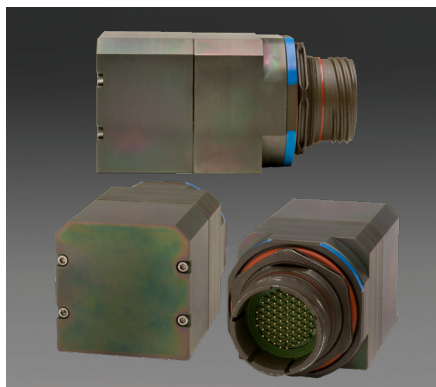# VIKING SERIES
10/100/1000BASE-T, AUTO MDI / MDIX, AUTONEGOTIOABLE
MIL-DTL-38999, LAYER 2, MANAGED ETHERNET SWITCH

Viking series 10/100/1000Base-T managed Ethernet switches consist of 5x10/100/1000Base-T ports with autonegotiation and auto MDI / MDIX cicuitry into a bulkhead mounted MIL-DTL-38999 connector assembly.

The external interface of the Viking series 10/100/1000Base-T Ethernet switches is a size 19 D38999 Series III connector with 5x IEEE-802.3U:2005 compliant Ethernet ports plus the power supply and ground connections.

Viking series 10/100/1000Base-T Ethernet switches are vibration isolated, environmentally hardened components designed for use in harsh environment applications.

MOOG

10/100/1000BASE-T, AUTO MDI / MDIX, AUTONEGOTIOABLE MIL-DTL-38999, LAYER 2, MANAGED ETHERNET SWITCH

Five Port
D38999 10/100/1000Base-T / Managed Ethernet Switch

FEATURES

• 5 triple-speed (10/100/1000 Mbps) copper Ethernet ports per IEEE 802.3:2005

• Cable link distances up to 100 Meters (EIA/TIA Cat-5E)

• Operating temperature range from -40°C to +85°C

• Jumbo frame support in all speeds (10/100/1000 Mbps) verified

• Full duplex flow control per IEEE Std 802.3X and half duplex back pressure, symmetric and asymmetric

• Designed to shock and vibration resistance per MIL-STD-810

• Olive drab cadmium plating meets stringent corrosion resistance specifications

• Aluminum housings are strong, durable and light weight

• Auto sensing of half or full duplex operation

• Managed Ethernet switch

APPLICATIONS

Viking series 10/100/1000Base-T Ethernet switches enable high speed network communications in harsh environments.

• Civil and military vehicle networking

• 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**
5x10/100/1000BASE-T, Flange	VM51F-5UAT-FW
5x10/100/1000BASE-T, Jam Nut	VM51J-5UAT-FW

See Appendix A1 for more part number options

10/100/1000BASE-T, AUTO MDI / MDIX, AUTONEGOTIOABLE MIL-DTL-38999, LAYER 2, 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}	+4.5	28.0	+36.0	V

DESIGNED TO PERFORM UNDER THE FOLLOWING CONDITIONS

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	RS103
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, 15k 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
MIL-STD-1686	ESD	Class 1

MATERIALS

Item	Detail	Notes
Shell and housing	Aluminum Alloy 6061-T6	
Plating	OD-CD, NI or ZN-NI	
Insert	Thermoplastic	
Interfacial Seal	Elastomer	
Weight	<12 oz / 341 gm	

ELECTRICAL PERFORMANCE SPECIFICATIONS T_A = OPERATING TEMPERATURE RANGE

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Power Supply Current @28 VDC	P_I	120	150	185	mA
Power Consumption	P	3.36	4.2	5.18	W

10/100/1000BASE-T, AUTO MDI / MDIX, AUTONEGOTIOABLE
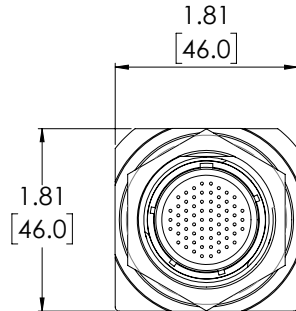# MIL-DTL-38999, LAYER 2, MANAGED ETHERNET SWITCH
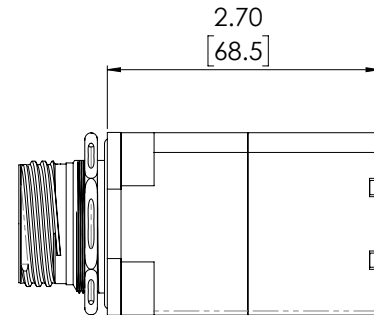
Dimensions are shown as: inches [mm]

4-40 Thread
0.36 [9.2] Deep
4 Places
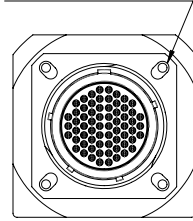
J1 - Option
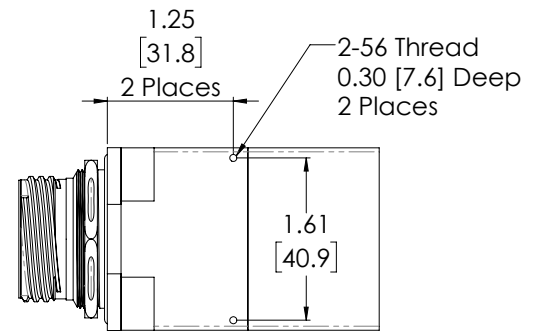D38990/20xF35PN

1.81
[46.0]

1.81
[46.0]

J1 - Option
D38990/24xF35PN

2.70
[68.5]

x = Finish Code; F, W or Z

1.25
[31.8]
2 Places

2-56 Thread
0.30 [7.6] Deep
2 Places

1.61
[40.9]

FLANGE MOUNT OR JAM NUT PANEL CUTOUT DIMENSIONS

Shell Size Code	Shell Size	M Min	P Holes	R Bsc	D1 Min	D2 Min
F	19	1.297 [32.94]	0.133 [3.4] / 0.123 [3.1]	1.156 [29.4]	1.385 [35.18]	1.335 [33.91]

Flange Mount
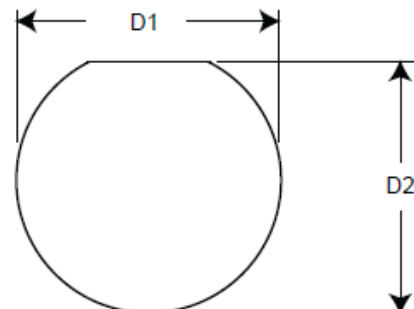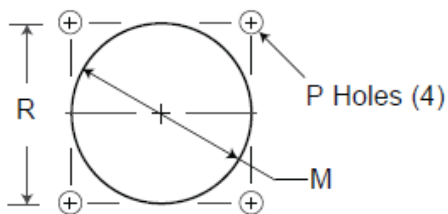
R

P Holes (4)

M

D1

D2

10/100/1000BASE-T, AUTO MDI / MDIX, AUTONEGOTIOABLE
MIL-DTL-38999, LAYER 2, MANAGED ETHERNET SWITCH
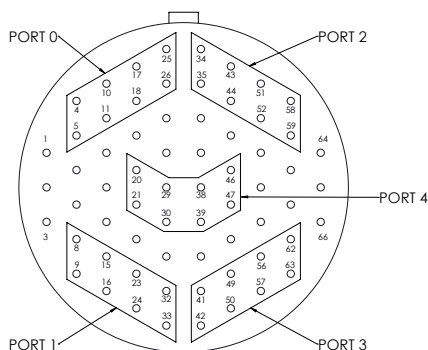
	J1 D38999 ELECTRICAL PIN FUNCTIONS - CONTINUED ON NEXT PAGE			
Pin Number	Port Number	Function	RJ-45 Eq. Pin Number	Logic Family
1	N/A	GND	N/A	Isolated from Case GND
2	N/A	GND	N/A	Isolated from Case GND
3	N/A	N/C	N/A	Do Not Connect - Factory Use Only
4	0	MDD-	8	IEEE-802.3.2005 10/100/1000Base-T
5	0	MDD+	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	N/A	N/C	N/A	Do Not Connect - Factory Use Only
20	4	MDA+	1	IEEE-802.3.2005 10/100/1000Base-T
21	4	MDA-	2	IEEE-802.3.2005 10/100/1000Base-T
22	N/A	N/C	N/A	Do Not Connect - Factory Use Only
23	1	MDB+	3	IEEE-802.3.2005 10/100/1000Base-T
24	1	MDB-	6	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	4	MDB+	3	IEEE-802.3.2005 10/100/1000Base-T
30	4	MDB-	6	IEEE-802.3.2005 10/100/1000Base-T
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

10/100/1000BASE-T, AUTO MDI / MDIX, AUTONEGOTIOABLE
MIL-DTL-38999, LAYER 2, MANAGED ETHERNET SWITCH
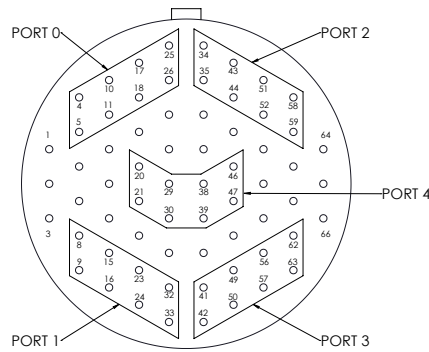
J1 / D38999 / 20XF35PN ELECTRICAL PIN FUNCTIONS - CONTINUED FROM PREVIOUS PAGE

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	4	MDC+	N/A	IEEE-802.3.2005 10/100/1000Base-T
39	4	MDC-	N/A	IEEE-802.3.2005 10/100/1000Base-T
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	N/A	N/C	N/A	Do Not Connect - Factory Use Only
46	4	MDD+	N/A	IEEE-802.3.2005 10/100/1000Base-T
47	4	MDD-	N/A	IEEE-802.3.2005 10/100/1000Base-T
48	N/A	N/C	N/A	Do Not Connect - Factory Use Only
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	18-36 VDC
65	ALL	V_{CC}	N/A	18-36 VDC
66	N/A	N/C	N/A	Do Not Connect - Factory Use Only

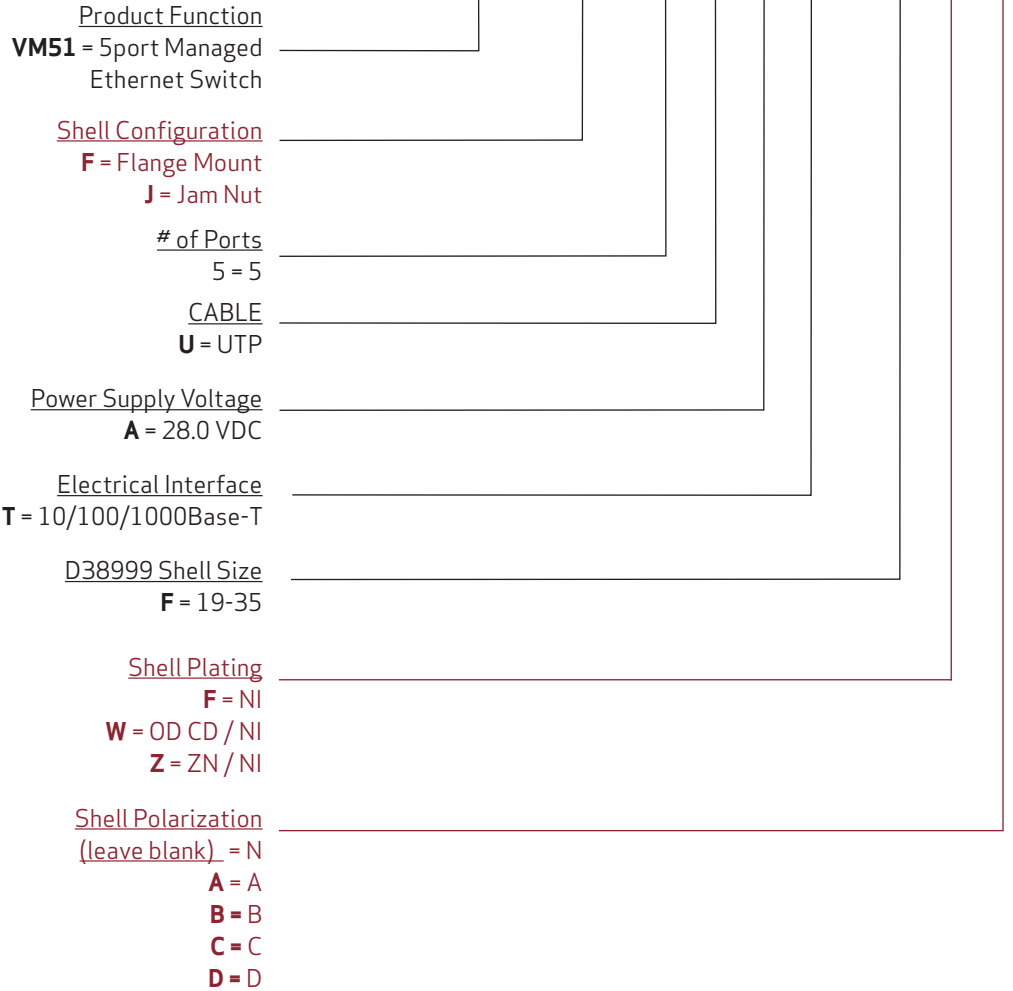# 10/100/1000BASE-T, AUTO MDI / MDIX, AUTONEGOTIOABLE MIL-DTL-38999, LAYER 2, MANAGED ETHERNET SWITCH

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.
Management	Debug CLI
	RESTful API
	Rx and Tx Counters
Multicast	IGMP Snooping
Protocols and Advanced	LLDP
	Rapid Spanning Tree

10/100/1000BASE-T, AUTO MDI / MDIX, AUTONEGOTIOABLE MIL-DTL-38999, LAYER 2, MANAGED ETHERNET SWITCH

APPENDIX A1 PART NUMBER OPTIONS
Five Port, 10/100/1000Base-T, Managed Ethernet Switch

VM51 x - 5 U A T - F x x

Product Function
VM51 = 5port Managed Ethernet Switch

Shell Configuration
F = Flange Mount
J = Jam Nut

# of Ports
5 = 5

CABLE
U = UTP

Power Supply Voltage
A = 28.0 VDC

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

D38999 Shell Size
F = 19-35

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

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

MOOG
PROTOKRAFT

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