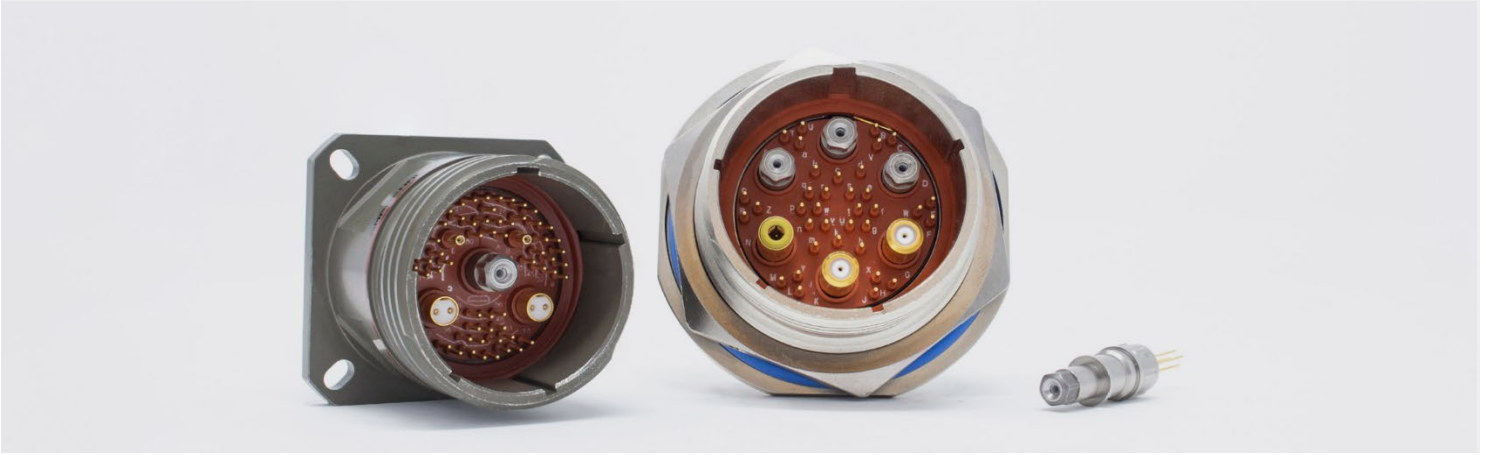
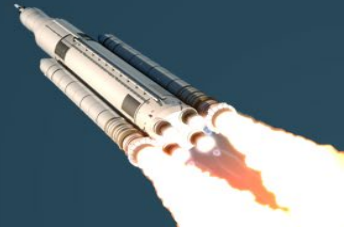


FIBERQUAD

RUGGED COPPER/ FIBER CONVERTER IN QUADRAX CONTACT



The FiberQuad is perfect for any high-speed and rugged Military, Aerospace, or Space application!



DESCRIPTION

Amphenol provides a high performance ruggedized Quadrax contact, known as FiberQuad, that embeds a fiber optic transmitter or receiver within the contact itself, along with the support electronics to provide a plug-and-play solution to our customers.

The contact is flexible enough to be a transmitter or receiver, support many wavelengths and modes, and support multiple protocols, including those which encoded and pathological. The contact fits within a standard Quadrax contact and can be installed in plugs and receptacles meant for Amphenol Quadrax 38999 connectors.

FEATURES

- Each Quadrax contact can contain a fiber optic transmitter or receiver
- Support for speeds up to 28.05 Gbps
- Support for 1300nm multi-mode (for legacy protocols such as 100-Base-FX), 1310nm single-mode, and 850nm multi-mode wavelengths

- Support for encoded data as well as pathological data
- Each contact can be installed in any Amphenol Quadrax 38999 Connector
- Onboard diagnostics and control
- Operating temperature: -40°C to +85°C
- Storage temperature: -55°C to +100°C for 10G parts
- TX_DIS and RX_LOS pins
- Support for low outgassing requirements

POWER SPECIFICATIONS

- Ethernet
- Fibre Channel
- ARINC-818
- PCI-Express
- Infiniband
- XAUI
- SDI / HD-SDI / 3G-HD-SDI
- DVI Dual Link
- Many others

ORDERING DETAILS

PART NUMBER	TX OR RX	WAVELENGTH	SIZE AND MODE	SPEED	INTERFACE TYPE
CF-170900-AXX	Transmit	850nm	50/125µm, MM	Up to 4.25Gbps	Encoded Data
CF-170900-BXX	Receive	850nm	50/125µm, MM	Up to 4.25Gbps	Encoded Data
CF-170900-CXX	Transmit	850nm	62.5/125µm, MM	Up to 4.25Gbps	Encoded Data
CF-170900-DXX	Receive	850nm	62.5/125µm, MM	Up to 4.25Gbps	Encoded Data
CF-170900-EXX	Transmit	850nm	50/125µm, MM	Up to 10.3125Gbps	Encoded Data
CF-170900-FXX	Receive	850nm	50/125µm, MM	Up to 10.3125Gbps	Encoded Data
CF-170900-GXX	Transmit	850nm	62.5/125µm, MM	Up to 10.3125Gbps	Encoded Data
CF-170900-HXX	Receive	850nm	62.5/125µm, MM	Up to 10.3125Gbps	Encoded Data
CF-170900-JXX ¹	Transmit	850nm	50/125µm, MM	Up to 28.05Gbps	Encoded Data
CF-170900-KXX ¹	Receive	850nm	50/125µm, MM	Up to 28.05Gbps	Encoded Data
CF-170900-LXX	Transmit	850nm	50/125µm, MM	Up to 4.25Gbps	Encoded Data
CF-170900-MXX	Receive	850nm	50/125µm, MM	Up to 4.25Gbps	Encoded Data
CF-170900-NXX	Transmit	1310nm	9/125µm, SM	Up to 4.25Gbps	*
CF-170900-PXX	Receive	1310nm	9/125µm, SM	Up to 4.25Gbps	*
CF-170900-QXX	Transmit	1310nm	9/125µm, SM	Up to 10.3125Gbps	*
CF-170900-RXX	Receive	1310nm	9/125µm, SM	Up to 10.3125Gbps	*
CF-170900-SXX	Transmit	850nm	50/125µm, MM	Up to 10.3125Gbps	DVI Data
CF-170900-TXX	Receive	850nm	50/125µm, MM	Up to 10.3125Gbps	DVI Data

*Contact factory for more information

¹Coming Soon!

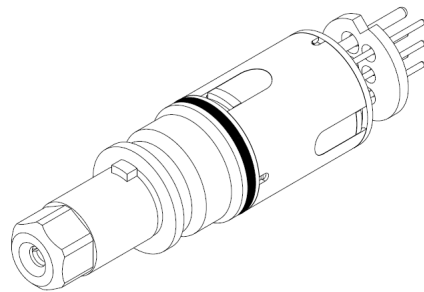
To complete part number for FIBERQUAD, XX represents code for lead length in inches ± 0.015 in, see table below

SUFFIX CODE	LENGTH ± 0.015 in
01	0.333 in
02	0.270 in
03	0.158 in

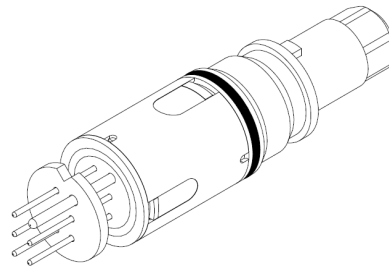
*Contact factory for any information not listed

MECHANICAL SPECIFICATIONS - CF-170900-A/B/C/DXXX

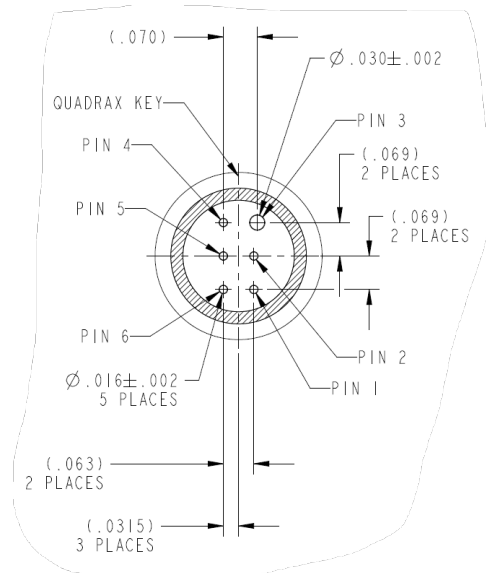
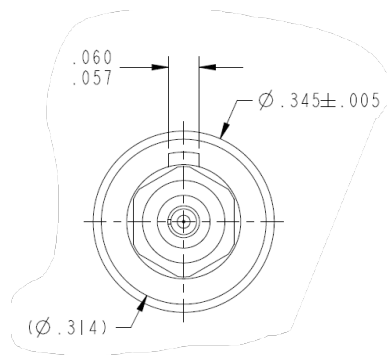
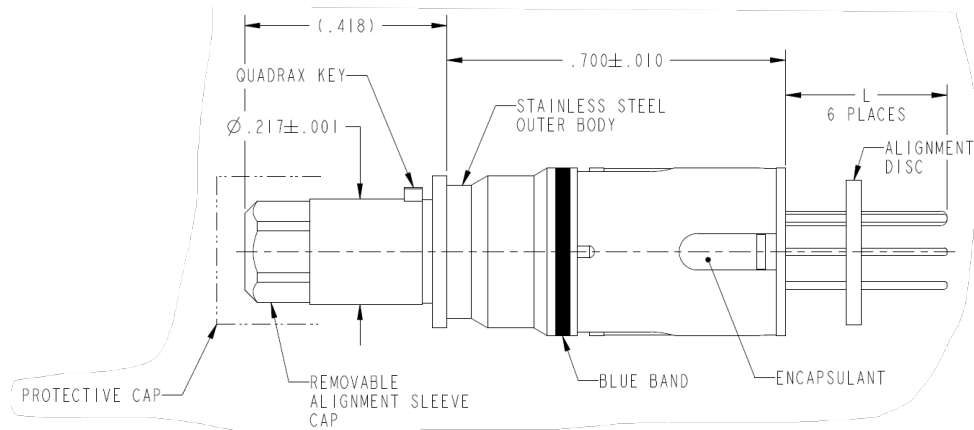
DIMENSIONS



FRONT ISO VIEW



REAR ISO VIEW



PINOUT – CF-170900-A/CXX, TRANSMITTER

PIN ID	FUNCTION	DESCRIPTION
1	DISABLE	Optical transmit disable pin. To enable the optical transmitter, apply 0VDC. To disable the optical transmitter, apply 3.3VDC or leave floating.
2	VCC	3.3 VDC
3	GND	Ground return
4	FAULT	Fiber optic transmitter fault
5	INPUT –	High speed AC coupled differential input signals
6	INPUT +	

PINOUT – CF-170900-B/DXX, RECEIVER

PIN ID	FUNCTION	DESCRIPTION
1	GND	Ground return
2	VCC	3.3 VDC
3	GND	Ground return
4	LOS	Optical receive loss of signal indicator. High level indicates the amplitude is below the programmed threshold level.
5	OUTPUT –	High speed AC coupled differential output signals
6	OUTPUT+	

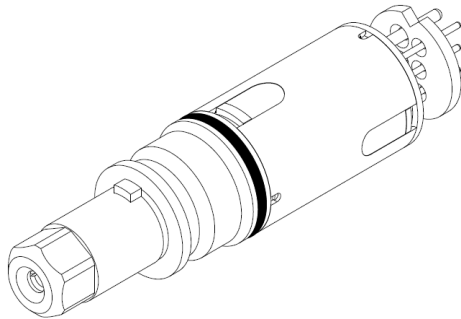
OPTO-ELECTRIC SPECIFICATIONS – CF-170900-A/B/C/DXX

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Supply Voltage	V _{DD}	-	3.3	3.8	V
Storage Temperature	T _{STO}	-40	-	85	°C
Operating Case Temperature	T _{OP}	-40	-	85	°C

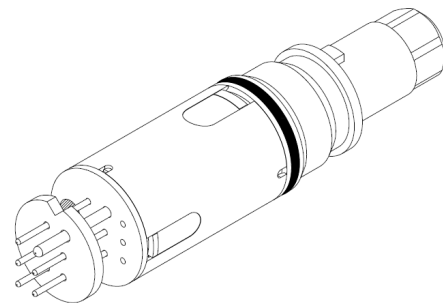
PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Bit Rate	T _{BAUD}	1.25	-	4.25	Gbps
Center Wavelength		840	-	860	Nm
Average Transmit Power	TxP _{AVG}	-5	-	-1	dBm
Receiver Sensitivity	RxP _{AVG}	-	-15.0	-14.1	dBm

MECHANICAL SPECIFICATIONS - CF-170900-E/F/G/H/L/MXXX

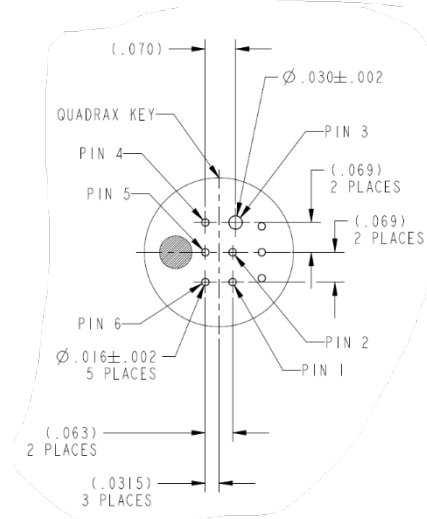
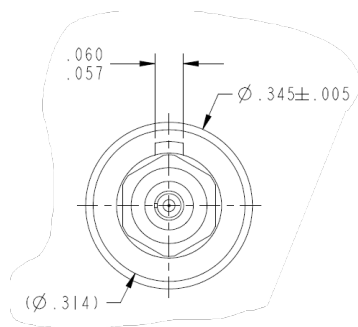
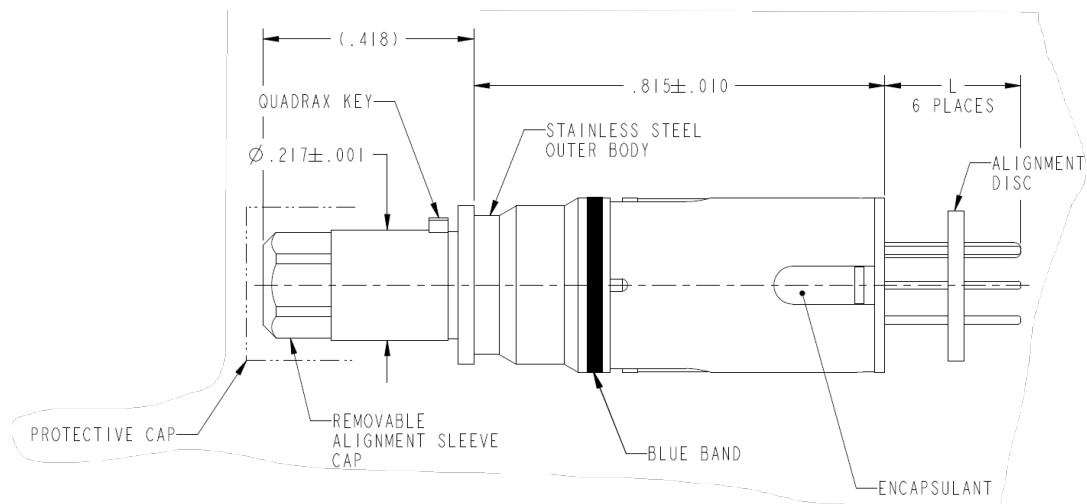
DIMENSIONS



FRONT ISO VIEW



REAR ISO VIEW



PINOUT – CF-170900-E/G/LXX, TRANSMITTER

PIN ID	FUNCTION	DESCRIPTION
1	DISABLE	Optical transmit disable pin. To enable the optical transmitter, apply 0VDC. To disable the optical transmitter, apply 3.3VDC or leave floating.
2	VCC	3.3 VDC
3	GND	Ground return
4	FAULT	Fiber optic transmitter fault
5	INPUT –	High speed AC coupled differential input signals
6	INPUT +	

PINOUT – CF-170900-F/H/MXX, RECEIVER

PIN ID	FUNCTION	DESCRIPTION
1	GND	Ground return
2	VCC	3.3 VDC
3	GND	Ground return
4	LOS	Optical receive loss of signal indicator. High level indicates the amplitude is below the programmed threshold level.
5	OUTPUT –	High speed AC coupled differential output signals
6	OUTPUT+	

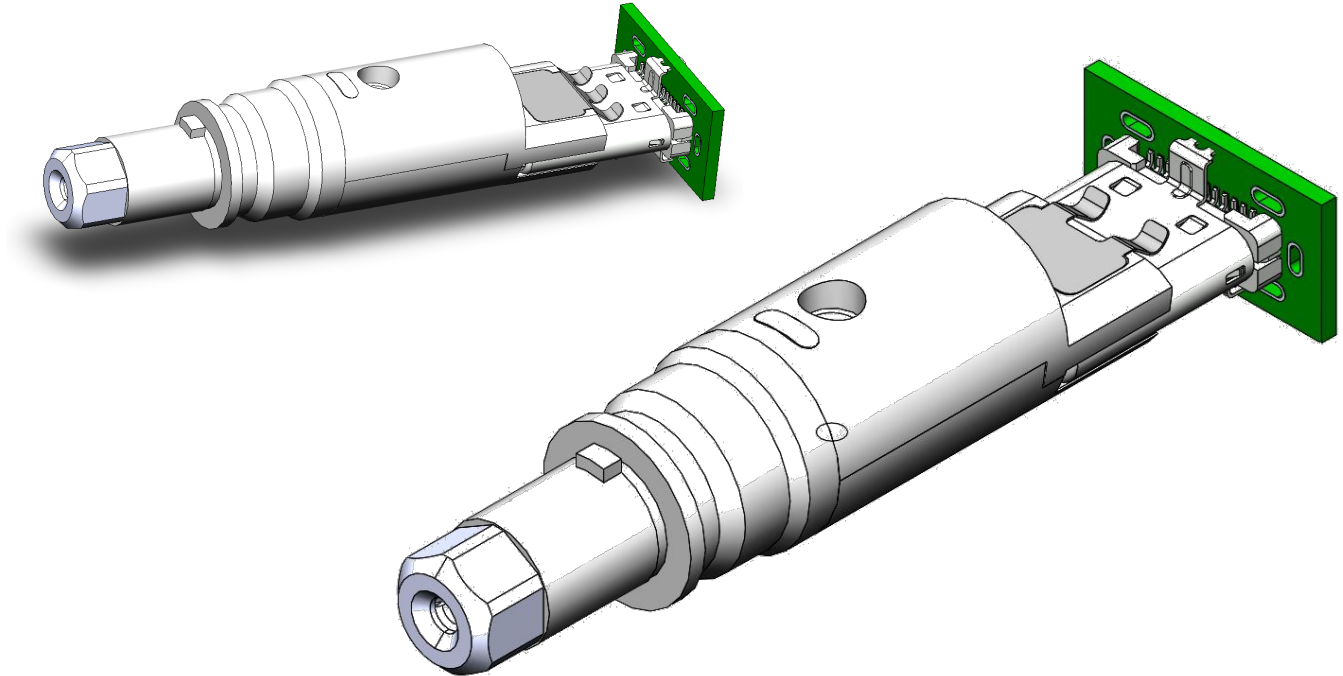
OPTO-ELECTRIC SPECIFICATIONS – CF-170900-E/F/G/H/L/MXX

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Supply Voltage	V _{DD}	-	3.3	3.8	V
Storage Temperature	T _{STO}	-40	-	85	°C
Operating Case Temperature	T _{OP}	-55	-	100	°C

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Bit Rate	T _{BAUD}	1.25	-	4.25	Gbps
Center Wavelength		840	-	860	Nm
Average Transmit Power	TxP _{AVG}	-5	-	0	dBm
Receiver Sensitivity	RxP _{AVG}	-	-11.8	-11	dBm

CF-170900-J/KXX – 25GBPS FIBERQUAD

High-speed and rugged size 8 contact to USB-C connector supporting USB 4.0 specifications.



OPTO-ELECTRIC SPECIFICATIONS - CF-170900-J/KXX

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Supply Voltage	V _{DD}	-	3.3	3.8	V
Storage Temperature	T _{STO}	-55	-	100	°C
Operating Case Temperature	T _{OP}	-40	-	85	°C
Humidity	RH	5	-	85	%

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Bit Rate	T _{BAUD}	1.25	25.78125	28.05	Gbps
Center Wavelength		840	-	860	Nm
Average Transmit Power	TxP _{AVG}	-2	-	3	dBm
Receiver Sensitivity	RxP _{AVG}	-	-11.8	-9.1	dBm

INDUSTRY CROSS REFERENCE

Amphenol Part Number	Glenair Part Number	Moog Part Number
CF-170900-AXX	050-301-XX-T	P44F-TS1x-LK
CF-170900-BXX	050-301-XX-R	P44F-RS1x-LX
CF-170900-AXX	050-307-XX-T	P44F-TS1x-LK
CF-170900-BXX	050-307-XX-R	P44F-RS1x-LX
CF-170900-AXX	050-367-XX-T	P44F-TS1x-LK
CF-170900-BXX	050-367-XX-R	P44F-RS1x-LX
CF-170900-AXX	050-399 -XX-T	P44F-TS1x-LK
CF-170900-BXX	050-399 -XX-R	P44F-RS1x-LX

Note: Amphenol part may not be footprint compatible, however, performance metrics are equivalent or superior.

ACCESSORIES

TEST CABLES

PART NUMBER	DESCRIPTION
CF-006008-072	Fiber Quad Evaluation kit for 4.25Gbps FiberQuad*
CF-006008-073	Fiber Quad Evaluation kit for 10.3125Gbps FiberQuad*
CF-006008-074	Fiber Quad Evaluation kit for 28.05Gbps FiberQuad*
CF-198201-000	ARINC 801 Termini Adapter
CF-901200-098B	ARINC 801 to LC Cable

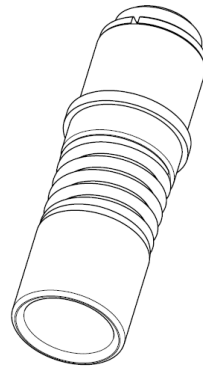
*Supplemental datasheet

Contact Amphenol for any options not listed

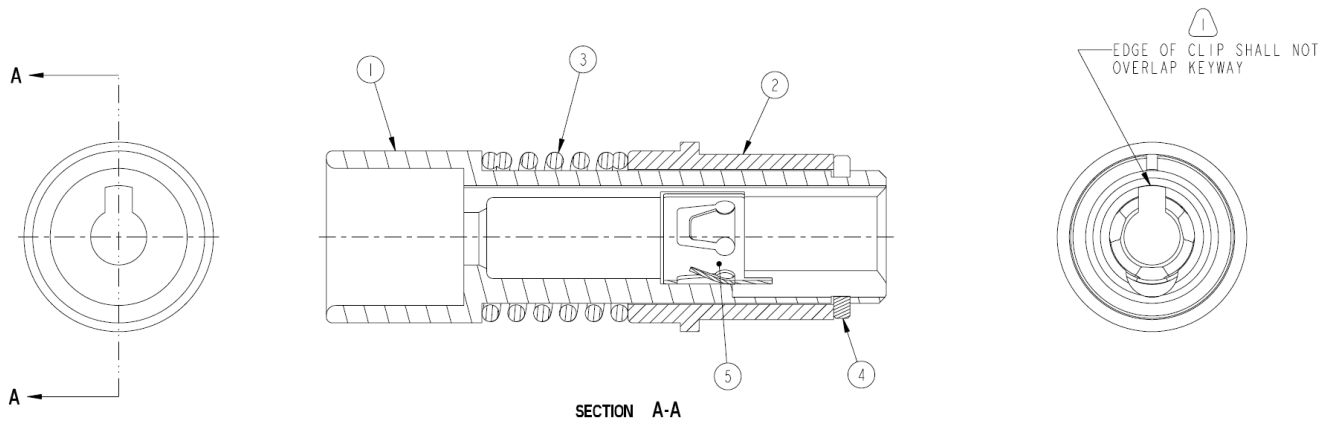
FIBERQUAD EVALUATION KIT



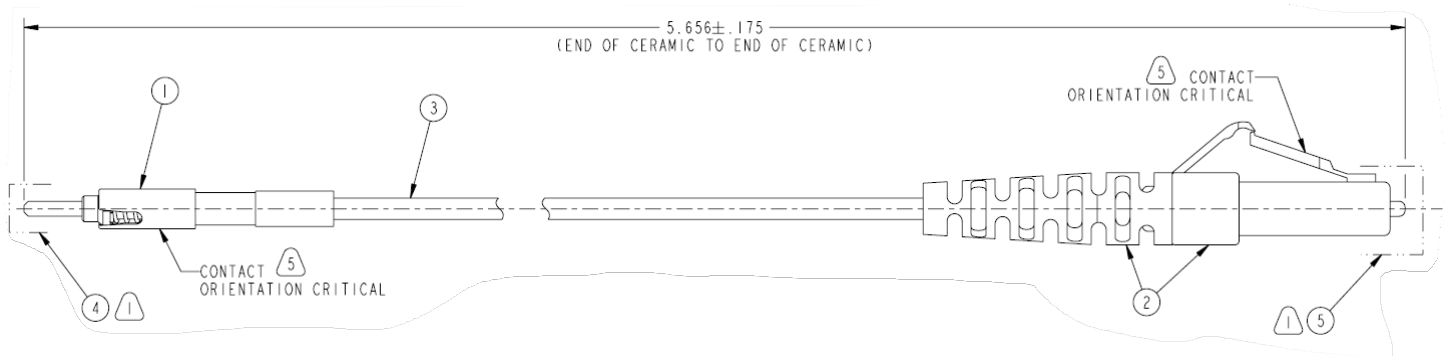
CF-198201-000



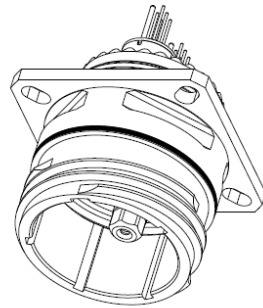
ISOMETRIC VIEW



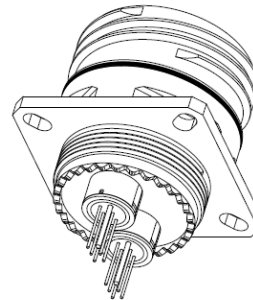
CF-901200-098B



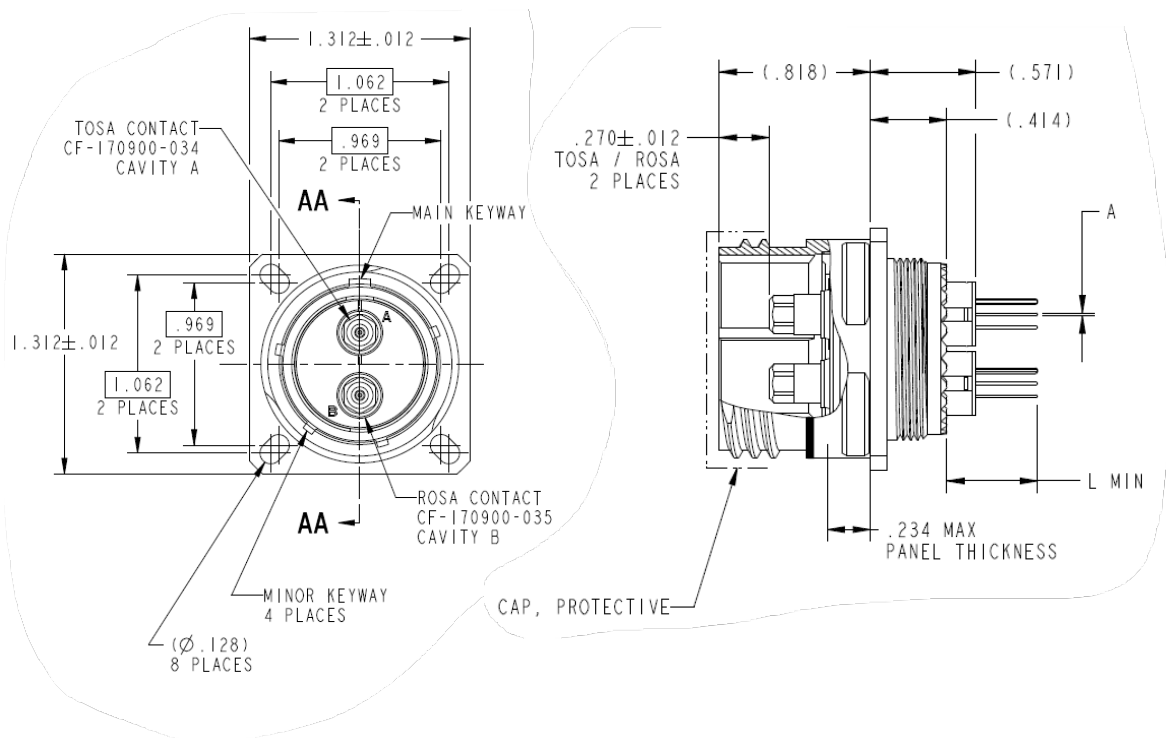
CF-020012-042X – EXAMPLE CONNECTOR WITH 4.25Gbps FIBERQUAD

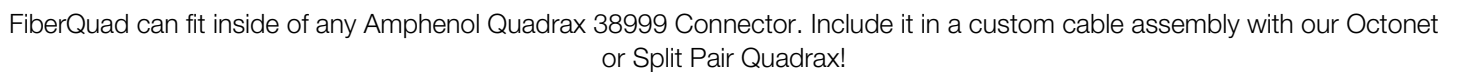


FRONT ISOMETRIC VIEW



REAR ISOMETRIC VIEW





Amphenol Ruggedization Design

OVERVIEW:

Amphenol integrated electronic products are designed and manufactured to our Ruggedization guidelines listed below. These guidelines ensure years of reliable operation in harsh environment applications where extreme operating temperatures, shock, vibration, and corrosive atmospheres are regularly experienced. Unless otherwise noted, the parts conform to the below specifications.

TEMPERATURE:

- Operating Temperature- Thermal Cycles between -40°C and 85°C while device is operating
- Temperature is measured at chassis housing or card edge
- Storage Temperature- Thermal Cycles between -55°C and 125°C

HUMIDITY:

- Operating Humidity- Humidity cycle between 0-100% non-condensing humidity while device operating
- Storage Humidity- Humidity cycle between 0-100% condensing humidity

SEALING:

- Sealing can be optionally provided at the MIL-DTL-38999 interface with up to 10^{-5} cc/sec performance

SHOCK AND VIBRATION:

- Sine Vibration - 10g Peak, 5-2,000Hz
 - Based on a sine sweep duration of 10 minutes per axis in each of three mutually perpendicular axes. May be displacement limited from 5 to 44 Hz, depending on specific test.
- Random Vibration - 0.0005 @ 5Hz, 0.1 @ 15 Hz, 0.1 @ 2,000 Hz
 - 60 minutes per axis, in each of three mutually perpendicular axes.
- 40 G Peak Shock Cycle
 - Three hits in each axis, both directions, ½ sine and terminal-peak saw tooth, Total 36 hits.

FLUIDS SUSEPTABILITY:

- MIL-DTL-38999 receptacle interface per EIA-364-10E

ALTITUDE:

- -1,500 to 60,000 ft Altitude Testing w/ Rapid Depressurization

ELECTROMAGNETIC COMPATIBILITY:

- Designed to comply with MIL-STD-461E

PRINTED CIRCUIT BOARD ASSEMBLIES:

- Conformal Coat
- Amphenol performs Conformal Coating to both sides of printed circuit board assemblies using HUSMISEAL IB31 in accordance with IPC-610, Class 3.
- Printed Circuit Board Rigidity
- Amphenol printed circuit boards are fabricated in accordance with IPC-6012, Class 3.
- Printed Circuit Board Fabrication
- Amphenol printed circuit boards acceptance criteria is in accordance with IPC-610, Class 3.

RELIABILITY PREDICTIONS (MTBF):

Amphenol can perform Mean Time Between Failure (MTBF) reliability analysis in full compliance with MIL-HDBK-217F-1 Parts Count Prediction and MIL-HDBK-217F-1 Parts Stress Analysis Prediction. We can also perform reliability analyses in full compliance of ANSI/VITA 51.1 if it is required or preferred over the later method

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