

# TN-5508/5516 Series

Preliminary

## EN50155 8/16-port managed Ethernet switches



- > M12 connectors for robust links
- > Wide power input range from 12 to 110 VDC (LV-MV model)
- > Isolated redundant power inputs with universal 12/24/36/48 VDC, 72/96/110 VDC, or 110/220 VDC/VAC power supply range
- > EN50155/50121-3-2/50121-4, NEMA TS2, and e-Mark compliant
- > -40 to 75°C operating temperature range (T models)
- > Turbo Ring, Turbo Chain, and IEEE 802.1D-2004 RSTP/STP for Ethernet redundancy



### Introduction

The ToughNet TN-5508/5516 series M12 managed Ethernet switches are designed for industrial applications in harsh environments. The TN series switches use M12 and other circular connectors to ensure tight, robust connections, and guarantee reliable operation against environmental disturbances, such as vibration and shock. The TN-5500-LV-MV switches provide the wide power input range of 12/24/36/48/72/96/110 VDC that allows you to use single source in global applications. In addition, the 12/24/36/48 VDC, 72/96/110 VDC, or 110/220 VDC/VAC dual, isolated redundant power supply

increases the reliability of your communications and saves on cabling/wiring costs. The TN-5508/5516 switches provide up to 8 or 16 fast Ethernet M12 ports. Models with an extended operating temperature range of -40 to 75°C are also available. The TN-5500 series Ethernet switches are compliant with EN50155/50121-3-2/50121-4 (railway applications), NEMA TS2 (traffic control systems), and e-Mark (vehicles) requirements, making the switches suitable for a variety of industrial applications.

### Features and Benefits

- Three rotary switches for setting the last 3 digits of the IP address makes maintenance even easier
- IPv6 Ready logo awarded (IPv6 Logo Committee certified)
- Leading EN50155-compliant industrial Ethernet switches for rolling stock applications
- DHCP Option 82 for IP address assignment with different policies
- Modbus/TCP industrial Ethernet protocol supported
- Turbo Ring, Turbo Chain, and IEEE 802.1D-2004 RSTP/STP for network redundancy
- IGMP snooping and GMRP for filtering multicast traffic
- Port-based VLAN, IEEE 802.1Q VLAN, and GVRP to ease network planning
- QoS (IEEE 802.1p/1Q and TOS/DiffServ) to increase determinism
- IEEE 802.3ad, LACP for optimum bandwidth utilization
- SNMPv3, IEEE 802.1X, HTTPS, and SSH to enhance network security
- SNMPv1/v2c/v3 for different levels of network management
- RMON for efficient network monitoring and proactive capability
- Bandwidth management prevents unpredictable network status
- Lock port allows access by only authorized MAC addresses
- Port mirroring for online debugging
- Automatic warning by exception through email, relay output
- Line-swap fast recovery
- Automatic recovery of connected device's IP addresses
- LLDP for automatic topology discovery in network management software
- Configurable by web browser, Telnet/serial console, and Windows utility
- Panel mounting or DIN-Rail mounting installation capability

### Specifications

#### Technology

#### Standards:

- IEEE 802.3 for 10BaseT
- IEEE 802.3u for 100BaseT(X)
- IEEE 802.3ab for 1000BaseT(X)
- IEEE 802.3x for Flow Control
- IEEE 802.1D for Spanning Tree Protocol
- IEEE 802.1w for Rapid STP
- IEEE 802.1Q for VLAN Tagging
- IEEE 802.1p for Class of Service
- IEEE 802.1X for Authentication
- IEEE 802.3ad for Port Trunk with LACP

**Protocols:** IGMPv1/v2 device, GMRP, GVRP, SNMPv1/v2c/v3, DHCP Server/Client, DHCP Option 66/67/82, BootP, TFTP, SNMP, SMTP, RARP, RMON, HTTP, HTTPS, Telnet, SSH, Syslog, LLDP, IEEE 1588 PTP, Modbus/TCP, IPv6

**MIB:** MIB-II, Ethernet-like MIB, P-BRIDGE MIB, Q-BRIDGE MIB, Bridge MIB, RSTP MIB, RMON MIB Group 1, 2, 3, 9

**Flow Control:** IEEE802.3x flow control, back pressure flow control

#### Switch Properties

**Priority Queues:** 4

**Max. Number of Available VLANs:** 64

**VLAN ID Range:** VID 1 to 4094

**IGMP Groups:** 256

### Interface

**Fast Ethernet:** Front cabling, M12 connector, 10/100BaseT(X) auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection

**Console Port:** M12 A-coding 5-pin male connector

**System LED Indicators:** PWR1, PWR2, FAULT, MSTR/HEAD, CPLR/TAIL

**Port LED Indicators:** 10/100M

**Alarm Contact:** 2 relay outputs in one M12 A-coding 5-pin male connector with current carrying capacity of 3 A @ 30 VDC or 3 A @ 240 VAC

**Rotary Switches:** For setting the last 3 digits of the IP address

### Power Requirements

**Input Voltage:**

- LV: 12/24/36/48 VDC (8.4 to 60 VDC)
- MV: 72/96/110 VDC (50.4 to 154 VDC)
- HV: 110/220 VDC/VAC (88 to 300 VDC, 85 to 264 VAC)

**Input Current:**

- TN-5508 Series: 0.234 A @ 24 VDC, 0.104 A @ 72 VDC, 0.072 A @ 110 VDC, 0.18 A @ 110 VAC, 0.12 A @ 220 VAC
- TN-5516 Series: 0.338 A @ 24 VDC, 0.133 A @ 72 VDC, 0.089 A @ 110 VDC, 0.270 A @ 110 VAC, 0.170 A @ 220 VAC

**Overload Current Protection:** Present

**Connection:** M23, 5-pin male connector

**Reverse Polarity Protection:** Present

### Physical Characteristics

**Housing:** Metal, IP54 protection (optional protective caps available for unused ports)

**Dimensions:**

TN-5508 Series: 185 x 170 x 69.8 mm (7.3 x 6.7 x 2.7 in)

TN-5516 Series: 250 x 170 x 69.8 mm (9.8 x 6.7 x 2.7 in)

**Weight:**

TN-5508 Series: 1650 g

TN-5516 Series: 2500 g

**Installation:** Panel mounting, DIN-Rail mounting (with optional kit)

### Environmental Limits

**Operating Temperature:**

Standard Models: 0 to 60°C (32 to 140°F)

Wide Temp. Models: -40 to 75°C (-40 to 167°F)

**Storage Temperature:** -40 to 85°C (-40 to 185°F)

**Operating Humidity:** 5 to 95% RH (non-condensing)

### Regulatory Approvals

**Safety:** UL508 (Pending)

**EMI:** FCC Part 15, CISPR (EN55022) class A

**EMS:**

EN61000-4-2 (ESD), Level 3

EN61000-4-3 (RS), Level 4

EN61000-4-4 (EFT), Level 3

EN61000-4-5 (Surge), Level 3

EN61000-4-6 (CS), Level 3

EN61000-4-8

EN61000-4-11

EN61000-4-12

**Traffic Control:** NEMA TS2 (Pending)

**Road Traffic:** e-Mark (Pending)

**Rail Traffic:** EN50155, EN50121-3-2, EN50121-4

*Note: Only panel mounting installations comply with EN50155, EN50121.*

**Shock:** IEC61373

**Freefall:** IEC60068-2-32

**Vibration:** IEC61373

*Note: Please check Moxa's website for the most up-to-date certification status.*

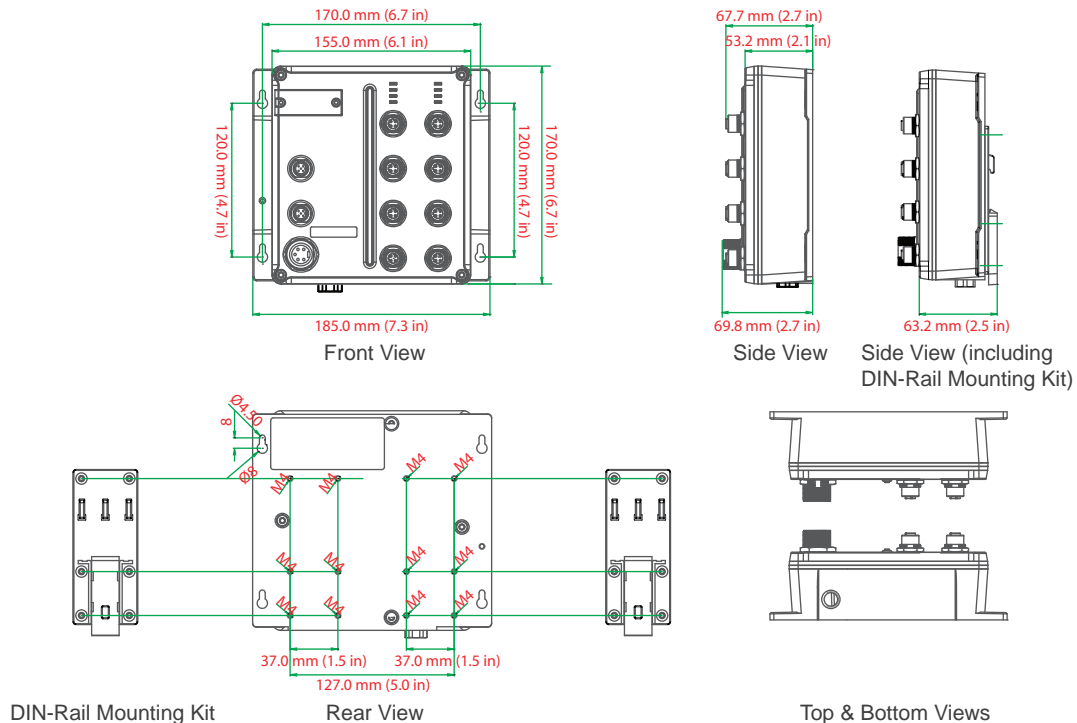
### Warranty

**Warranty Period:** 5 years

**Details:** See [www.moxa.com/warranty](http://www.moxa.com/warranty)

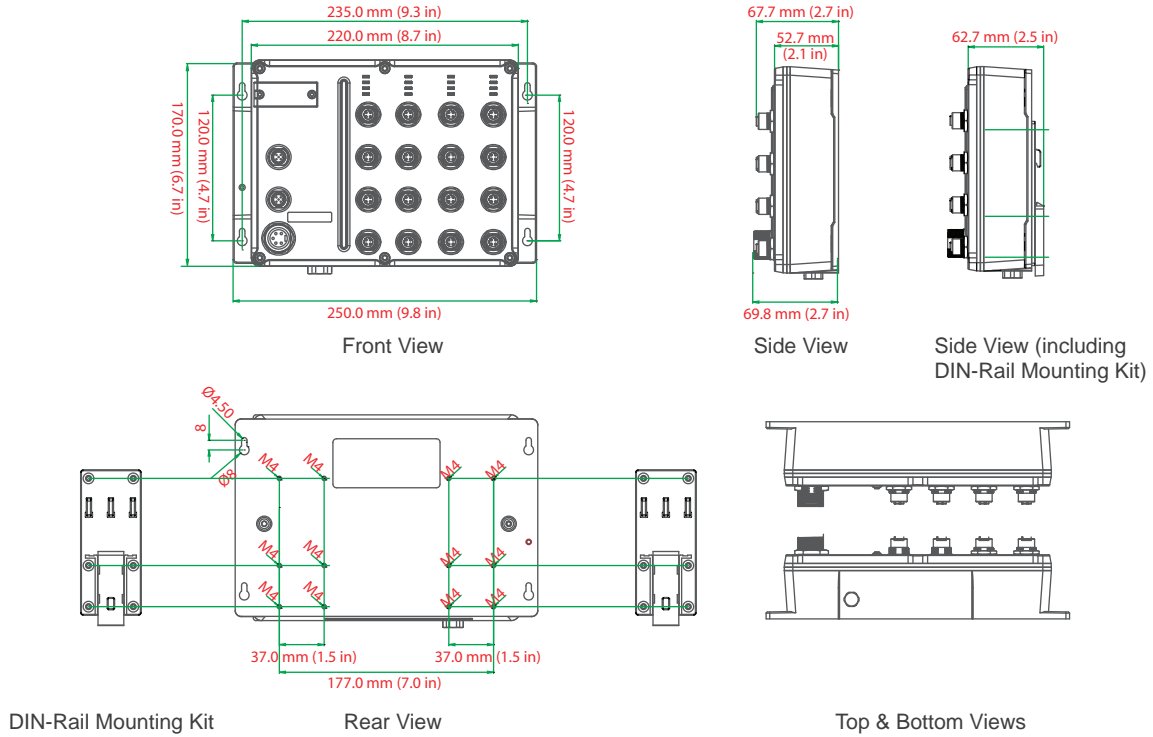
## Dimensions

### TN-5508 Series



**Dimensions**

**TN-5516 Series**



**Ordering Information**

Available Models		Port Interface	Power Supply					
Standard Temperature (0 to 60°C)	Wide Temperature (-40 to 75°C)		Power Supply 1			Power Supply 2		
		LV	MV	HV	LV	MV	HV	
		10/100 BaseT(X) M12 connector	12/24/36/48 VDC (8.4 to 60 V), non-isolated	72/96/110 VDC (50.4 to 154 V), isolated	88 to 300 VDC and 85 to 264 VAC, isolated	12/24/36/48 VDC (8.4 to 60 V), non-isolated	72/96/110 VDC (50.4 to 154 V), isolated	88 to 300 VDC and 85 to 264 VAC, isolated
<b>TN-5508 Series</b>								
TN-5508-LV-LV	TN-5508-LV-LV-T	8	1	-	-	1	-	-
TN-5508-LV-MV	TN-5508-LV-MV-T	8	1	-	-	-	1	-
TN-5508-LV-HV	TN-5508-LV-HV-T	8	1	-	-	-	-	1
<b>TN-5516 Series</b>								
TN-5516-LV-LV	TN-5516-LV-LV-T	16	1	-	-	1	-	-
TN-5516-LV-MV	TN-5516-LV-MV-T	16	1	-	-	-	1	-
TN-5516-LV-HV	TN-5516-LV-HV-T	16	1	-	-	-	-	1
TN-5516-MV-MV	TN-5516-MV-MV-T	16	-	1	-	-	1	-
TN-5516-MV-HV	TN-5516-MV-HV-T	16	-	1	-	-	-	1
TN-5516-HV-HV	TN-5516-HV-HV-T	16	-	-	1	-	-	1