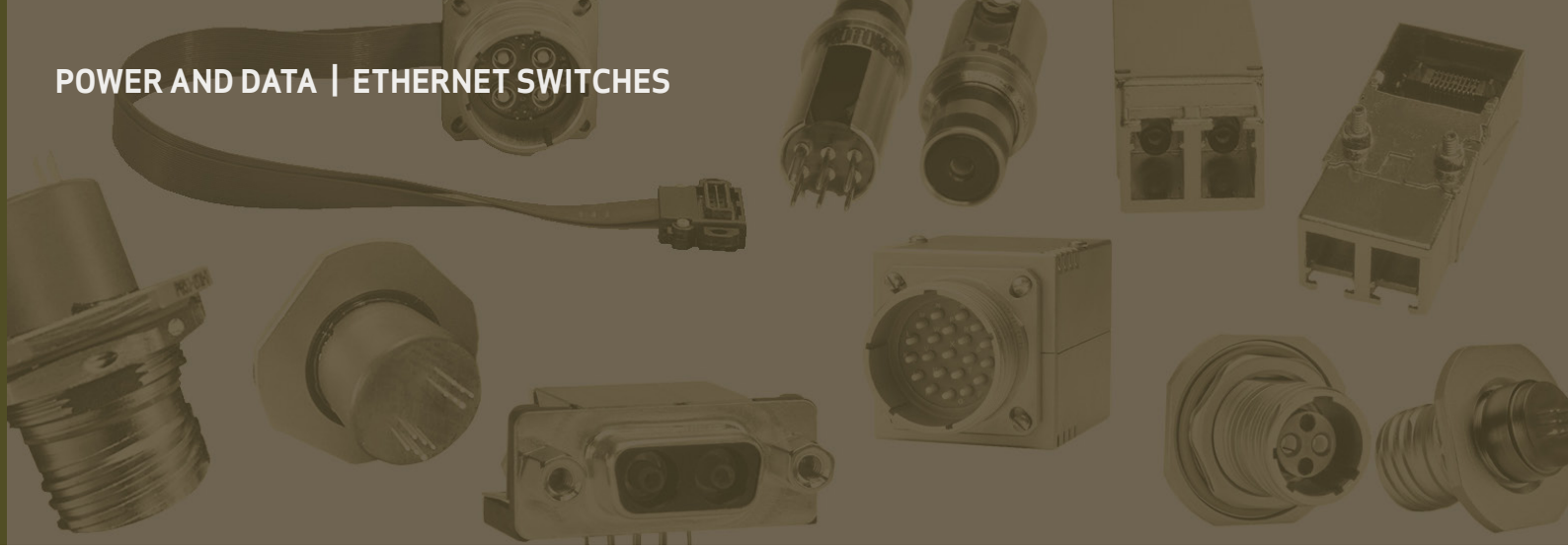


VIKING SERIES

10/100/1000BASE-T + 10GBASE-SR, AUTO MDI/MDIx, AUTONEGOTIOABLE MIL-DTL-38999, MANAGED ETHERNET SWITCH



Viking series 10/100/1000BASE-T + 10GBASE-SR managed Ethernet switches consist of 4x10/100/1000Base-T ports plus 2x 10GBase-SR ports in a floor mounted in-line MIL-DTL-38999 connector assembly.

The Viking series Ethernet switch offers two separate D38999 Ethernet connectorinterfaces.OneinterfaceisaD38999/19-35with4x10/100/1000Base-T Ethernet ports compliant with IEEE-802.3 plus the 28 VDC interface. The other interface is a D38999/19-11 with 2x 10GBase-SR Ethernet fiber optic ports per IEEE-802.3.

The Viking 4+2 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 10/100/1000BASE-T + 10GBASE-SR Ethernet switches are vibration isolated, environmentally hardened components designed for use in harsh environment applications.

MOOG

SIX PORT (4+2) VIKING SERIES D38999, 10/100/1000BASE-T + 10GBASE-SR, MANAGED ETHERNET SWITCH

6 Port (4 Copper + 2 Optical), Floor Mounted

FEATURES

- Up to 4x 10/100/1000Base-T non-blocking wire speed copper Ethernet ports per IEEE 802.3
- Up to 2x 10GBase-SR fiber Ethernet ports per IEEE 802.3
- Electrical cable links up to 100 meters (EIA/TIA Cat-5E)
- Fiber optic link distances up to 300 meters (50/125µ 2,000 MHz*Km MMF)
- Operating temperature range from -40°C to +85°C
- Jumbo frame support
- Full duplex fl ow control per IEEE Std 802.3x and half duplex back pressure, symmetric and asymmetric
- 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
- Polysulfide treated for moisture resistance

APPLICATIONS

Viking series 4+2 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
10/100/1000BASE-T + 10GBASE-SR - 28 VDC	VX42F-6AAT-FW

See Appendix A2 for more part number options

SIX PORT (4+2) VIKING SERIES D38999, 10/100/1000BASE-T + 10GBASE-SR, MANAGED ETHERNET SWITCH

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
Power Supply Voltage	V_{CC}	+18.0	28.0	+36.0	V
Power Supply Noise (p-p)	N_P			200	mV

POWER SUPPLY CURRENT T_A = OPERATING TEMPERATURE RANGE

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Suppy Current @ 28VDC	I_{CCT}		180	220	mA

DESIGNED TO STANDARDS

Requirement	Description	Section
MIL-STD-461	Conducted Emissions	CE102
MIL-STD-461	Conducted Susceptibility	CS101, CS114-116
MIL-STD-461	Radiated Emissions	RE102
MIL-STD-461	Radiated Susceptibility	RE103
MIL-STD-810	High/Low Temp Opp	M 501.6/502.6 P II
MIL-STD-810	High/Low Temp Storage	M 502.6/502.6 P I
MIL-STD-810	Altitude Opp/Non-Opp	M 500 P I, 15 k feet
MIL-STD-810	Humidity	M 507, P II
MIL-STD-810	Acoustic Noise	M 515.7 P I
MIL-STD-810	Shock	> 100 G
MIL-STD-810	Vibration	M 514
MIL-STD-810	Sea Salt Atmosphere	M 509
MIL-STD-810	Fungus	M 508.6
ANSI/ESD S20.20	ESD	Class 1
MIL-STD-704	Steady State Limites for Voltage	LDC102
MIL-STD-704	Voltage Distortion Spectrum	LDC103
MIL-STD-704	Total Ripple	LDC104
MIL-STD-704	Steady State Limits	LDC301

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	

SIX PORT (4+2) VIKING SERIES D38999, 10/100/1000BASE-T + 10GBASE-SR, MANAGED ETHERNET SWITCH

OPTICAL TRANSMITTERS T_A = OPERATING TEMPERATURE RANGE

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Optical Output Power	P_o	-7.3		-1.0	dBm
Optical Output Wavelength	λ_{OUT}	830	850	860	nM
Extinction Ratio	ER	3.0	5.0		dB

OPTICAL RECEIVERS T_A = OPERATING TEMPERATURE RANGE

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Optical Sensitivity	P_I	-11.1		-1.0	dBm
Optical Wavelength	λ_{IN}	770	850	860	nM

OPTICAL FIBER LINK DISTANCES

Application	Cable Specification	Distance
10GBASE-S; IEEE:802.3:2005	62.5/125µ - 200MHz*Km	33M
	50/125µ - 2000MHz*Km	300M

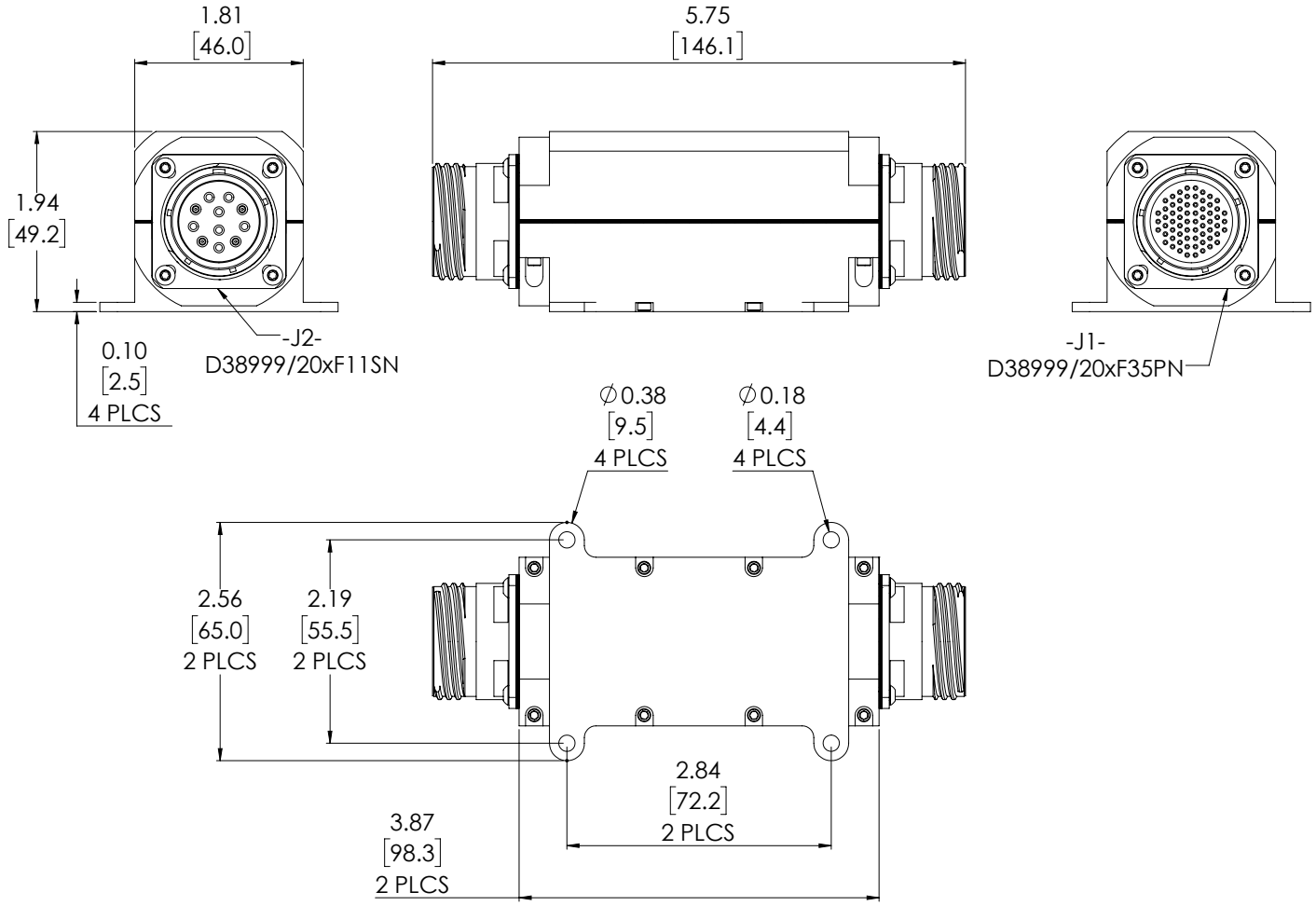
COPPER CABLE LINK DISTANCES

Application	Cable Specification	Distance
Gigabit Ethernet - IEEE 802.3:2005 - 1000BASE-T	TIA/EIA-568-B Cat 5E - for other transmission media, please consult the factory	100M

SIX PORT (4+2) VIKING SERIES D38999, 10/100/1000BASE-T + 10GBASE-SR, MANAGED ETHERNET SWITCH

OUTLINE DRAWING

Dimensions are shown as: inches [mm]

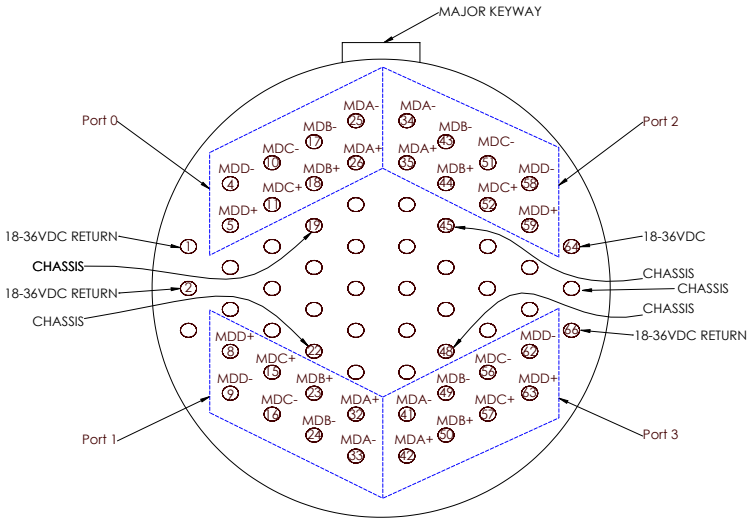


PORT / FUNCTION ASSIGNMENTS

Port Number	Function
J1	4x10/100/1000Base-T + 28VDC
J2	2x10GBASE-SR

SIX PORT (4+2) VIKING SERIES D38999, 10/100/1000BASE-T + 10GBASE-SR, 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

MIL-DTL-38999 OPTICAL INTERFACE					
Port Number	Pin Number	Function	Port Number	Pin Number	Function
0	26	MDA+	2	35	MDA+
	25	MDA-		34	MDA-
	18	MDB+		44	MDB+
	17	MDB-		43	MDB-
	11	MDC+		52	MDC+
	10	MDC-		51	MDC-
	5	MDD+		59	MDD+
	4	MDD-		58	MDD-
1	32	MDA+	3	42	MDA+
	33	MDA-		41	MDA-
	23	MDB+		50	MDB+
	24	MDB-		49	MDB-
	15	MDC+		57	MDC+
	16	MDC-		56	MDC-
	8	MDD+		63	MDD+
	9	MDD-		62	MDD-

SIX PORT (4+2) VIKING SERIES D38999, 10/100/1000BASE-T + 10GBASE-SR, 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	18-36 VDC Return - Isolated from Chassis
2	ALL	GND	N/A	18-36 VDC Return - Isolated from Chassis
3	N/A	N/C	N/A	Do Not Connect - Factory Use Only
4	0	MDD-	8	IEEE-802.3.2005 10/100/1000Base-T
5	0	MDD+	7	IEEE-802.3.2005 10/100/1000Base-T
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	1	MDD+	7	IEEE-802.3.2005 10/100/1000Base-T
9	1	MDD-	8	IEEE-802.3.2005 10/100/1000Base-T
10	0	MDC-	5	IEEE-802.3.2005 10/100/1000Base-T
11	0	MDC+	4	IEEE-802.3.2005 10/100/1000Base-T
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	1	MDC+	4	IEEE-802.3.2005 10/100/1000Base-T
16	1	MDC-	5	IEEE-802.3.2005 10/100/1000Base-T
17	0	MDB-	6	IEEE-802.3.2005 10/100/1000Base-T
18	0	MDB+	3	IEEE-802.3.2005 10/100/1000Base-T
19	ALL	CHASSIS	N/A	CHASSIS
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	CHASSIS
23	1	MDB+	6	IEEE-802.3.2005 10/100/1000Base-T
24	1	MDB-	3	IEEE-802.3.2005 10/100/1000Base-T
25	0	MDA-	2	IEEE-802.3.2005 10/100/1000Base-T
26	0	MDA+	1	IEEE-802.3.2005 10/100/1000Base-T
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	MDA+	1	IEEE-802.3.2005 10/100/1000Base-T
33	1	MDA-	2	IEEE-802.3.2005 10/100/1000Base-T
34	2	MDA-	2	IEEE-802.3.2005 10/100/1000Base-T

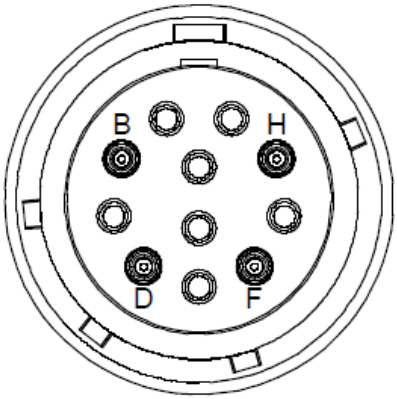
SIX PORT (4+2) VIKING SERIES D38999, 10/100/1000BASE-T + 10GBASE-SR, MANAGED ETHERNET SWITCH

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

Pin Number	Port Number	Function	RJ-45 Eq. Pin Number	Logic Family
35	2	MDA+	1	IEEE-802.3.2005 10/100/1000Base-T
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	MDA-	2	IEEE-802.3.2005 10/100/1000Base-T
42	3	MDA+	1	IEEE-802.3.2005 10/100/1000Base-T
43	2	MDB-	6	IEEE-802.3.2005 10/100/1000Base-T
44	2	MDB+	3	IEEE-802.3.2005 10/100/1000Base-T
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	MDB-	6	IEEE-802.3.2005 10/100/1000Base-T
50	3	MDB+	3	IEEE-802.3.2005 10/100/1000Base-T
51	2	MDC-	5	IEEE-802.3.2005 10/100/1000Base-T
52	2	MDC+	4	IEEE-802.3.2005 10/100/1000Base-T
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	3	MDC-	5	IEEE-802.3.2005 10/100/1000Base-T
57	3	MDC+	4	IEEE-802.3.2005 10/100/1000Base-T
58	2	MDD-	8	IEEE-802.3.2005 10/100/1000Base-T
59	2	MDD+	7	IEEE-802.3.2005 10/100/1000Base-T
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	3	MDD-	8	IEEE-802.3.2005 10/100/1000Base-T
63	3	MDD+	7	IEEE-802.3.2005 10/100/1000Base-T
64	ALL	V_{CC}	N/A	18-36VDC
65	ALL	CHASSIS	N/A	CHASSIS
66	ALL	GND	N/A	18-36 VDC Return - Isolated from Chassis

SIX PORT (4+2) VIKING SERIES D38999, 10/100/1000BASE-T + 10GBASE-SR, MANAGED ETHERNET SWITCH

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
5	B	D

SIX PORT (4+2) VIKING SERIES D38999, 10/100/1000BASE-T + 10GBASE-SR, 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

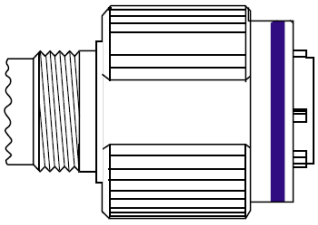
SIX PORT (4+2) VIKING SERIES D38999, 10/100/1000BASE-T + 10GBASE-SR, MANAGED ETHERNET SWITCH

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

*D38999 PLUG - PIN INSERT

MIL-DTL-38999 Cable Plug

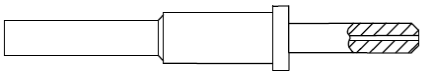
MS PLUG P/N	*D38999/26WF11PN



*FIBER OPTIC PIN TERMINUS

MIL-T-29504 Pin Terminus

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

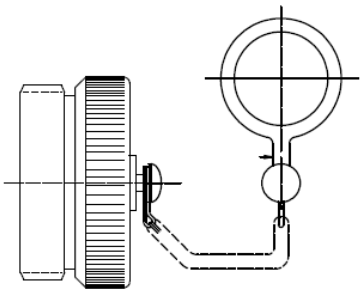


**defined by fiber optic cable configuration

*CABLE PROTECTION CAP

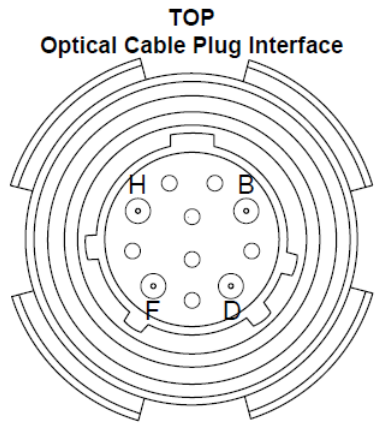
D38999/32 Plug Protection Cap

MS PLUG CAP P/N	*D38999/32W19N



D38999 PLUG PORT FUNCTIONS

Port Number	TX	RX
4	H	F
5	B	D

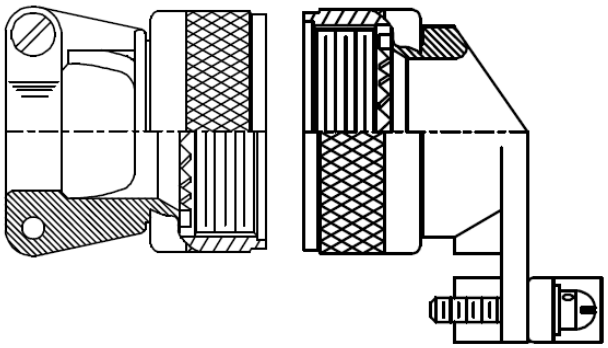


Front face of the optical cable plug pin insert shown. Transceiver insert opposite.

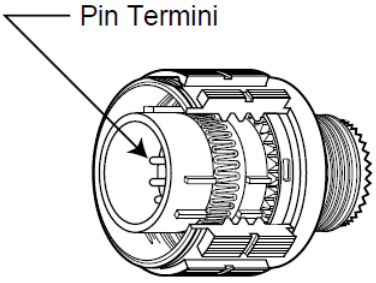
*CABLE BACKSHELL

MIL-C-85049 Cable Backshell

MS BACKSHELL P/N	*MS85049/xxxxxx**



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



SIX PORT (4+2) VIKING SERIES D38999, 10/100/1000BASE-T + 10GBASE-SR, MANAGED ETHERNET SWITCH

APPENDIX A2 PART NUMBER OPTIONS

In-Line, Six (4+2) 10/100/1000BASE-T + 10GBASE-SR, Managed Ethernet Switch

VX42 F - 6 A A T - F x

Product Function
VX42 = Inline Managed Ethernet Switch

Shell Configuration
F = Flange Mount

# of Ports
6 = 4 + 2

OPTICAL PROTOCOL
A = 10GBase-SR

Power Supply Voltage
A = EMI Filtered 28 VDC

Electrical Interface*
T = 10/100/1000Base-T

D38999 Shell Size
F = 19-35 / 11

ENCLOSURE FINISH
F = NI
W = OD CD / NI
Z = ZN / NI

*Consult factory for optional configurations

MOOG

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