

Mustang Series

Fast Ethernet, TFOCA II[®], 100Base-TX / FX Media Converter, Multimode, 1310nm

Dual Port, Jam Nut

FEATURES

- Compliant with IEEE-802.3:2005 Fast Ethernet 10/100Base-TX and 100Base-FX
- Optical fiber link distances up to 2.0 Kilometers
- Copper link distances up to 100 Meters (EIA/TIA Cat-5E)
- Operating temperature range from -40°C to +85°C
- Shock, vibration and immersion resistant per Mil-Std-810
- Zinc Nickel plating meets stringent EMI / RFI and corrosion resistance performance specifications
- Aluminum housings are strong, durable and light weight
- TFOCA II[®] compliant optical fiber connector interface
- Mil-Dtl-83513 electrical interface with #2-56 jacksockets

APPLICATIONS

Mustang 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 TFOCA II[®] shell provides a sealed optical interface that is water-tight to Mil-Std-810 when mated.

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

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



TFOCA II[®] to M83513 / Optical to Electrical Media Converter

DESCRIPTION

Mustang series Fast Ethernet media converters consist of optoelectronic transmitter and receiver functions integrated along with the 10/100Base-TX electrical to 100Base-FX optical media conversion circuitry into a jam-nut TFOCA II[®] fiber optic connector assembly.

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

The electrical interface to the Mustang series optical media converters is a Mil-Dtl-83513 Micro D-Subminiature pin connector enabling interconnection to a customer supplied flexible circuit or cable assembly.

Mustang 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

ORDERING INFORMATION

Application	Product Number
Dual Port 100Base-TX / FX - 28VDC	P51J-4LAU-FZ-M

For additional product options see Appendix A2

Dual Port Mustang Series *TFOCA II® Connector, 10/100Base-TX to
100Base-FX Media Converter, Multimode, 1310nm

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

SPECIFICATIONS COMPLIANCE

Requirement	Feature	Condition	Notes
MIL-STD-883	ESD	Class II	2200V
MIL-STD-810	Vibration	3.8g ² /Hz	43G rms
MIL-STD-810	Shock	40.0g	6-9mS
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 & TFOCA II Cylindrical Shells	Aluminum	
Plating	Zinc Nickel / Nickel	
D38999 Inserts	Thermoplastic	
Interfacial Seals	Elastomer	
Optical Ferrules	Zirconia	
Printed Circuits	Polyimide / FR-4	Mil-P-31032 Type 4
Housing	Aluminum	

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

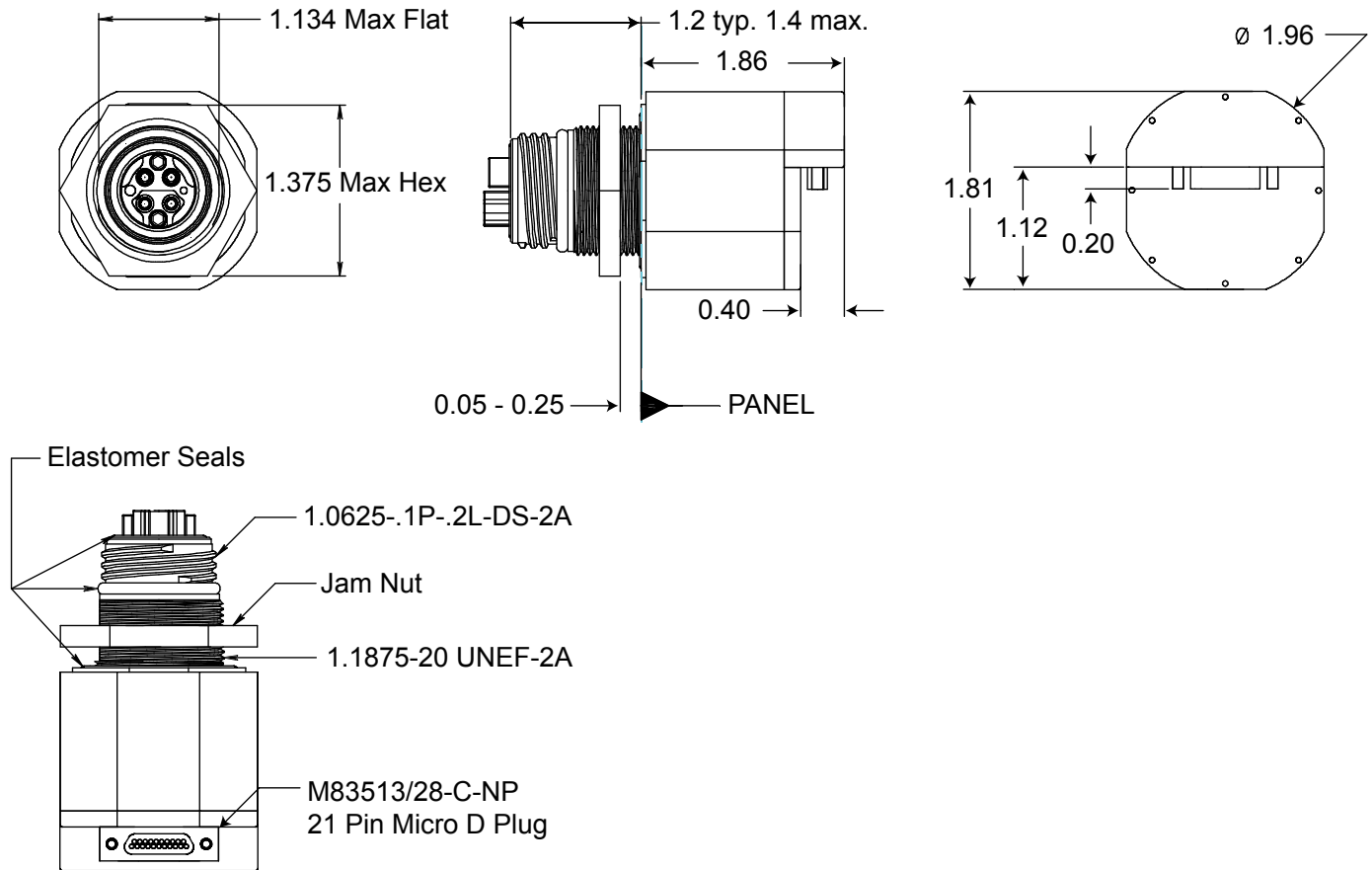
OPTICAL FIBER LINK DISTANCES

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

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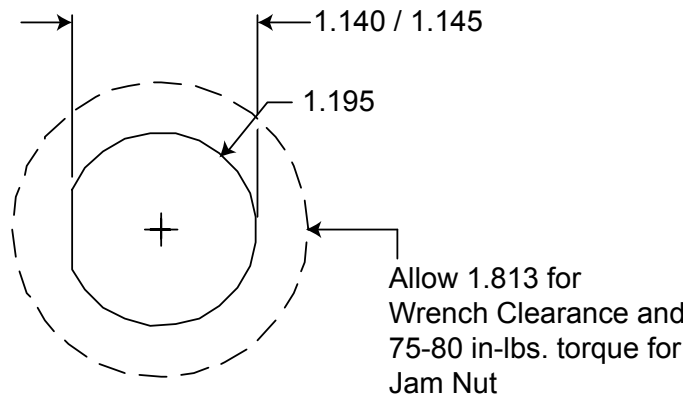
OUTLINE DRAWING

Dimensions are shown as: inches



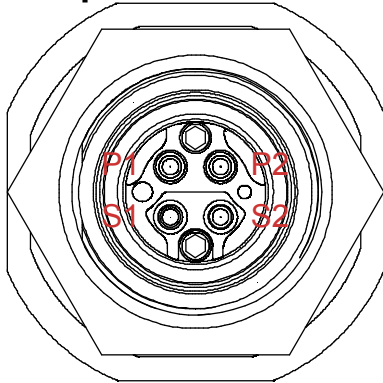
Panel Cutout Dimensions

Dimensions are shown as: inches



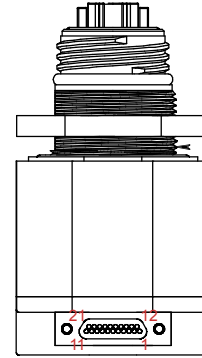
MEDIA CONVERTER OPTICAL INSERT AND ELECTRICAL PIN ARRANGEMENT

TOP
Optical Interface



Front view of the TFOCA II media converter optical insert shown - fiber optic cable plug opposite - see Appendix A1 for details

TOP
Electrical Interface



Back view of the media converter shown - see Electrical Pin Function Chart for more details

OPTICAL PORT ASSIGNMENTS

TFOCA II OPTICAL INTERFACE

PORT NUMBER	RX	TX
0	P2	S2
1	P1	S1

ELECTRICAL PIN ASSIGNMENTS

MICRO-D ELECTRICAL INTERFACE

PIN #	PORT #	FUNCTION	PIN #	PORT #	FUNCTION
1	0	TX_D1+	12	1	TX_D1+
2	0	TX_D1-	13	1	TX_D1-
3	0	RX_D2+	14	1	RX_D2+
4	0	RX_D2-	15	1	RX_D2-

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ELECTRICAL PIN ASSIGNMENTS

21 POSITION MICRO-D ELECTRICAL INTERFACE

PIN #	PORT #	FUNCTION	Input / Output	Logic Family
1	0	TX_D1+	Input	IEEE-802.3:2005 10/100Base-TX
2	0	TX_D1-	Input	IEEE-802.3:2005 10/100Base-TX
3	0	RX_D2+	Output	IEEE-802.3:2005 10/100Base-TX
4	0	RX_D2-	Output	IEEE-802.3:2005 10/100Base-TX
5	N/A	NC	N/A	N/A
6	NA	NC	N/A	N/A
7	N/A	NC	N/A	N/A
8	NA	NC	N/A	N/A
9	N/A	NC	N/A	N/A
10	NA	NC	N/A	N/A
11	N/A	NC	N/A	N/A
12	1	TX_D1+	Input	IEEE-802.3:2005 10/100Base-TX
13	1	TX_D1-	Input	IEEE-802.3:2005 10/100Base-TX
14	1	RX_D2+	Output	IEEE-802.3:2005 10/100Base-TX
15	1	RX_D2-	Output	IEEE-802.3:2005 10/100Base-TX
16	NA	NC	N/A	N/A
17	N/A	NC	N/A	N/A
18	NA	NC	N/A	N/A
19	N/A	NC	N/A	Do Not Connect - Factory Use Only
20	0 / 1	GND	N/A	N/A
21	0 / 1	V _{cc}	Input	N/A

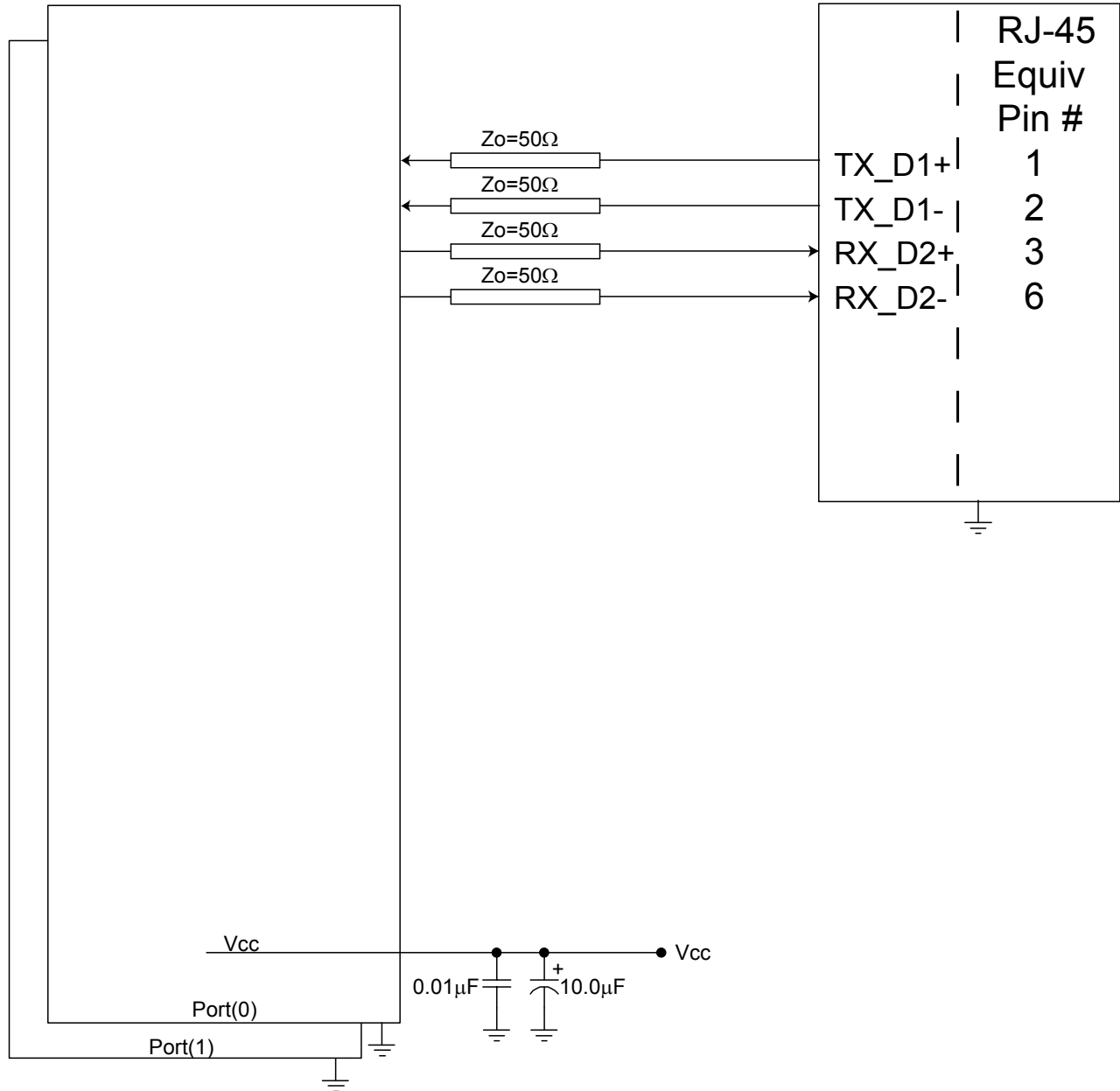
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APPLICATION SCHEMATIC

For Dual Port 10/100Base-TX to 100Base-FX Media Converter Applications

**10/100Base-TX to 100Base-FX
Media Converter**

**10/100Base-TX
Ethernet Interface**



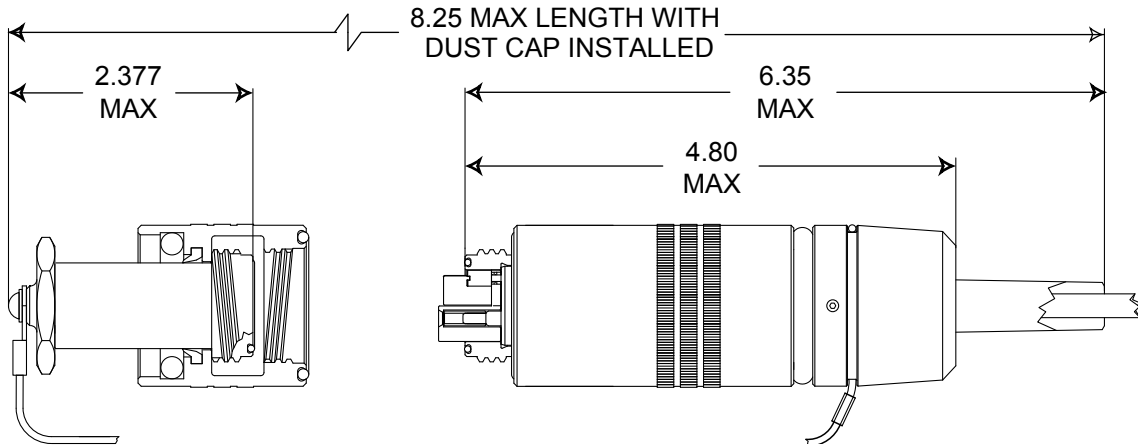
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APPENDIX A1

TFOCA-II® 4 Channel Fiber Optic Cable Plug

Dimensions are shown as: inches



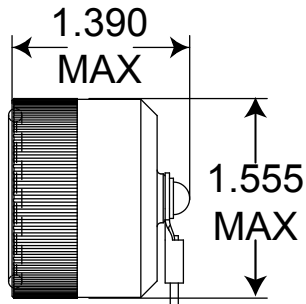
Amphenol Fiber Systems International® TFOCA-II® 4-Channel Connector Part Numbers*

*Contact Amphenol Fiber Systems International for more information

TFOCA II® RECEPTACLE PROTECTION CAPS

RECEPTACLE CAP P/N

Contact Amphenol Fiber Systems International

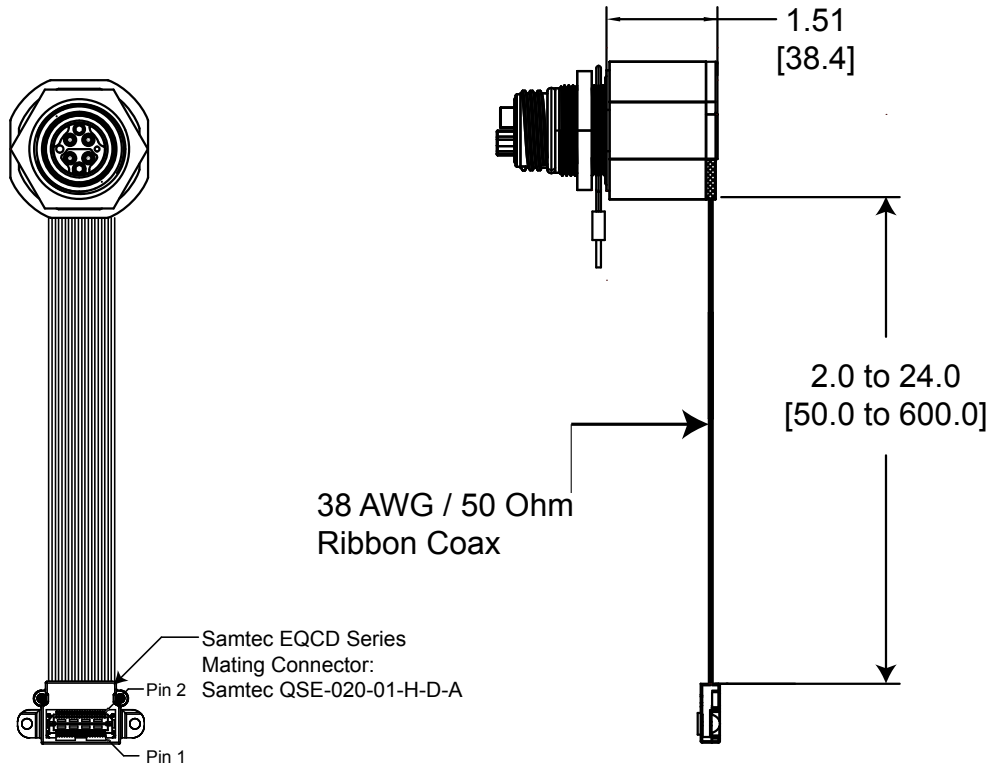


Dual Port Mustang Series *TFOCA II® Connector, 10/100Base-TX to
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APPENDIX A2

CABLE ASSEMBLY CONSTRUCTION OPTIONS

Dimensions are shown as: inches (mm)



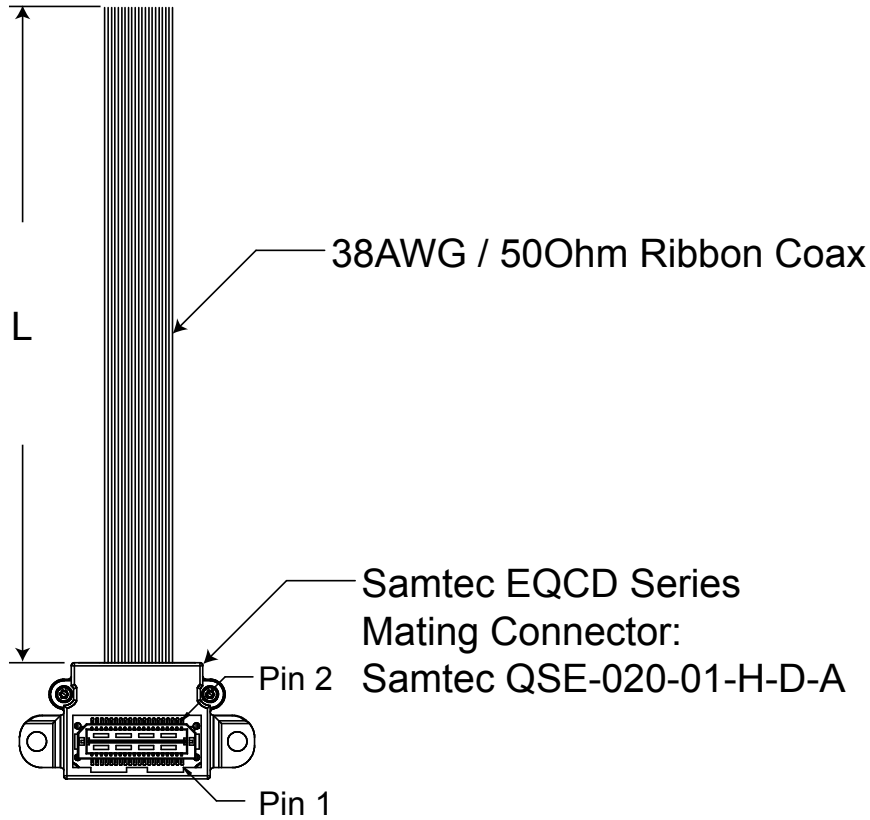
Part Number = P51J-xxxx-xx-Lxxx*

* See page 10 for standard length options

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OUTLINE DRAWING

Cable Length Options



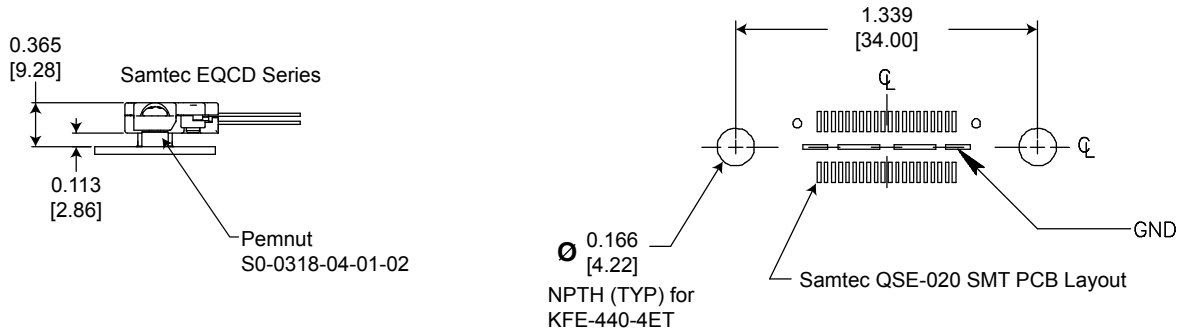
Ribbon Coax Cable Length Options

L (mm) +/- 6.0	ITEM #
50	xxxx-xxxx-xx-L050
100	xxxx-xxxx-xx-L100
150	xxxx-xxxx-xx-L150
200	xxxx-xxxx-xx-L200
250	xxxx-xxxx-xx-L250

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PRINTED CIRCUIT BOARD FOOTPRINT

All dimensions shown are for reference only: inches [mm]



Samtec EQCD PIN ASSIGNMENTS

PIN #	PORT #	FUNCTION	Input / Output	RJ-45 PIN#	Logic Family
1	0	TX_D1+	Output	1	IEEE-802.3:2005 100Base-TX
2	1	TX_D1+	Output	1	IEEE-802.3:2005 100Base-TX
3	0	TX_D1-	Output	2	IEEE-802.3:2005 100Base-TX
4	1	TX_D1-	Output	2	IEEE-802.3:2005 100Base-TX
5	0	RX_D2+	Input	3	IEEE-802.3:2005 100Base-TX
6	1	RX_D2+	Input	3	IEEE-802.3:2005 100Base-TX
7	0	RX_D2-	Input	6	IEEE-802.3:2005 100Base-TX
8	1	RX_D2-	Input	6	IEEE-802.3:2005 100Base-TX
19	0-1	V _{cc}	Input	N/A	N/A
20	0-1	V _{cc}	Input	N/A	N/A
21	0-1	V _{cc}	Input	N/A	N/A
22	0-1	V _{cc}	Input	N/A	N/A

*Reset Function: Logic "0" Input = Restart, registers initialized; Logic "1", Open or High Z Input = Normal Operation, center slug is isolated GND, all other pins are N/C



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