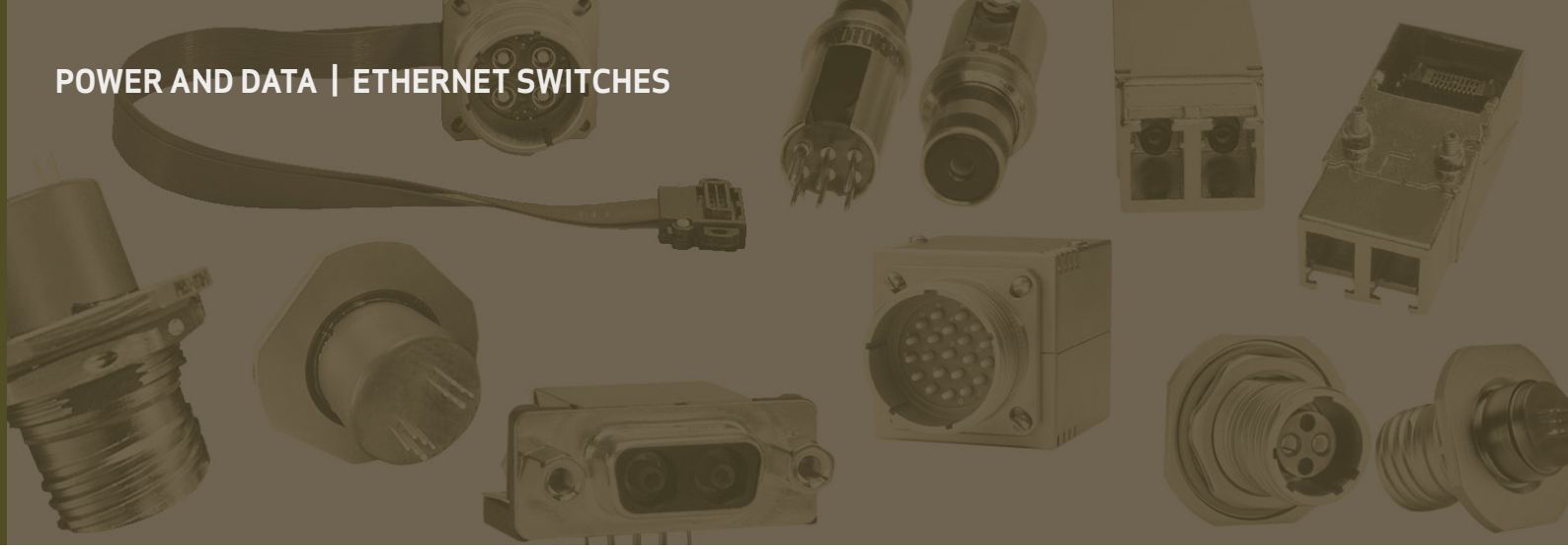
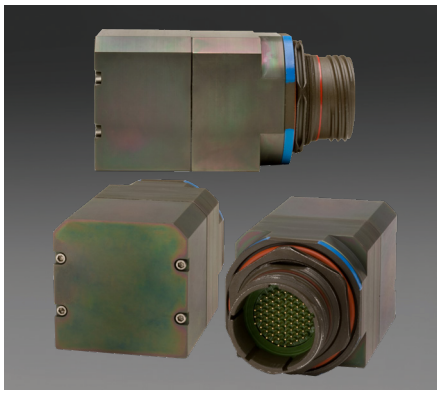


# VIKING SERIES

## 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 at 1000 Mbps only
- 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

## 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 | 28.0 | +36.0 | V |

## DESIGNED TO SPECIFICATIONS

| 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

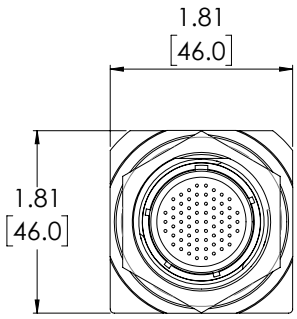
| Parameter | Symbol | Minimum | Typical | Maximum | Unit |
|---|---|---|---|---|---|
| Power Supply Current @28 VDC | $P_I$ | 120 | 150 | 185 | mA |
| Power Consumption | P | 3.36 | 4.2 | 5.18 | W |

## OUTLINE DRAWING

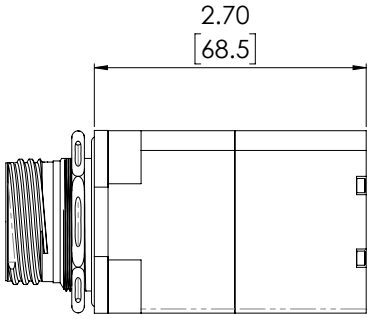
Dimensions are shown as: inches [mm]



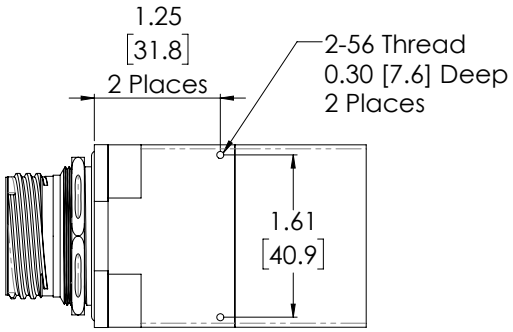

J1 - Option
D38990/20xF35PN




J1 - Option
D38990/24xF35PN



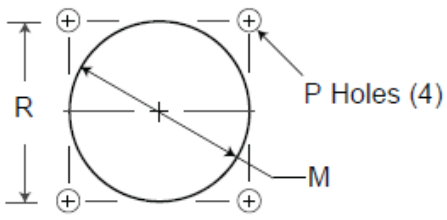

x = Finish Code; F, W or Z

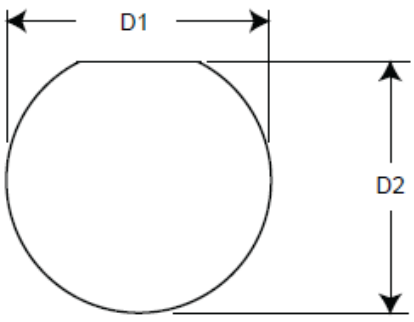


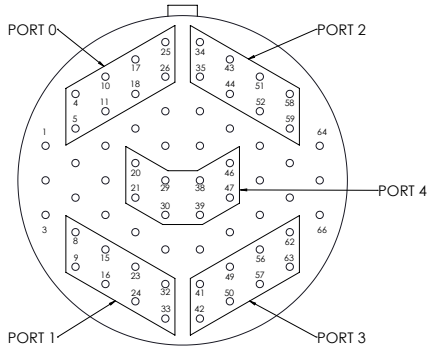

## FLANGE MOUNT OR JAM NUT PANEL CUTOUT DIMENSIONS

| 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

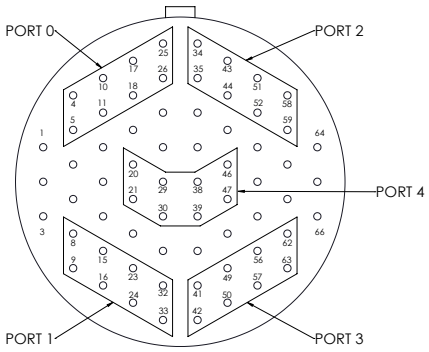





## J1 D38999 ELECTRICAL PIN FUNCTIONS - CONTINUED ON NEXT PAGE

| 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 |




## 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+ | 4 | IEEE-802.3.2005 10/100/1000Base-T |
| 39 | 4 | MDC- | 5 | 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+ | 7 | IEEE-802.3.2005 10/100/1000Base-T |
| 47 | 4 | MDD- | 8 | 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

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

Products and solutions are subject to the export control requirements of the country in which they are manufactured and / or sold.

© 2026 a Moog company. All rights reserved.
Product and company names listed are trademarks or trade names of their respective companies.