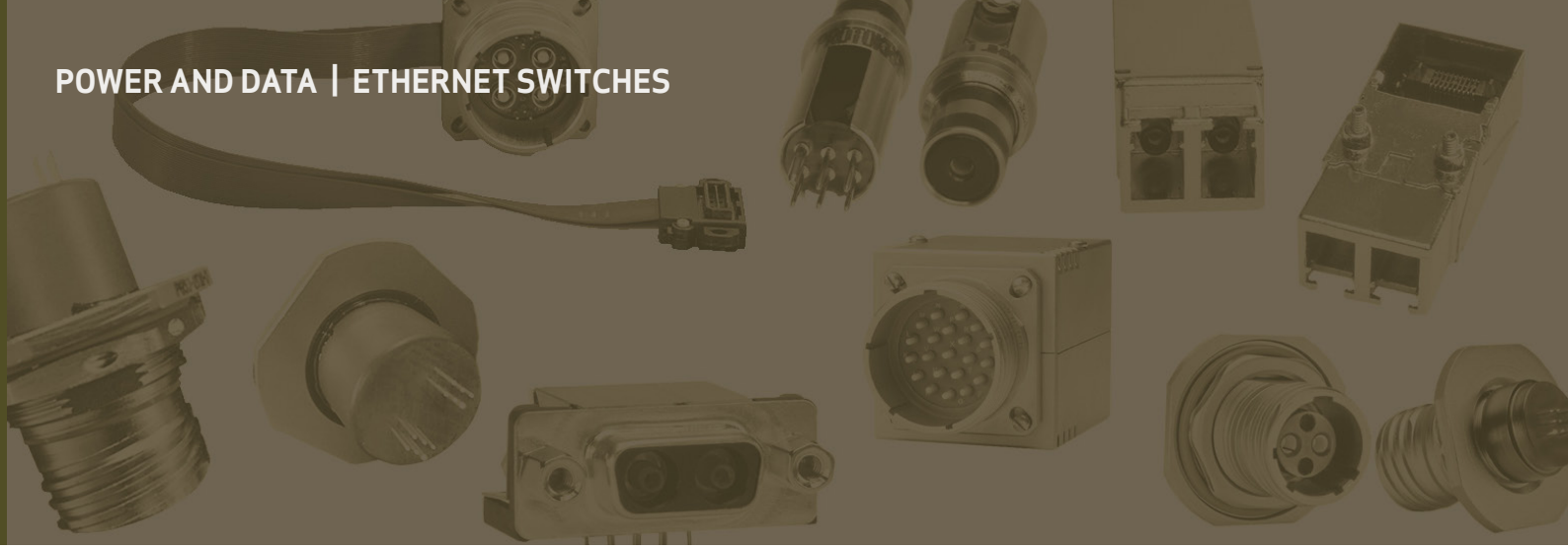


VIKING SERIES

10/100BASE-T/FX, AUTO MDI/MDIx, AUTONEGOTIOABLE MIL-DTL-38999, MANAGED ETHERNET SWITCH

Viking series 10/100Base-TX/FX managed Ethernet switches consist of 4x10/100Base-TX ports plus 1x100Base- FX port in an inline MIL-DTL-38999 connector assembly.

The Viking series Ethernet switch offers two separate D38999 Ethernet connector interfaces. One interface is a D38999/19-35 with 4x10/100Base-T Ethernet ports compliant with IEEE-802.3U:2005 plus the 5 VDC interface. The other interface is a D38999/19-11 with 1x100Base-FX Ethernet fiber optic ports per IEEE-802.3U:2005.

The Viking 4+1 port Ethernet switch is a highly integrated and extremely rugged solution for vehicle and mobile networking applications. Its small size, light weight and low power requirements make it an excellent fit for next generation networks.

Viking series 4+1 port Ethernet switches are vibration isolated, environmentally hardened components designed for use in harsh environment applications.

MOOG

FIVE PORT (4+1) VIKING SERIES D38999, 10/100BASE-T/FX MANAGED ETHERNET SWITCH

5 Port (4 + 1), Flange Mounted
D38999 In-line 4+1 Port 10/100Base-TX/FX Ethernet Switch

FEATURES

- 4x10/100Base-T nonblocking wire speed copper Ethernet ports per IEEE 802.3:2005
- 1x100Base-FX fiber Ethernet ports per IEEE 802.3:2005
- L2/L3 managed switch
- Electrical cable links up to 100 meters (EIA / TIA Cat-5E)
- Fiber optic link distances up to 2.0 kilometers per IEEE 8023
- Operating temperature range from -40°C to +85°C
- Full duplex flow control per IEEE Std 802.3x and half duplex back pressure, symmetric and asymmetric
- Designed to shock and vibration per MIL-STD-810
- Enhanced Link Budget
- OD-CD, NI or ZN-NI plating options for enhanced corrosion resistance
- Aluminum connector shells and housing are strong, durable and light weight
- Auto sensing of half or full duplex operation

APPLICATIONS

Viking series 4+1 port Ethernet switches enable high speed network communications in harsh environments.

- Civil and military vehicle networking
- Aerospace and naval platform networks
- Managed Ethernet switch applications

The MIL-DTL-38999, series III connectors provide a sealed interface that is water-tight to MIL-STD-810 when mated.

ORDERING INFORMATION

Application	Part Number
10/100BASE-TX/FX - 5 VDC	VM42F-5LCU-FW-S483

See Appendix A2 for more part number options

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	V_{CC}	+4.5	+5.0	+5.5	V
Power Supply Noise (p-p)	N_P			200	mV

MATERIALS

Item	Detail	Notes
Shell and housing	Aluminum Alloy	
Plating	OD-CD, NI or ZN-NI	
Insert	Thermoplastic	
Interfacial Seal	Elastomer	
Alignment Sleeve	Composite Polymer	
Weight	<15 oz/425 g	

FIVE PORT (4+1) VIKING SERIES D38999, 10/100BASE-T/FX MANAGED ETHERNET SWITCH

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	1360	nM

RECEIVERS T_A = OPERATING TEMPERATURE RANGE

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Optical Sensitivity	P_I	-34.0		-8.0	dBm
Optical Wavelength	λ_{IN}	1100		1590	nM

SUPPLY CURRENT T_A = OPERATING TEMPERATURE RANGE

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Suppy Current	I_{CCT}		.7	.9	A

OPTICAL FIBER LINK DISTANCES

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

COPPER CABLE LINK DISTANCES

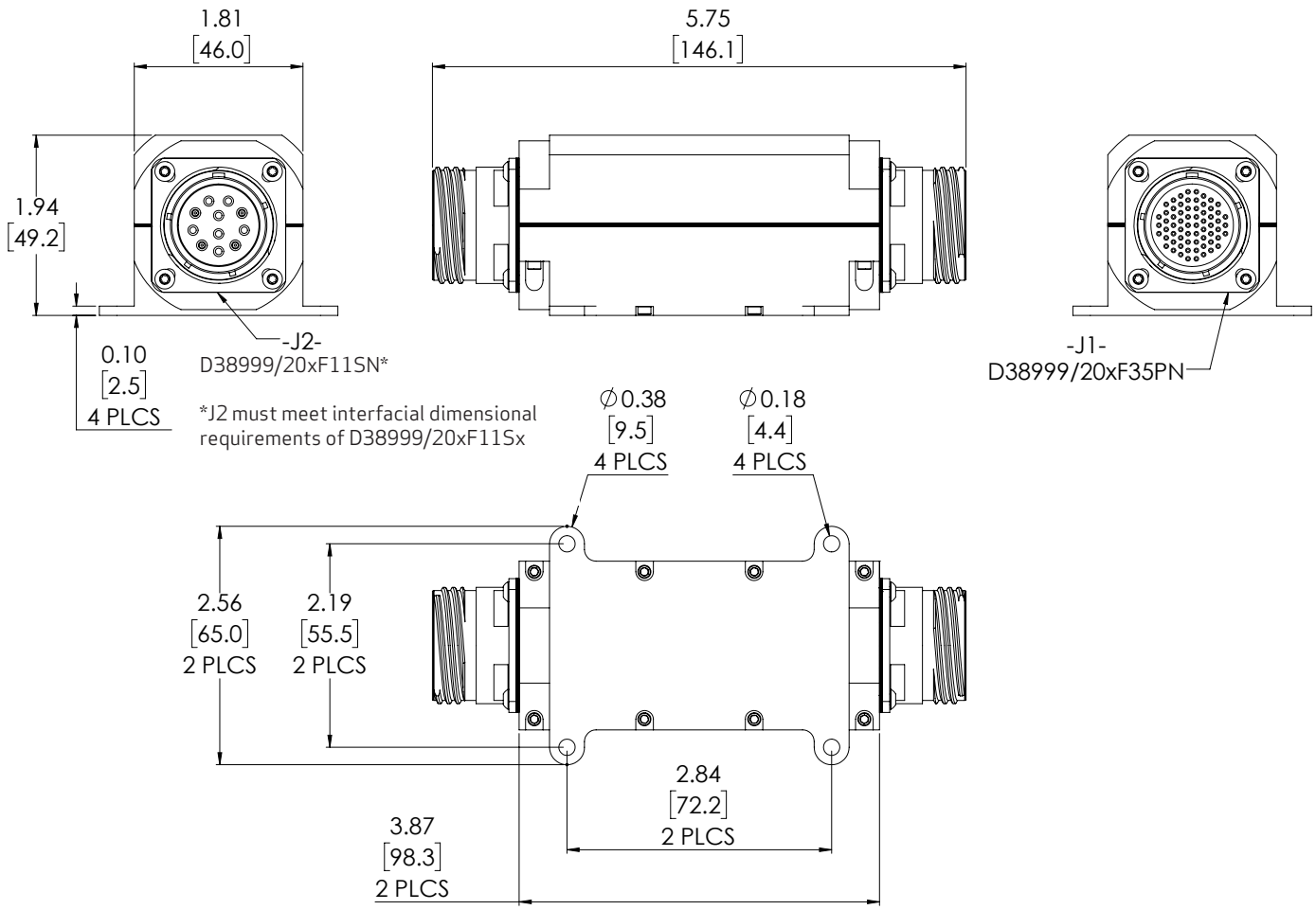
Application	Cable Specification	Distance
Fast Ethernet - IEEE 802.3u	TIA / EIA-568-B Cat 5*	100 M

* For other transmission media, please consult the factory

FIVE PORT (4+1) VIKING SERIES D38999, 10/100BASE-T/FX MANAGED ETHERNET SWITCH

OUTLINE DRAWING

Dimensions are shown as: inches [mm]

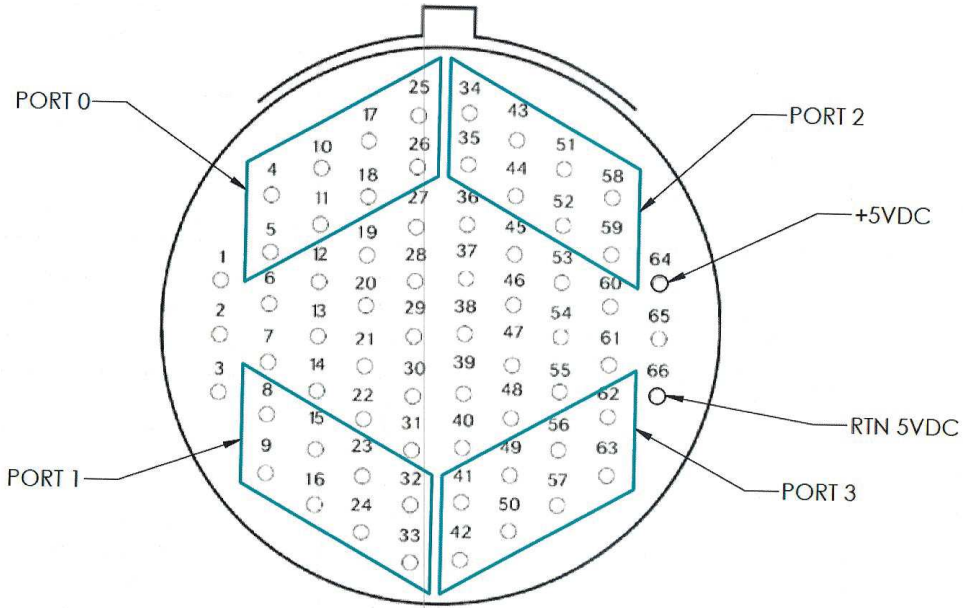


PORT / FUNCTION ASSIGNMENTS

Port Number	Function
J1	4x10/100Base-T + 5 VDC
J2	1x100Base-FX

FIVE PORT (4+1) VIKING SERIES D38999, 10/100BASE-T/FX MANAGED ETHERNET SWITCH

J1 PIN FUNCTIONS ETHERNET PORT AND PIN ASSIGNMENTS TOP



Front view of the J1 connector shown - mating cable plug opposite - see J1 D38999 Pin Function Chart for details

INTERFACE					
Port Number	Pin Number	Function	Port Number	Pin Number	Function
0	26	TXD+	2	35	TXD+
	25	TXD-		34	TXD-
	18	RXD+		44	RXD+
	17	RXD-		43	RXD-
1	32	TXD-	3	42	TXD-
	33	TXD+		41	TXD+
	23	RXD-		50	RXD-
	24	RXD+		49	RXD+

FIVE PORT (4+1) VIKING SERIES D38999, 10/100BASE-T/FX MANAGED ETHERNET SWITCH

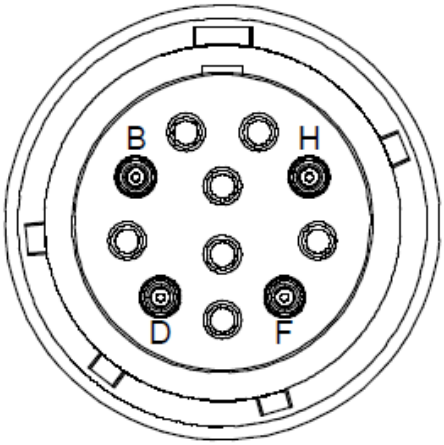
J1 / D38999 / 20XF35PN ELECTRICAL PIN FUNCTIONS - CONTINUED ON NEXT PAGE

Pin Number	Port Number	Function	RJ-45 Eq. Pin Number	Logic Family
1	ALL	GND	N/A	RTN 5 VDC, Isolated From Case
2	ALL	GND	N/A	RTN 5 VDC, Isolated From Case
3	N/A	N/C	N/A	Do Not Connect - Factory Use Only
4	N/A	N/C	N/A	Do Not Connect - Factory Use Only
5	N/A	N/C	N/A	Do Not Connect - Factory Use Only
6	N/A	N/C	N/A	Do Not Connect - Factory Use Only
7	N/A	N/C	N/A	Do Not Connect - Factory Use Only
8	N/A	N/C	N/A	Do Not Connect - Factory Use Only
9	N/A	N/C	N/A	Do Not Connect - Factory Use Only
10	N/A	N/C	N/A	Do Not Connect - Factory Use Only
11	N/A	N/C	N/A	Do Not Connect - Factory Use Only
12	N/A	N/C	N/A	Do Not Connect - Factory Use Only
13	N/A	N/C	N/A	Do Not Connect - Factory Use Only
14	N/A	N/C	N/A	Do Not Connect - Factory Use Only
15	N/A	N/C	N/A	Do Not Connect - Factory Use Only
16	N/A	N/C	N/A	Do Not Connect - Factory Use Only
17	0	RXD-	6	IEEE-802.3.2005 10/100/Base-TX
18	0	RXD+	3	IEEE-802.3.2005 10/100/Base-TX
19	ALL	CHASSIS	N/A	Do Not Connect - Factory Use Only
20	N/A	N/C	N/A	Do Not Connect - Factory Use Only
21	N/A	N/C	N/A	Do Not Connect - Factory Use Only
22	ALL	CHASSIS	N/A	Do Not Connect - Factory Use Only
23	1	RXD-	6	IEEE-802.3.2005 10/100/Base-TX
24	1	RXD+	3	IEEE-802.3.2005 10/100/Base-TX
25	0	TXD-	2	IEEE-802.3.2005 10/100/Base-TX
26	0	TXD+	1	IEEE-802.3.2005 10/100/Base-TX
27	N/A	N/C	N/A	Do Not Connect - Factory Use Only
28	N/A	N/C	N/A	Do Not Connect - Factory Use Only
29	N/A	N/C	N/A	Do Not Connect - Factory Use Only
30	N/A	N/C	N/A	Do Not Connect - Factory Use Only
31	N/A	N/C	N/A	Do Not Connect - Factory Use Only
32	1	TXD-	2	IEEE-802.3.2005 10/100/Base-TX
33	1	TXD+	1	IEEE-802.3.2005 10/100/Base-TX
34	2	TXD-	2	IEEE-802.3.2005 10/100/Base-TX

J1 / D38999/20XF35PN ELECTRICAL PIN FUNCTIONS - CONTINUED FROM PREVIOUS PAGE

Pin Number	Port Number	Function	RJ-45 Eq. Pin Number	Logic Family
35	2	TXD+	1	IEEE-802.3.2005 10/100/Base-TX
36	N/A	N/C	N/A	Do Not Connect - Factory Use Only
37	N/A	N/C	N/A	Do Not Connect - Factory Use Only
38	N/A	N/C	N/A	Do Not Connect - Factory Use Only
39	N/A	N/C	N/A	Do Not Connect - Factory Use Only
40	N/A	N/C	N/A	Do Not Connect - Factory Use Only
41	3	TXD+	1	IEEE-802.3.2005 10/100/Base-TX
42	3	TXD-	2	IEEE-802.3.2005 10/100/Base-TX
43	2	RXD-	6	IEEE-802.3.2005 10/100/Base-TX
44	2	RXD+	3	IEEE-802.3.2005 10/100/Base-TX
45	ALL	CHASSIS	N/A	CHASSIS
46	N/A	N/C	N/A	Do Not Connect - Factory Use Only
47	N/A	N/C	N/A	Do Not Connect - Factory Use Only
48	ALL	CHASSIS	N/A	CHASSIS
49	3	RXD+	3	IEEE-802.3.2005 10/100/Base-TX
50	3	RXD-	6	IEEE-802.3.2005 10/100/Base-TX
51	N/A	N/C	N/A	Do Not Connect - Factory Use Only
52	N/A	N/C	N/A	Do Not Connect - Factory Use Only
53	N/A	N/C	N/A	Do Not Connect - Factory Use Only
54	N/A	N/C	N/A	Do Not Connect - Factory Use Only
55	N/A	N/C	N/A	Do Not Connect - Factory Use Only
56	N/A	N/C	N/A	Do Not Connect - Factory Use Only
57	N/A	N/C	N/A	Do Not Connect - Factory Use Only
58	N/A	N/C	N/A	Do Not Connect - Factory Use Only
59	N/A	N/C	N/A	Do Not Connect - Factory Use Only
60	N/A	N/C	N/A	Do Not Connect - Factory Use Only
61	N/A	N/C	N/A	Do Not Connect - Factory Use Only
62	N/A	N/C	N/A	Do Not Connect - Factory Use Only
63	N/A	N/C	N/A	Do Not Connect - Factory Use Only
64	ALL	V_{CC}	N/A	+5 VDC
65	ALL	N/C	N/A	Do Not Connect - Factory Use Only
66	ALL	GND	N/A	RTN 5 VDC, Isolated From Case

J2 PIN FUNCTIONS ETHERNET PORT AND PIN ASSIGNMENTS TOP



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
4	H	F

FIVE PORT (4+1) VIKING SERIES D38999, 10/100BASE-T/FX MANAGED ETHERNET SWITCH

ETHERNET SWITCH MANAGEMENT FEATURES
WEB-BASED GUI FOR CONFIGURATION

Layer	Features
1	Cable Diagnostic
	Cascading
	EEE Power Saving (IEEE 802.3az)
	AVS
	Link Aggregation
2	Jumbo Frame Support
	Switching/MAC Learning
	Broadcast Storm Control
	VLAN Support (Multiple Bridging Domains)
	Isolation Group (Tree)
	AutoVoIP
	AutoDOS
2 QoS	8 Queues Per Port
	IEEE 802.1p Priority Mapping
	DSCP Priority Mapping
	Scheduling Configurable SP
	Scheduling Configurable WRR
	Metering Rate Limiting
	Shaping Queue/Port
	Flow Control – PAUSE IEEE 802.3x
	Flow Control – PFC IEEE 802.1Qbb
Management	Debug CLI
	RESTful API
	Rx and Tx Counters
Multicast	IGMP Snooping
Protocols and Advanced	LLDP
	Rapid Spanning Tree

FIVE PORT (4+1) VIKING SERIES D38999, 10/100BASE-T/FX MANAGED ETHERNET SWITCH

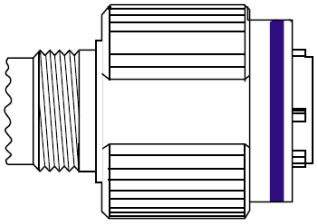
APPENDIX A1 MIL-DTL-38999 FIBER OPTIC CABLE PLUG / MIL-T-29504 PIN TERMINI

*See DSCC or SAE QPL for Approved Suppliers
http://www.dscc.dla.mil/programs/qmlqpl/QPLdetail.asp?QPL=38999

*D38999 PLUG - RECEPTACLE INSERT

MIL-DTL-38999 Cable Plug

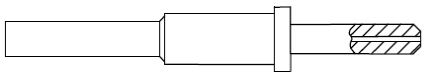
MS PLUG P/N	*D38999 / 26WF11PN



*FIBER OPTIC PIN TERMINUS

MIL-T-29504 Pin Terminus

MS PIN TERMINUS P/N	*M29504 / 04-xxxx**

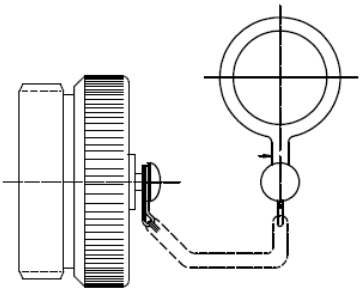


**Defined by fiber optic cable configuration

*CABLE PROTECTION CAP

D38999 / 32 Plug Protection Cap

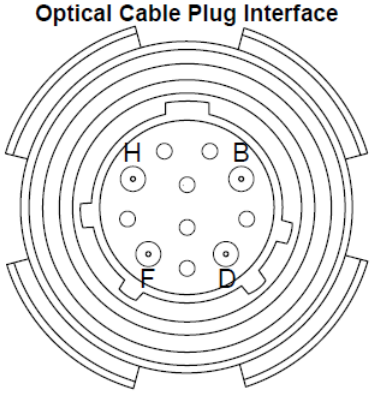
MS PLUG CAP P/N	*D38999 / 32W19N



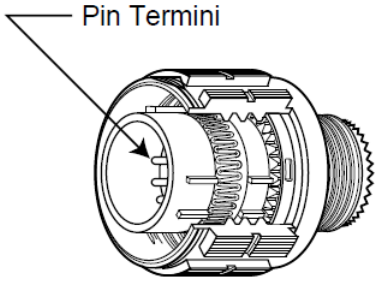
D38999 PLUG PORT FUNCTIONS

Port Number	TX	RX
4	H	F

TOP
Optical Cable Plug Interface



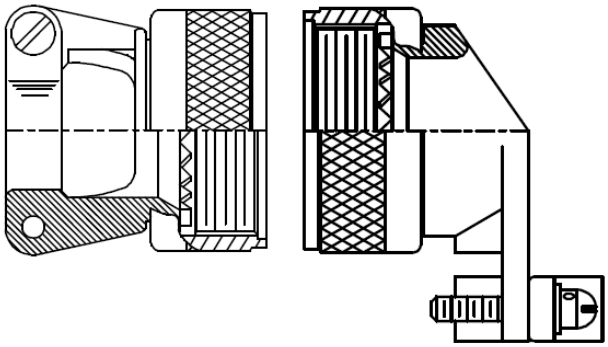
Front face of the optical cable plug pin insert shown. Transceiver insert opposite.



*CABLE BACKSHELL

MIL-C-85049 Cable Backshell

MS BACKSHELL P/N	*MS85049 / xxxxxx**



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

FIVE PORT (4+1) VIKING SERIES D38999, 10/100BASE-T/FX MANAGED ETHERNET SWITCH

APPENDIX A2 PART NUMBER OPTIONS

In-Line, Five (4+1) Port, 10/100Base-T/FX, Managed Ethernet Switch

VM42 F - 5 L C U - F x - S483

Product Function
VM42 = In-line Managed Ethernet Switch

Shell Configuration
F = Flange Mount

# of Ports
5 = 4 + 1

Optical Interface
L = 100Base-FX

Power Supply Voltage
C = 5.0 VDC

Electrical Interface
U = 10/100Base-TX

D38999 Shell Size
F = 19-35 / 11

Shell Planting
F = NI
W = OD CD / NI
Z = ZN / NI

Enhanced Link Budget

192 Bob Fitz Road, Johnson City, TN 37615
salesmp@moog.com
moogprotokraft.com