

Wildcat Series

4+1 Port 1000Base-SX / T, Gigabit Ethernet Switch, Multimode, 850nm, 5.0VDC, MIL-DTL-38999

Five Port (4+1), Receptacle

FEATURES

- 4x 1000Base-SX switched optical Ethernet ports with D38999 interface
- 1x 10/100/1000Base-T Ethernet internal connection through Samtec SMT connector
- Compliant with IEEE-802.3:2005 Gigabit Ethernet 1000Base-SX and 10/100/1000Base-T
- Optical fiber link distances up to 550 Meters (50/125)
- Operating temperature range from -40°C to +85°C
- Shock, vibration and immersion resistant per MIL-STD-810
- Olive Drab Cadmium plating meets stringent EMI / RFI and corrosion resistance performance specifications
- Aluminum housings are strong, durable and light weight
- MIL-T-29504 compliant optical fiber connector interface
- MIL-DTL-38999 fiber optic insert per MIL-STD-1560
- Samtec EQCD Series electrical connector for SMT interface

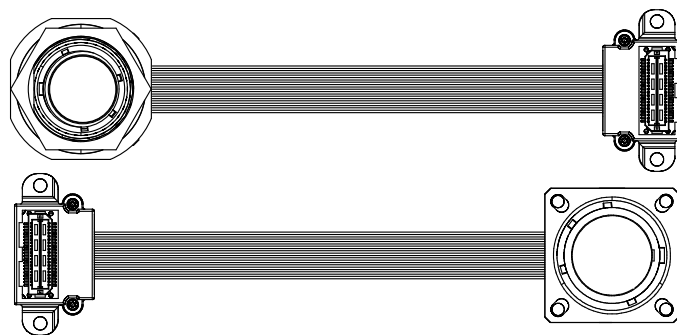
APPLICATIONS

Wildcat series bulkhead mounted Gigabit Ethernet switches enable high speed network communications over long distances in harsh environments.

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

The MIL-DTL-38999, Series III 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.



D38999 + SMT/PCB - 4+1 Port Gigabit Ethernet Optical Switch

DESCRIPTION

Wildcat series panel mounted Gigabit Ethernet switches consist of 4x1000Base-SX plus 1x10/100/1000Base-T Ethernet switch functions integrated into a panel mounted MIL-DTL-38999 optical connector assembly.

The optical transmitters are high output 850nm VCSEL lasers. The optical receivers consist of GaAs PIN and preamplifier assemblies and limiting post-amplifiers.

The electrical interface to the Wildcat series bulkhead mounted Gigabit Ethernet switches is a ribbon coax to Samtec EQCD high density cable assembly enabling SMT interconnection to a customer's backplane, motherboard or daughtercard.

Wildcat series panel mounted D38999 Gigabit Ethernet switches 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
Flange	W41F-5SCT-HW-Lxxx
Jam Nut	W41J-5SCT-HW-Lxxx

See page 6 for standard part number / cable length options

Facilitating Secure Communications in Harsh Environments

Wildcat Series, 5 Port Ethernet Switch, MIL-DTL-38999 + SAMTEC SMT
4x1000Base-SX+1x1000Base-T, Multimode, 5.0VDC, 850nM

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

RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Operating Temperature	T_A	-40		+85	°C
Supply Voltage xxxx-xxBx-xx xxxx-xxCx-xx	V_{CC}	+6.0 +4.5	12.0 5.0	+24.0 +5.5	VDC
Power Supply Noise (p-p)	N_p			200	mV

INTERFACE 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-810	Immersion	1.0 meter	2.0Hours
MIL-STD-1344	Flame Resistance	Method 1012	30 Seconds
MIL-STD-1344	Damp Heat	10 Cycles	24 Hours

MATERIALS

Item	Detail	Notes
Shell and housing	Aluminum Alloy	
Connector Shell Plating	OD-CD, NI or ZN-NI	
Insert	Thermoplastic	
Interfacial Seal	Elastomer	

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OPTICAL TRANSMITTERS T_A = Operating Temperature Range

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Optical Output Power	P_o	-9.5		-4.0	dBm
Optical Output Wavelength	λ_{OUT}	830	850	860	nM
Spectral Width	$\Delta\lambda_{RMS}$			0.85	nM

OPTICAL RECEIVERS T_A = Operating Temperature Range

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Optical Sensitivity	P_i	-19.0		-2.0	dBm
Optical Wavelength	λ_{IN}	830	850	860	nM

POWER SUPPLY CURRENT T_A = Operating Temperature Range

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Supply Current	I_{CCT}		1500	2000	mA

OPTICAL LINK DISTANCES

Protocol	Cable Specification	Distance
Gigabit Ethernet - IEEE-802.3:2005 - 1000BASE-SX	62.5/125 μ 200MHz*Km	275M
	50/125 μ 500MHz*Km	550M

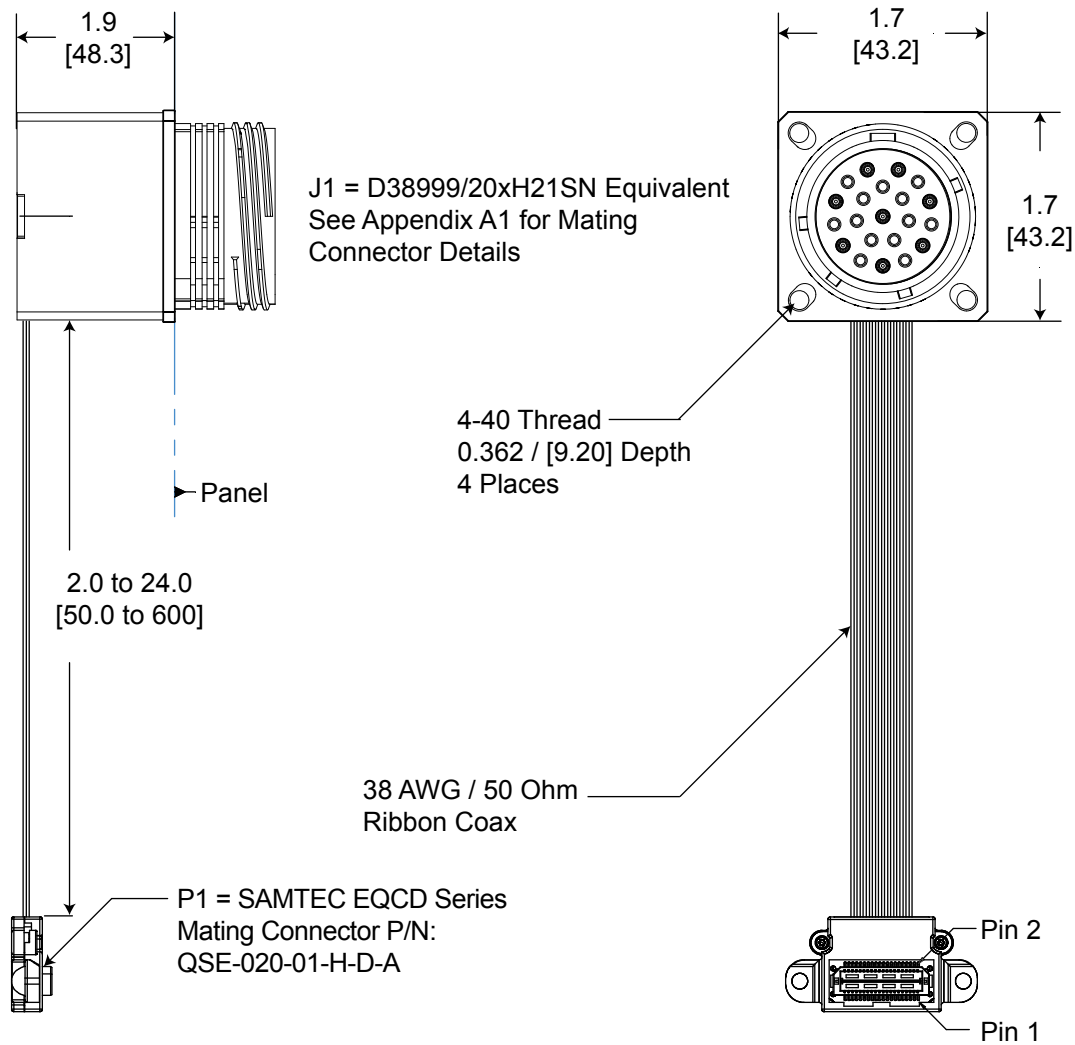
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OUTLINE DRAWING

Flange Mount Option

Dimensions are shown as: inches [mm]



Part Number = *W41F-5xxx-Hx-Lxxx

*See page 6 for standard part number / cable length options

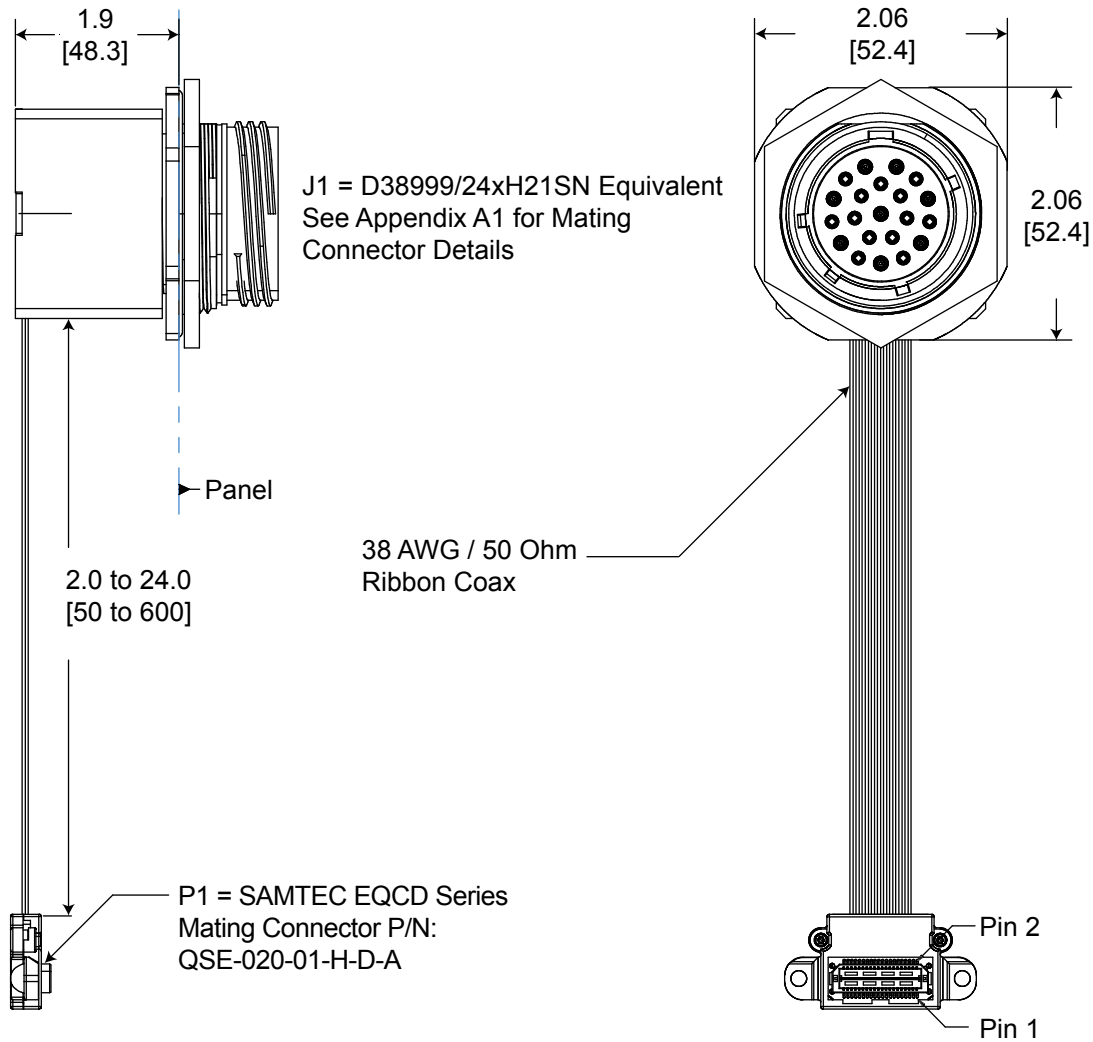
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4x1000Base-SX+1x1000Base-T, Multimode, 5.0VDC, 850nM

OUTLINE DRAWING

Jam Nut Option

Dimensions are shown as: inches [mm]



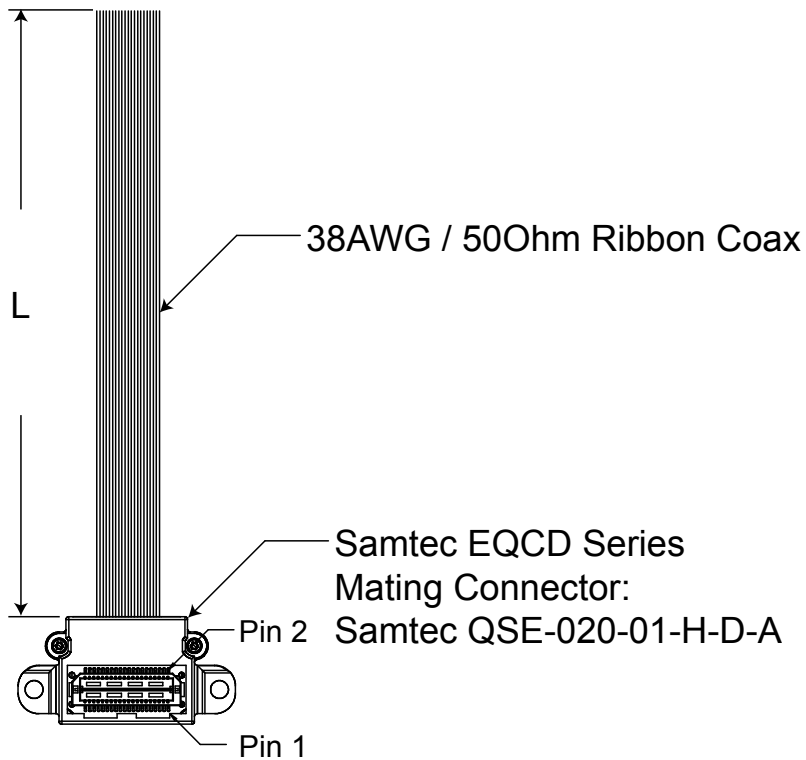
Part Number = *W41J-5xxx-Hx-Lxxx

*See page 6 for standard part number / cable length options

Wildcat Series, 5 Port Ethernet Switch, MIL-DTL-38999 + SAMTEC SMT
4x1000Base-SX+1x1000Base-T, Multimode, 5.0VDC, 850nm

OUTLINE DRAWING

Cable Length Options



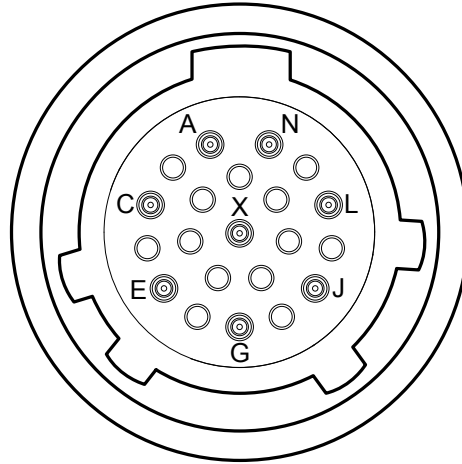
Ribbon Coax Cable Length Options

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

Wildcat Series, 5 Port Ethernet Switch, MIL-DTL-38999 + SAMTEC SMT
4x1000Base-SX+1x1000Base-T, Multimode, 5.0VDC, 850nm

J1 D38999 PIN and PORT ASSIGNMENTS

TOP Optical Interface



Front view of the D38999 optical insert shown, fiber optic cable plug opposite - see Appendix A1 for details

MIL-DTL-38999 OPTICAL INTERFACE

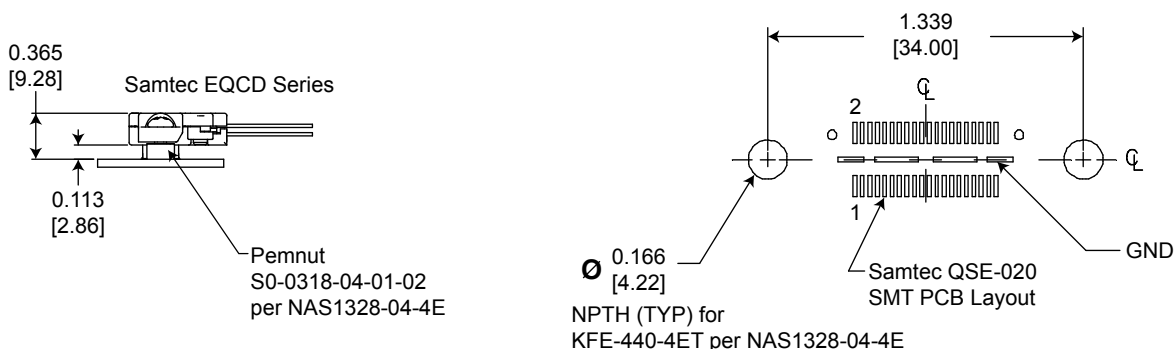
PORT NUMBER	TX	RX
0	J	L
1	N	G
2	X	A
3	E	C

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PRINTED CIRCUIT BOARD FOOTPRINT

Dimensions shown are: inches [mm]



Samtec EQCD PIN ASSIGNMENTS

PIN #	PORT #	FUNCTION	Input / Output	RJ-45 PIN#	Logic Family
1	4	MDA+	Input / Output	1	IEEE-802.3:2005 10/100/1000Base-T
3	4	MDA-	Input / Output	2	IEEE-802.3:2005 10/100/1000Base-T
5	4	MDB+	Input / Output	3	IEEE-802.3:2005 10/100/1000Base-T
7	4	MDB-	Input / Output	6	IEEE-802.3:2005 10/100/1000Base-T
9	4	MDC+	Input / Output	4	IEEE-802.3:2005 10/100/1000Base-T
11	4	MDC-	Input / Output	5	IEEE-802.3:2005 10/100/1000Base-T
13	4	MDD+	Input / Output	7	IEEE-802.3:2005 10/100/1000Base-T
15	4	MDD-	Input / Output	8	IEEE-802.3:2005 10/100/1000Base-T
17	0-4	*Reset_Low	Input	N/A	LVTTL with Internal Pullup
19	0-4	V _{CC}	Input	N/A	N/A
20	0-4	V _{CC}	Input	N/A	N/A
21	0-4	V _{CC}	Input	N/A	N/A
22	0-4	V _{CC}	Input	N/A	N/A

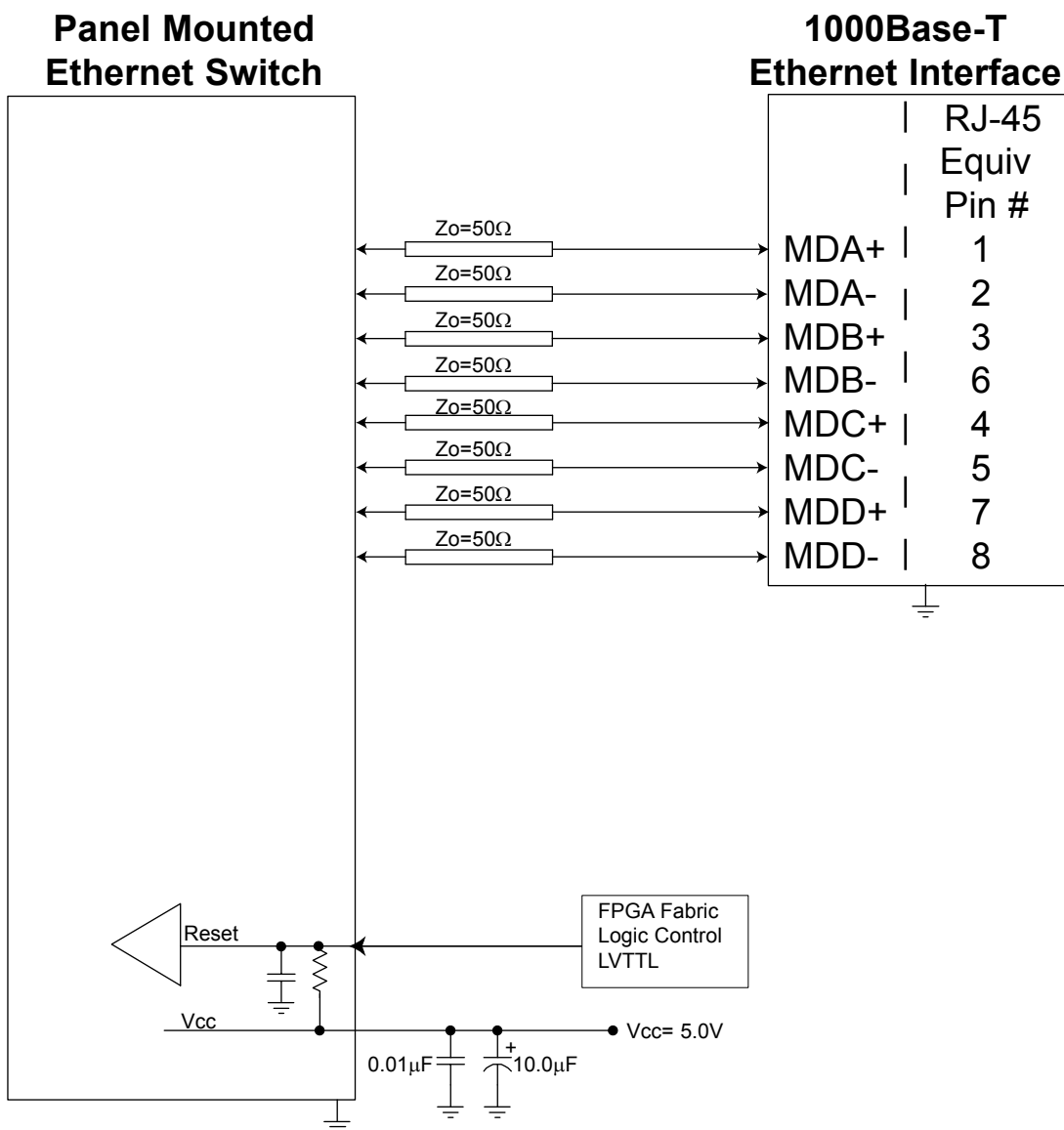
*Reset Function: Logic "0" Input = Restart, registers initialized; Logic "1", Open or High Z Input = Normal Operation, all other pins are N/C, center slug is GND

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APPLICATION SCHEMATIC

Panel Mounted Ethernet Switch



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APPENDIX A1

MIL-DTL-38999 FIBER OPTIC CABLE PLUG / MIL-T-29504 PIN TERMINI

*See DSCC or SAE QPL for Approved Suppliers

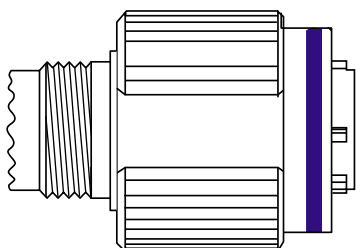
<http://www.dsccl.dla.mil/programs/qmlqpl/QPLdetail.asp?QPL=38999>

*D38999 PLUG - PIN INSERT

MIL-DTL-38999 CABLE PLUG

MS PLUG P/N

*D38999/26WH21PN

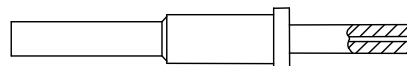


*FIBER OPTIC PIN TERMINUS

MIL-T-29504 PIN TERMINUS

MS PIN TERMINUS P/N

*M29504/04-xxxx**



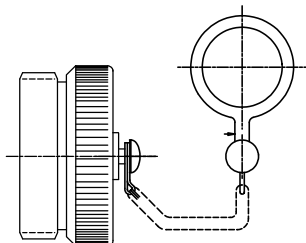
**defined by fiber optic cable configuration

*CABLE PROTECTION CAP

D38999/32 PLUG PROTECTION CAP

MS PLUG CAP P/N

*D38999/32W23N



D38999 PLUG PORT FUNCTIONS

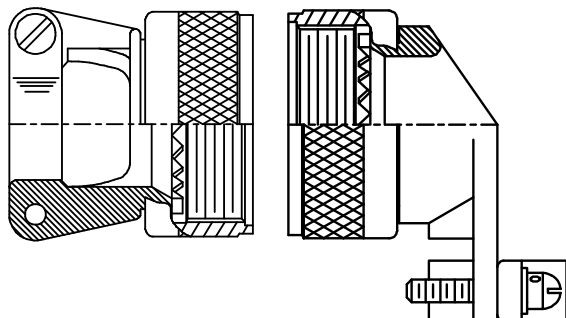
PORT NUMBER	TX	RX
0	J	L
1	N	G
2	X	A
3	E	C

*CABLE BACKSHELL

MIL-C-85049 CABLE BACKSHELL

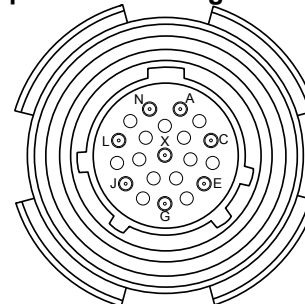
MS BACKSHELL P/N

*MS85049/xxxxxx**



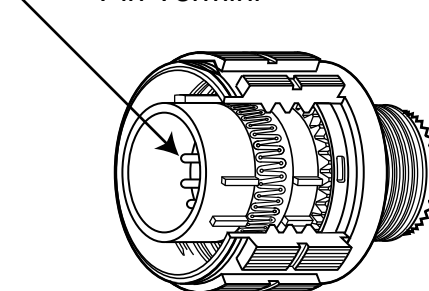
**Straight or angled backshell - defined by application / mounting configuration

TOP Optical Cable Plug Interface



Front face of the optical cable plug pin insert shown. Transceiver insert opposite.

Pin Termini



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APPENDIX A2 PART NUMBER OPTIONS

4+1 Port, GbE, 850nm, Samtec Ribbon Coax Assembly

W41 X - 5 S X T - H X X - L

Shell Configuration
W41= 38999 Receptacle

Shell Configuration
F = Square Flange
J = Jam Nut

Channels (TX+RX)
5 = 4x 1000Base-SX + 1x
10/100/1000Base-T

Wavelength
S= 850nm

Power Supply
B = 6 to 24VDC
C = 5.0VDC

Fiber Optic Interface
T = 1.25 Gbps

Shell Size Code
H = 23 - 21

D38999 Shell Plating
F = NI
W = OD CD / NI
Z = ZN / NI

Shell Polarization
(leave blank) _ = N
A = A
B = B
C = C
D = D

Electrical Interface
L = Ribbon Coax to Samtec
EQCD Series - Cable Length
TBD

Other wavelength, mounting and port count options are available.
Please consult the Protokraft website for alternate configurations.