

MAVERICK SERIES

FAST ETHERNET, EXTERNAL TFOCA II^{®*}, 100BASE-TX / FX MEDIA CONVERTER, 28 VDC, MULTIMODE, 1310 NM



Maverick series Fast Ethernet media converters consist of optoelectronic transmitter and receiver functions integrated along with the 100Base-TX Ethernet electrical to 100Base-FX optical media conversion circuitry into a wall mounted TFOCA II[®] fiber optic connector assembly.

The optical transmitters are high output 1310 nM devices. The optical receivers consist of InGaAs PIN and preamplifier assemblies and limiting post-amplifiers.

The electrical signal interface to the Maverick series bulkhead optical media converters is a MIL-DTL-38999 Quadrax connector enabling interconnection to an internal or external backbone cable interface. The electrical power interface to the Maverick series bulkhead optical media converters is a MIL-DTL-38999 electrical connector enabling interconnection to a vehicle or shelter power supply.

Maverick series Fast Ethernet media converters are vibration isolated, environmentally hardened components designed for use in harsh environment applications.

- Sealed against liquid and solid contaminants
- Shock and vibration resistant

*TFOCA II[®] is a trademark of Amphenol Fiber Systems, International.

DUAL PORT TFOCA II*, 100BASE-TX TO 100BASE-FX, FAST ETHERNET MEDIA CONVERTER, MULTIMODE, 28 VDC, 1310 NM

Dual Port, Flange Receptacles
TFOCA II® to D38999 / Optical to Electrical Media Converter

FEATURES

- Compliant with IEEE-802.3u Fast Ethernet
- Optical fiber link distances up to 2.0 kilometers
- Maximum optical channel bit error rate less than 2.5×10^{-10}
- Operating temperature range from -40° to +85° C
- Shock, vibration and immersion resistant per MIL-STD-810 and MIL-STD-1344
- Optical interfaces meet stringent EMI / RFI performance specifications
- Olive drab cadmium plated aluminum housings are strong, durable and corrosion resistant
- TFOCA II® compliant optical fiber connector interface
- D38999 electrical interfaces provides robust interconnection to vehicle or shelter cabling

APPLICATIONS

Maverick series bulkhead mounted Fast Ethernet media converters enable high speed network communications over long distances in harsh environments.

- Fast Ethernet switches and peripherals
- Telecom and datacom switch / router rack-to-rack links
- Storage or computation clusters

The MIL-DTL-38999 series III electrical connectors provide sealed interfaces that are water-tight to MIL-STD-810 / IP67 / NEMA-4x when mated.

The multimode TFOCA II® optical fiber interface supports applications where copper cable link distance, bandwidth, weight or bulk make the use of twisted pair, twinax or quadax copper conductors unacceptable.

ORDERING INFORMATION

Application	Part Number
100Base-TX to FX, 28 VDC	M65R-4LAU-FW

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ABSOLUTE MAXIMUM RATINGS

Absolute maximum limits mean that no catastrophic damage will occur if the product is subjected to these ratings for short periods, provided each limiting parameter is in isolation and all other parameters have values within the performance specification. It should not be assumed that limiting values of more than one parameter can be applied to the product at the same time.

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Storage Temperature	T_s	-55		+100	°C
Supply Voltage	V_{cc}	-0.5		45.0	V
Data Input Voltage	V_i	-0.5		V_{cc}	V

RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Operating Temperature	T_A	-40		+85	°C
Supply Voltage	V_{cc}	+18.0	+28.0	+36.0	VDC
Power Supply Noise (p-p)	N_p			200	mV

INTERFACE SPECIFICATIONS COMPLIANCE

Requirement	Feature	Condition	Notes
MIL-STD-883	ESD	Class II	2200 V
MIL-STD-810	Vibration	30.0 g	18 mS
MIL-STD-810	Shock	40.0 g	6-9 mS
MIL-STD-1344	Flame Resistance	Method 1012	30 Seconds
MIL-STD-1344	Damp Heat	10 Cycles	24 Hours
TFOCA II®	Mating Durability	2000 Cycles	EIA / TIA-455-21
FDA / CDRH / IEC-825-1	Eye Safety	Class 1	No Safety Interlocks Required

MATERIALS

Item	Detail	Notes
D38999 and TFOCA II® Cylindrical Shells	Aluminum	
D38999 Plating	Olive Drab Cadmium	
TFOCA II® Plating	ZN Alloy	
Interfacial Seal	Elastomer	
Optical Ferrules	Zirconia	
Printed Circuits	Polyimide / FR-4	
Housing	Aluminum	MIL-P-31032 Type 4

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TRANSMITTERS T_A = OPERATING TEMPERATURE RANGE

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Optical Output Power	P_O	-15.0		-8.0	dBm
Optical Output Wavelength	λ_{OUT}	1260	1310	1380	nM

RECEIVERS T_A = OPERATING TEMPERATURE RANGE

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Optical Sensitivity	P_I	-31.5		-6.0	dBm
Optical Wavelength	λ_{IN}	1100		1590	nM

SUPPLY CURRENT T_A = OPERATING TEMPERATURE RANGE

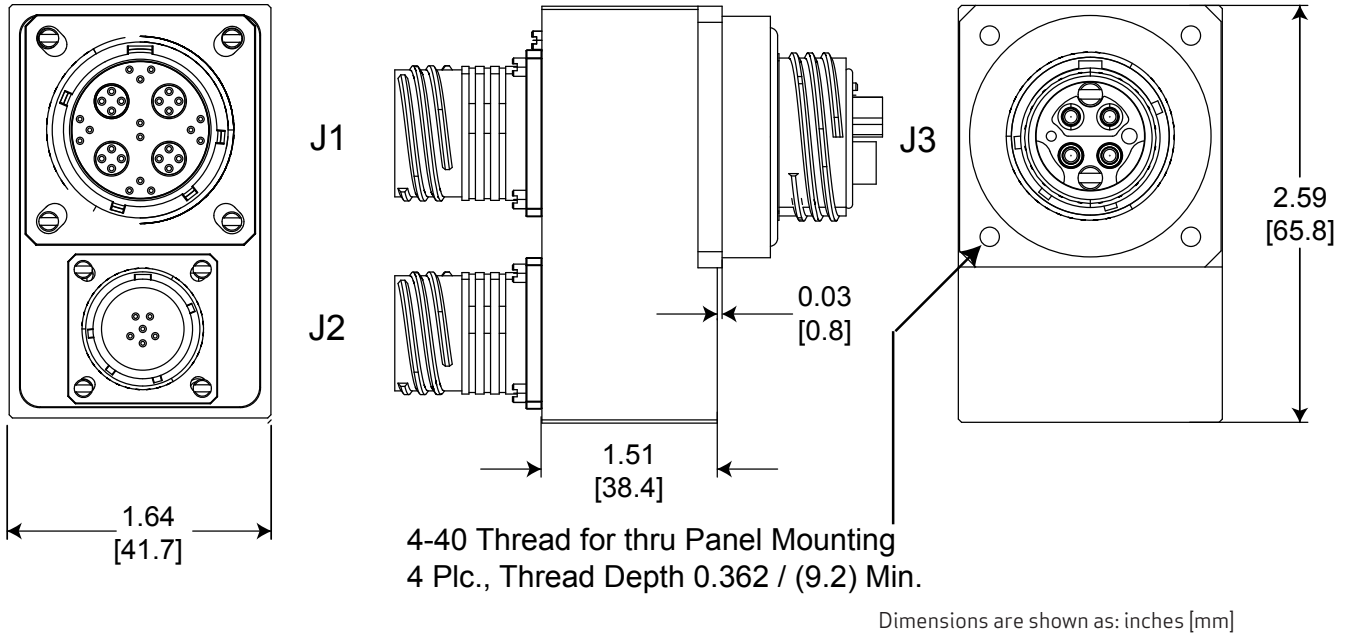
Parameter	Symbol	Typical	Maximum	Unit
Supply Current per Port	I_{CCT}	100	150	mA

OPTICAL FIBER LINK DISTANCES

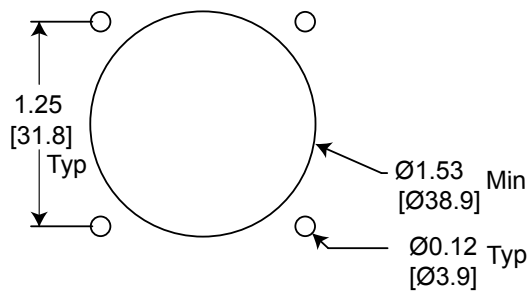
Application	Fiber Specification	Distance
Fast Ethernet - IEEE 802.3u FDDI PMD ISO / IEC 9314-3	62.5 / 125 μ - 500 MHz*Km	2.0 Km
	50 / 125 μ - 500 MHz*Km	2.0 Km

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OUTLINE DRAWING



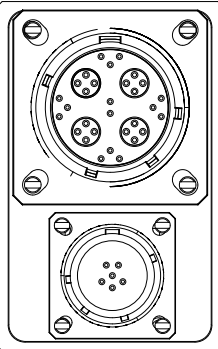
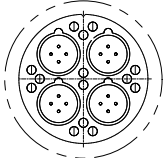
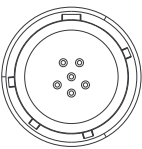
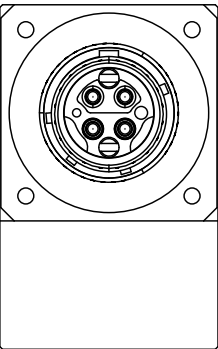

RECOMMENDED PANEL CUTOUT



Dimensions are shown as: inches [mm]

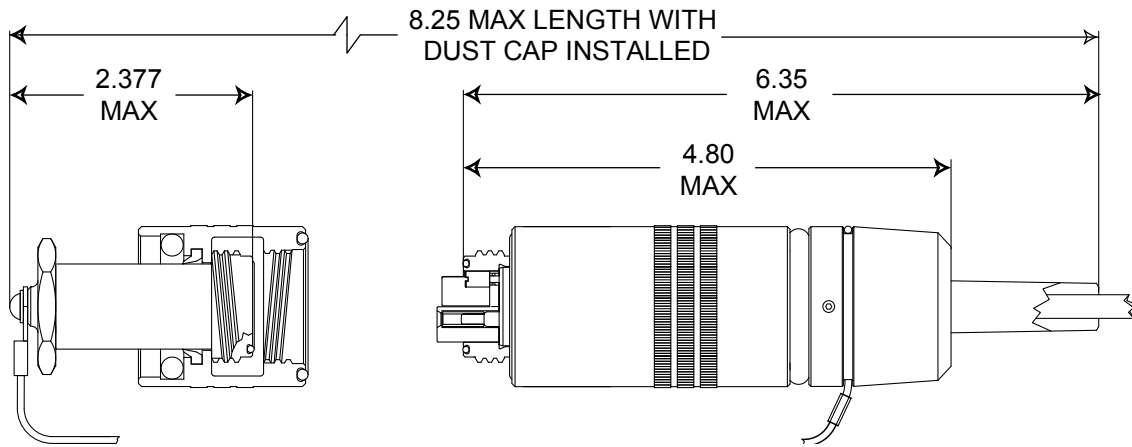
DUAL PORT TFOCA II*, 100BASE-TX TO 100BASE-FX, FAST ETHERNET MEDIA CONVERTER, MULTIMODE, 28 VDC, 1310 NM

MEDIA CONVERTER INSERT ARRANGEMENTS

	Media Converter Insert Pin Numbers	Media Converter Pin Functions	Mating Cable Plug Connector P/N	
	J1		Electrical Signal Interface See Appendix A2	See Appendix A3
	J2		Power Supply Interface See Appendix A4	See Appendix A5
	J3		Optical Fiber Interface Position S2 = Optical TX (1) Position P2 = Optical RX (1) Position S1 = Optical TX (2) Position P1 = Optical RX (2)	Fiber Optic Cable See Appendix A1
	Media converter fiber pin numbers and functions shown - mating cable plug opposite			

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APPENDIX A1 - TFOCA-II° 4 CHANNEL FIBER OPTIC CABLE PLUG



Dimensions are shown as: inches

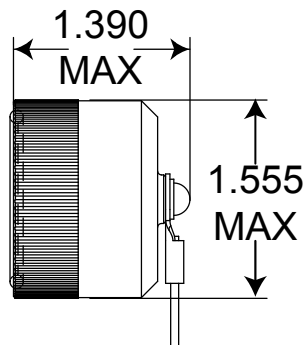
Amphenol Fiber Systems International® TFOCA-II° 4-Channel Connector Part Numbers*

*Contact Amphenol Fiber Systems International for more information.

TFOCA II° RECEPTACLE PROTECTION CAPS

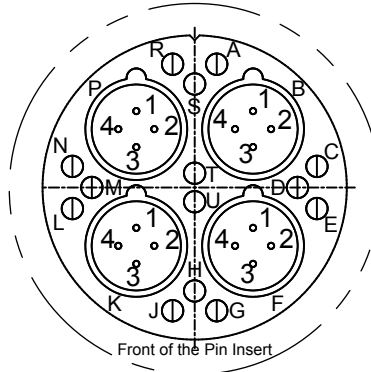
Receptacle Cap P/N

Contact Amphenol Fiber Systems International



DUAL PORT TFOCA II*, 100BASE-TX TO 100BASE-FX, FAST ETHERNET MEDIA CONVERTER, MULTIMODE, 28 VDC, 1310 NM

APPENDIX A2 - J1 PIN FUNCTIONS - ELECTRICAL DATA CONNECTOR WIRING SCHEMATIC



DUAL PORT / FAST ETHERNET

Pin	Channel	Pin Function	Pin	Channel	Pin Function
A	N/A	Power Supply Status	K1	2	IEEE-802.3:2005 DA+
B1	1	IEEE-802.3:2005 DA+	K2	2	IEEE-802.3:2005 DB+
B2	1	IEEE-802.3:2005 DB+	K3	2	IEEE-802.3:2005 DA-
B3	1	IEEE-802.3:2005 DA-	K4	2	IEEE-802.3:2005 DB-
B4	1	IEEE-802.3:2005 DB-	L	N/A	No Connect
C	N/A	No Connect	M	N/A	No Connect
D	N/A	No Connect	N	N/A	No Connect
E	N/A	No Connect	P1	N/A	No Connect
F1	N/A	No Connect	P2	N/A	No Connect
F2	N/A	No Connect	P3	N/A	No Connect
F3	N/A	No Connect	P4	N/A	No Connect
F4	N/A	No Connect	R	N/A	DC Return
G	N/A	No Connect	S	N/A	No Connect
H	N/A	No Connect	T	N/A	No Connect
J	N/A	No Connect	U	N/A	No Connect

J1 Power Supply Status Indicator Functions

The Power Supply Status Indicator is High when power supply conditions are acceptable and Low when power supply conditions are unacceptable. The Power Supply Status Indicator logic state is referenced to 3.3 VDC.

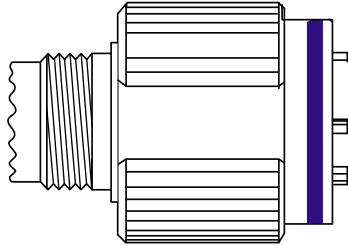
See Appendix A3 for identification of the mating cable plug.

DUAL PORT TFOCA II*, 100BASE-TX TO 100BASE-FX, FAST ETHERNET MEDIA CONVERTER, MULTIMODE, 28 VDC, 1310 NM

APPENDIX A3 - ELECTRICAL DATA CABLE - PLUG CONFIGURATION

ELECTRICAL CABLE PLUG - SOCKET INSERT*

Configuration	Generic P/N	Amphenol P/N*
D38999 Size 19-18	D38999 / 26xF18SN	TV06RQx19-18S*



x = Service Class*

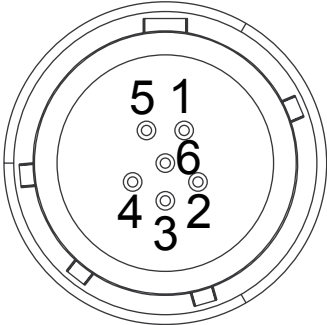
*Contact your local Amphenol Sales Representative for more information about the Amphenol D38999 Quadrax cable plugs.

RJ-45 PIN ASSIGNMENTS

Signal	Media Converter		RJ-45
DA+	B1	K1	1
DB+	B2	K2	3
DA-	B3	K3	2
DB-	B4	K4	6

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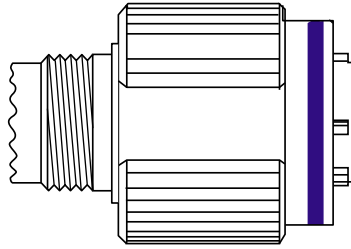
APPENDIX A4 J2 PIN FUNCTIONS - POWER SUPPLY CONNECTOR ELECTRICAL POWER CABLE - CONNECTOR WIRING SCHEMATIC



Pin Number	Pin Function
1	Isolated Case Ground
2	Isolated Case Ground
3	Isolated Case Ground
4	Isolated Case Ground
5	18 - 36 VDC
6	VDC Return

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APPENDIX A5 - POWER CABLE - PLUG CONFIGURATION



POWER CABLE PLUG - SOCKET INSERT*

Configuration	Generic P/N	Amphenol P/N*
D38999 Size 9-35	D38999 / 26xA35SN	TV06Rx-9-35SN*

x = Service Class

*Contact your local Amphenol sales representative for more information about the Amphenol D38999 power cable plugs.



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