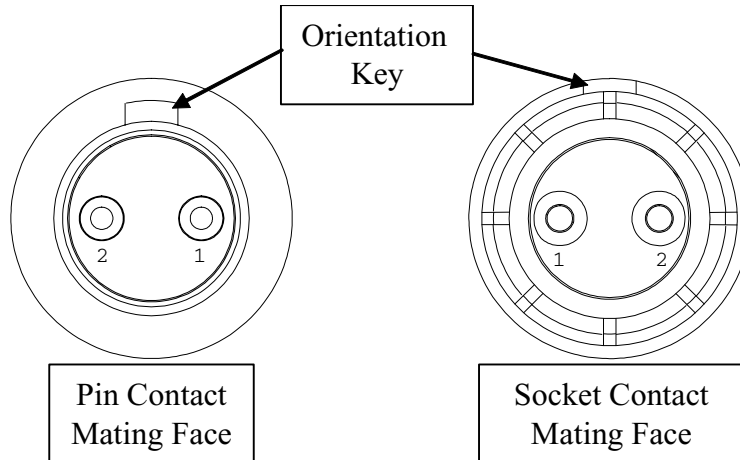


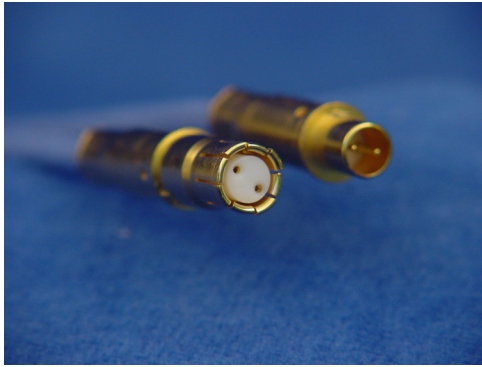
Figure 2 - Inner Contact Numbering, Twinax

Size 8 Quadrax mated pair terminated to Tensolite Cable NF24Q100

Differential Impedance:	100 Ohm +/-10	Ethernet 100 Base-T Cable IEEE1394 FireWire Cable
Attenuation on 22.5 Ft:	100 MHz : 1.78 dB 400 MHz : 3.94 dB 1.0 GHz : 7.55 dB 2.5 GHz : 15.8 dB 3.0 GHz : 19.1 dB	
Far End Cross Talk (FEXT) ²	> -30 dB up to 3.5 GHz	
Eye Pattern ¹	The minimum output eye opening with a 1-volt p-p input shall be 408 mV p-p measured at 50% of the period.	
¹ Differential mode, 22.5 feet test length, 100 ps rise time (20%-80%), 1.65 Gb/sec.		
² 22.5 feet test length, tested on HP8753ES Network Analyzer		

Size 8 Quadrax mated pair terminated to Tensolite Cable 26473/02006X-4(LD)

Differential Impedance:	150 Ohm +/-30	Fibre Channel Cable
Attenuation on 22.5 Ft:	512 MHz : 4.41 dB 1.06 GHz : 7.02 dB 1.65 GHz : 10.72 dB 2.00 GHz : 12.65 dB	
Far End Cross Talk (FEXT) ²	> -30 dB up to 3.5 GHz	
Eye Pattern ¹	The minimum output eye opening with a 1-volt p-p input shall be 438 mV p-p measured at 50% of the period.	
¹ Differential mode, 35 feet test length, 100 ps rise time (20%-80%), 1.65 Gb/sec.		
² 35 feet test length, tested on HP8753ES Network Analyzer		



Size 8 Differential Twinax mated pair terminated
Tensolite Cable 24463/9P025X-2(LD)

Ethernet 100 Base-T Cable
IEEE1394 FireWire Cable

Differential Impedance: 100 Ohm +/-10

Attenuation on 22.5 Ft:

608 MHz :	32.22 dB
1.85 GHz :	23.98 dB
2.31 GHz :	23.30 dB
3.31 GHz :	23.90 dB

Eye Pattern¹ The minimum output eye opening with a 1-volt p-p input shall be 434 mV p-p measured at 50% of the period.

¹ Differential mode, 22.5 feet test length, 100 ps rise time (20%-80%), 1.65 Gb/sec.