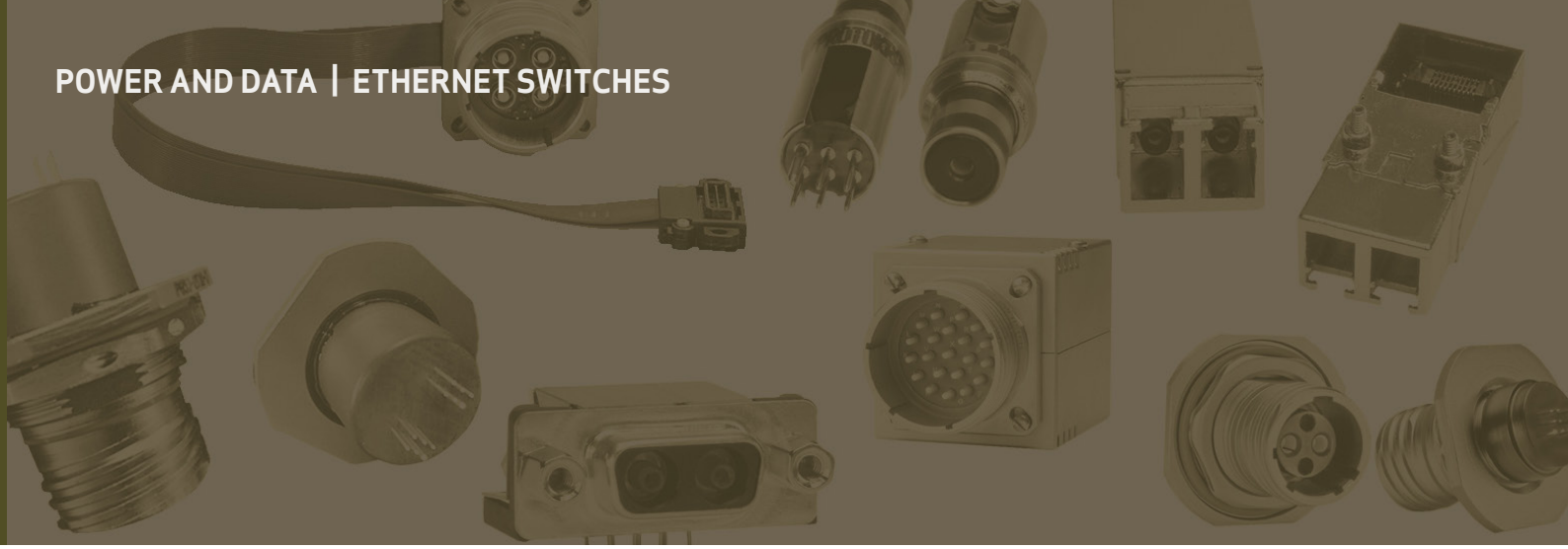
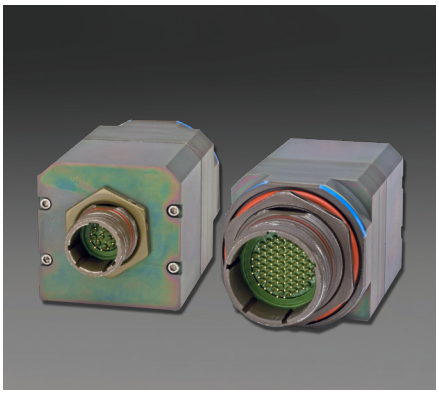


VIKING SERIES

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



Viking series 10/100/1000Base-T managed Ethernet switches consist of 5x 10/100/1000Base-T ports with autonegotiation and auto MDI / MDIX circuitry in a wall or floor mounted in-line MIL-DTL-38999 connector assembly.

The Viking series managed Ethernet switch consists of two Ethernet interfaces for in-line port expander applications. The 4x expansion interface of the Viking series 10/100/1000Base-T Ethernet switches is a D38999 size 19-35 connector with 4x IEEE-802.3U:2005 compliant 10/100/1000Base-T Ethernet ports.

The 1x up-link Ethernet electrical interface of the Viking series Ethernet switch is a D38999 size 11-35 connector with 1x IEEE-802.3U:2005 compliant 10/100/1000Base-T Ethernet ports and the power supply connections. Viking series 10/100/1000Base-T Ethernet switches are vibration isolated, environmentally hardened components designed for use in harsh environment applications.

- Front interface is sealed against liquid and solid contaminants when sealed
- Shock and vibration resistant

MOOG

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

Five Port (4+1)
D38999 In-Line 4+1 Port 10/100/1000Base-T 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 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 resistant per MIL-STD-810
- Olive drab cadmium plating meets stringent corrosion resistance specifications
- Aluminum connector shells and housing 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
10/100/1000Base-T - Jam Nut	VM41J-5UAT-FW
10/100/1000Base-T - Flange	VM41F-5UAT-FW

See Appendix A1 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
Power Supply Voltage	V_{CC}	+4.5	28.0	+36.0	V
Power Supply Noise (p-p)	N_P			200	mV

DESIGNED TO PERFORM UNDER THE FOLLOWING CONDITIONS

Requirement	Feature	Condition	Notes
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	<13 oz / 369 gm	

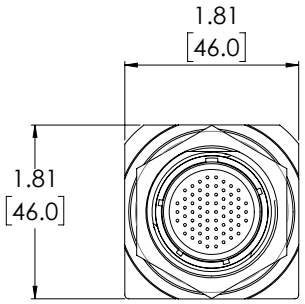
ELECTRICAL PERFORMANCE SPECIFICATIONS T_A = OPERATING TEMPERATURE RANGE

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

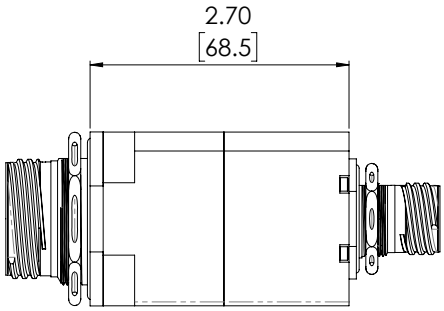
VIKING SERIES 10/100/1000BASE-T, AUTO MDI / MDIX, AUTONEGOTIABLE MIL-DTL-38999, LAYER 2, MANAGED ETHERNET SWITCH

OUTLINE DRAWING

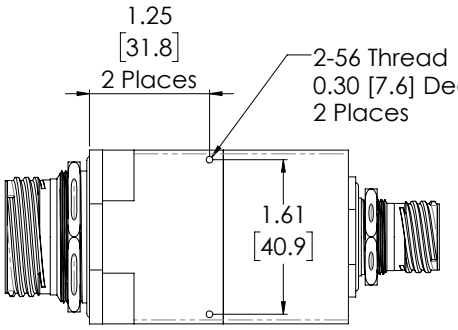
J1 - Option
D38999/20xF35PN

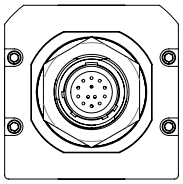


J1 - Option
D38999/24xF35PN



x = Finish Code: F, W or Z

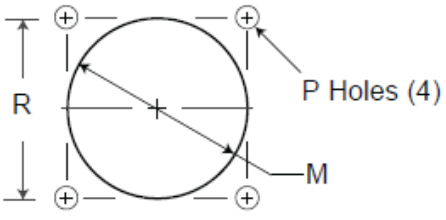


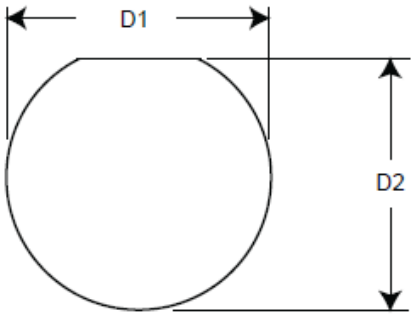


J2
D38999/24xB35PN

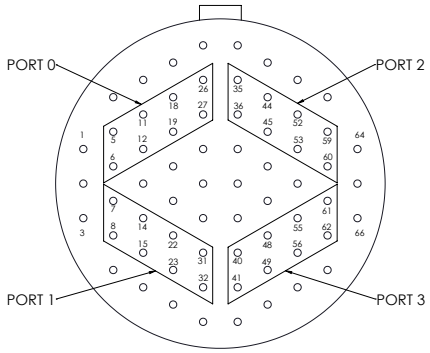
FLANGE MOUNT OR JAM NUT PANEL CUTOUT DIMENSIONS

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]



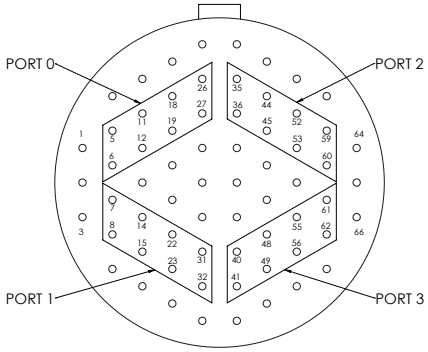


VIKING SERIES 10/100/1000BASE-T, AUTO MDI / MDIX, AUTONEGOTIABLE MIL-DTL-38999, LAYER 2, MANAGED ETHERNET SWITCH



J1 / D38999/20XF35PA ELECTRICAL PIN FUNCTIONS - CONTINUED ON NEXT PAGE

Pin Number	Port Number	Function	RJ-45 Eq. Pin Number	Logic Family
1	N/A	N/C	N/A	Do Not Connect - Factory Use Only
2	N/A	N/C	N/A	Do Not Connect - Factory Use Only
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	0	MDD-	8	IEEE-802.3.2005 10/100/1000Base-T
6	0	MDD+	7	IEEE-802.3.2005 10/100/1000Base-T
7	1	MDD-	8	IEEE-802.3.2005 10/100/1000Base-T
8	1	MDD+	7	IEEE-802.3.2005 10/100/1000Base-T
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	0	MDC-	5	IEEE-802.3.2005 10/100/1000Base-T
12	0	MDC+	4	IEEE-802.3.2005 10/100/1000Base-T
13	N/A	N/C	N/A	Do Not Connect - Factory Use Only
14	1	MDC-	5	IEEE-802.3.2005 10/100/1000Base-T
15	1	MDC+	4	IEEE-802.3.2005 10/100/1000Base-T
16	N/A	N/C	N/A	Do Not Connect - Factory Use Only
17	N/A	N/C	N/A	Do Not Connect - Factory Use Only
18	0	MDB-	6	IEEE-802.3.2005 10/100/1000Base-T
19	0	MDB+	3	IEEE-802.3.2005 10/100/1000Base-T
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	1	MDB-	6	IEEE-802.3.2005 10/100/1000Base-T
23	1	MDB+	3	IEEE-802.3.2005 10/100/1000Base-T
24	N/A	N/C	N/A	Do Not Connect - Factory Use Only
25	N/A	N/C	N/A	Do Not Connect - Factory Use Only
26	0	MDA-	2	IEEE-802.3.2005 10/100/1000Base-T
27	0	MDA+	1	IEEE-802.3.2005 10/100/1000Base-T
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	1	MDA-	2	IEEE-802.3.2005 10/100/1000Base-T
32	1	MDA+	1	IEEE-802.3.2005 10/100/1000Base-T
33	N/A	N/C	N/A	Do Not Connect - Factory Use Only
34	N/A	N/C	N/A	Do Not Connect - Factory Use Only

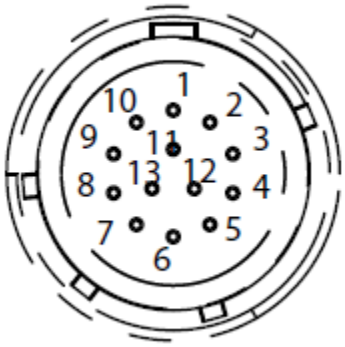


J1 / D38999 / 20XF35PA ELECTRICAL PIN FUNCTIONS - CONTINUED FROM PREVIOUS PAGE

Pin Number	Port Number	Function	RJ-45 Eq. Pin Number	Logic Family
35	2	MDA-	2	IEEE-802.3.2005 10/100/1000Base-T
36	2	MDA+	1	IEEE-802.3.2005 10/100/1000Base-T
37	N/A	N/C	N/A	Do Not Connect
38	N/A	N/C	N/A	Do Not Connect
39	N/A	N/C	N/A	Do Not Connect
40	3	MDA+	1	IEEE-802.3.2005 10/100/1000Base-T
41	3	MDA-	2	IEEE-802.3.2005 10/100/1000Base-T
42	N/A	N/C	N/A	Do Not Connect
43	N/A	N/C	N/A	Do Not Connect
44	2	MDB-	6	IEEE-802.3.2005 10/100/1000Base-T
45	2	MDB+	3	IEEE-802.3.2005 10/100/1000Base-T
46	N/A	N/C	N/A	Do Not Connect
47	N/A	N/C	N/A	Do Not Connect
48	3	MDB+	3	IEEE-802.3.2005 10/100/1000Base-T
49	3	MDB-	6	IEEE-802.3.2005 10/100/1000Base-T
50	N/A	N/C	N/A	Do Not Connect
51	N/A	N/C	N/A	Do Not Connect
52	2	MDC-	5	IEEE-802.3.2005 10/100/1000Base-T
53	2	MDC+	4	IEEE-802.3.2005 10/100/1000Base-T
54	N/A	N/C	N/A	Do Not Connect
55	3	MDC+	4	IEEE-802.3.2005 10/100/1000Base-T
56	3	MDC-	5	IEEE-802.3.2005 10/100/1000Base-T
57	N/A	N/C	N/A	Do Not Connect
58	N/A	N/C	N/A	Do Not Connect
59	2	MDD-	8	IEEE-802.3.2005 10/100/1000Base-T
60	2	MDD+	7	IEEE-802.3.2005 10/100/1000Base-T
61	3	MDD+	7	IEEE-802.3.2005 10/100/1000Base-T
62	3	MDD-	8	IEEE-802.3.2005 10/100/1000Base-T
63	N/A	N/C	N/A	Do Not Connect
64	N/A	N/C	N/A	Do Not Connect
65	N/A	N/C	N/A	Do Not Connect
66	N/A	N/C	N/A	Do Not Connect

J2 D38999 PIN AND PORT ASSIGNMENTS

TOP



Front view of the J2 D38999 connector shown - mating cable plug opposite - see J2 D38999 Pin Function Chart below for details

J2 / D38999/24XB35PN ELECTRICAL PIN FUNCTIONS

Pin Number	Function	RJ-45 Pin Number	Logic Family
1	*RESET_LOW	N/A	LVTTL with Internal Pullup
2	MDA+	1	IEEE-802.3.2005 10/100/1000Base-T
3	MDA-	2	IEEE-802.3.2005 10/100/1000Base-T
4	MDB+	3	IEEE-802.3.2005 10/100/1000Base-T
5	MDB-	6	IEEE-802.3.2005 10/100/1000Base-T
6	GND	N/A	Isolated from Case GND
7	MDC-	5	IEEE-802.3.2005 10/100/1000Base-T
8	MDC+	4	IEEE-802.3.2005 10/100/1000Base-T
9	MDD-	8	IEEE-802.3.2005 10/100/1000Base-T
10	MDD+	7	IEEE-802.3.2005 10/100/1000Base-T
11	V_{CC}	N/A	12-36 VDC
12	GND	N/A	Isolated from Case GND
13	V_{CC}	N/A	12-36 VDC

*Reset Function: Logic “0” Input = Restart, registers initialized; Logic “1”, Open or High Z Input = Normal Operation

VIKING SERIES 10/100/1000BASE-T, AUTO MDI / MDIX, AUTONEGOTIABLE 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

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

APPENDIX A1 PART NUMBER OPTIONS

In-Line, 5x (4+1) Port, 10/100/1000Base-T, Managed Ethernet Switch

VM41 x - 5 U A T - F x x

Product Function
VM41 = Inline Managed Ethernet Switch

Shell Configuration
J = Jam Nut
F = Flange

# of Ports
5 = 4 + 1

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) _ = I
A = A
B = B
C = C
D = D

Other mounting and interface options are available.
Please consult the Moog Protokraft website for alternate configurations.

MOOG PROTOKRAFT

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