

# TN-5510/5518 Series

## EN50155 8+2G/16+2G-port Gigabit managed Ethernet switches



- > 2 Gigabit ports with optional bypass relay function
- > 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, RSTP/STP, and MSTP\* for network redundancy

\*Available in Q3, 2011



EN50155



# 2

Industry-specific Ethernet Switches > TN-5510/5518 Series

## Introduction

The ToughNet TN-5510/5518 series M12 managed Ethernet switches are designed for industrial applications, such as rolling stock, vehicle, and railway applications. 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 the same type of power source at different sites around the globe. 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 system and saves on cabling/wiring costs. The TN-5510/5518 switches provide up to 8 or 16 fast Ethernet M12 ports, and 2 ports on the down side to provide the Gigabit Ethernet interface with an optional bypass relay function. 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 Gigabit Ethernet switches for rolling stock applications
- DHCP Option 82 for IP address assignment with different policies
- EtherNet/IP\* and Modbus/TCP industrial Ethernet protocol supported
- Turbo Ring, Turbo Chain, RSTP/STP, and MSTP\* 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 CLI\* Windows utility
- Panel mounting or DIN-Rail mounting installation capability

\*Available in Q3, 2011

## 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-2004\* for Spanning Tree Protocol  
 IEEE 802.1w for Rapid STP  
 IEEE 802.1s\* for Multiple Spanning Tree Protocol  
 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, GMRP, GVRP, SNMPv1/v2c/v3, DHCP Server/Client, DHCP Option 66/67/82, BootP, TFTP, SNTP, SMTP, RARP, RMON, HTTP, HTTPS, Telnet, SSH, Syslog, LLDP, IEEE 1588 PTP V2\*, Modbus/TCP, IPv6, NTP Server/Client\*

**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

\*Available in Q3, 2011

### 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

**Gigabit Ethernet:** Down cabling, M12 connector, 10/100/1000BaseT(X) auto negotiation speed, F/H duplex mode, auto MDI/MDI-X connection, with or without bypass relay function

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

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

**Port LED Indicators:** 10/100M (fast Ethernet port), 10/100/1000M (Gigabit Ethernet port)

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

**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-5510-2GTX Series  
0.416 A @ 24 VDC, 0.187 A @ 72 VDC, 0.129 A @ 110 VDC, 0.316 A @ 110 VAC, 0.208 A @ 220 VAC
- TN-5510-2GTXBP Series  
0.52 A @ 24 VDC, 0.218 A @ 72 VDC, 0.150 A @ 11 VDC, 0.369 A @ 110 VAC, 0.243 A @ 220 VAC
- TN-5518-2GTX Series  
0.635 A @ 24 VDC, 0.28 A @ 72 VDC, 0.19 A @ 110 VDC, 0.37 A @ 110 VAC, 0.238 A @ 220 VAC
- TN-5518-2GTXBP Series  
0.667 A @ 24 VDC, 0.296 A @ 72 VDC, 0.202 A @ 11 VDC, 0.387 A @ 110 VAC, 0.244 A @ 220 VAC

**Overload Current Protection:** Present

**Connection:** M23 connector

**Reverse Polarity Protection:** Present

**Physical Characteristics**

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

**Dimensions:**

TN-5510 Series: 185 x 180.9 x 76.0 mm (7.28 x 7.12 x 2.99 in)

TN-5518 Series: 250 x 181.4 x 76.0 mm (9.84 x 7.14 x 2.99 in)

**Weight:**

TN-5510 Series: 1700 g

TN-5518 Series: 2550 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)

**Ambient Relative Humidity:** 5 to 95% (non-condensing)

**Standards and Certifications**

**Safety:** UL 508 (Pending)

**EMI:** FCC Part 15 Subpart B Class A, EN 55022 Class A

**EMS:**

EN 61000-4-2 (ESD) Level 3,

EN 61000-4-3 (RS) Level 4,

EN 61000-4-4 (EFT) Level 3,

EN 61000-4-5 (Surge) Level 3,

EN 61000-4-6 (CS) Level 3,

EN 61000-4-8,

EN 61000-4-11,

EN 61000-4-12

**Traffic Control:** NEMA TS2 (Pending), e-Mark (Pending)

**Rail Traffic:** (for panel mounting installations)

EN 50155, EN 50121-3-2, EN 50121-4

**Shock:** IEC 61373

**Freefall:** IEC 60068-2-32

**Vibration:** IEC 61373

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

**Warranty**

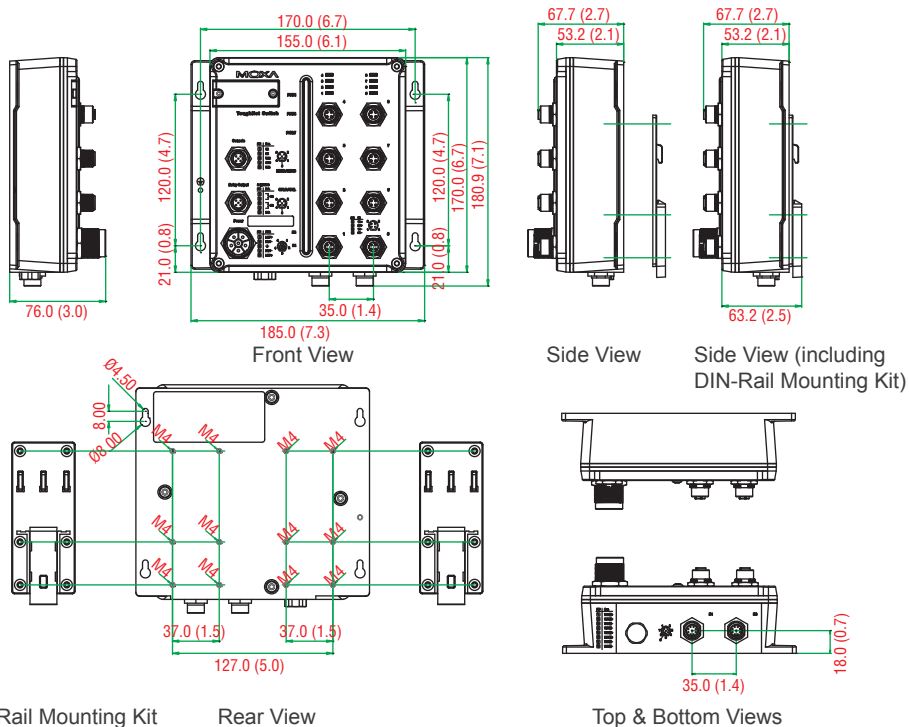
**Warranty Period:** 5 years

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

**Dimensions**

**TN-5510 Series**

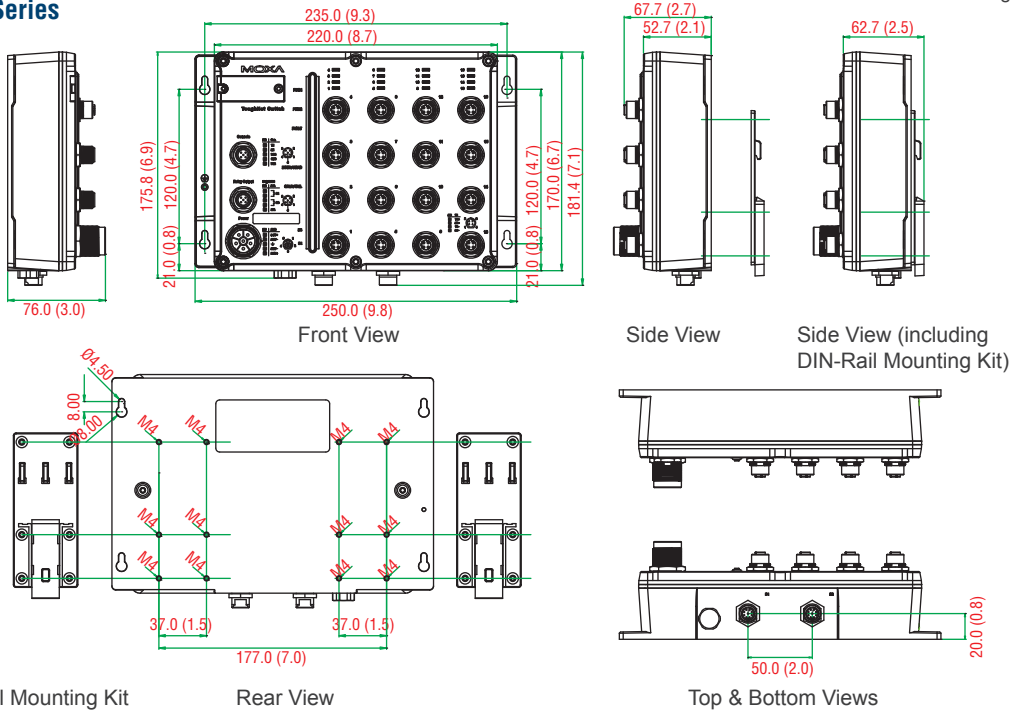
Unit: mm (inch)



Dimensions

TN-5518 Series

Unit: mm (inch)



Ordering Information

| Available Models                    |                                   | Port interface                |                                    |   | Power Supply                                      |   |   |   |   |   |
|-------------------------------------|-----------------------------------|-------------------------------|------------------------------------|---|---|---|---|---|---|---|
| Standard Temperature<br>(0 to 60°C) | Wide Temperature<br>(-40 to 75°C) | Front Cabling                 | Down Cabling                       |   | Power Supply 1                                    |   |   | Power Supply 2                                    |   |   |
|                                     |                                   | 10/100 BaseT(X) M12 connector | 10/100/1000 BaseT(X) M12 connector | 10/100/1000 BaseT(X) M12 connector, bypass relay function | LV<br>12/24/36/48 VDC (8.4 to 60 V), non-isolated | MV<br>72/96/110 VDC (50.4 to 154 V), isolated | HV<br>88 to 300 VDC and 85 to 264 VAC, isolated | LV<br>12/24/36/48 VDC (8.4 to 60 V), non-isolated | MV<br>72/96/110 VDC (50.4 to 154 V), isolated | HV<br>88 to 300 VDC and 85 to 264 VAC, isolated |
| <b>TN-5510 Series</b>               |                                   |                               |                                    |   |   |   |   |   |   |   |
| TN-5510-2GTX-LV-LV                  | TN-5510-2GTX-LV-LV-T              | 8                             | 2                                  | -   | 1   | -   | -   | 1   | -   | -   |
| TN-5510-2GTX-LV-MV                  | TN-5510-2GTX-LV-MV-T              | 8                             | 2                                  | -   | 1   | -   | -   | -   | 1   | -   |
| TN-5510-2GTX-LV-HV                  | TN-5510-2GTX-LV-HV-T              | 8                             | 2                                  | -   | 1   | -   | -   | -   | -   | 1   |
| TN-5510-2GTXBP-LV-LV                | TN-5510-2GTXBP-LV-LV-T            | 8                             | -                                  | 2   | 1   | -   | -   | 1   | -   | -   |
| TN-5510-2GTXBP-LV-MV                | TN-5510-2GTXBP-LV-MV-T            | 8                             | -                                  | 2   | 1   | -   | -   | -   | 1   | -   |
| TN-5510-2GTXBP-LV-HV                | TN-5510-2GTXBP-LV-HV-T            | 8                             | -                                  | 2   | 1   | -   | -   | -   | -   | 1   |
| <b>TN-5518 Series</b>               |                                   |                               |                                    |   |   |   |   |   |   |   |
| TN-5518-2GTX-LV-LV                  | TN-5518-2GTX-LV-LV-T              | 16                            | 2                                  | -   | 1   | -   | -   | 1   | -   | -   |
| TN-5518-2GTX-LV-MV                  | TN-5518-2GTX-LV-MV-T              | 16                            | 2                                  | -   | 1   | -   | -   | -   | 1   | -   |
| TN-5518-2GTX-LV-HV                  | TN-5518-2GTX-LV-HV-T              | 16                            | 2                                  | -   | 1   | -   | -   | -   | -   | 1   |
| TN-5518-2GTX-MV-MV                  | TN-5518-2GTX-MV-MV-T              | 16                            | 2                                  | -   | -   | 1   | -   | -   | 1   | -   |
| TN-5518-2GTX-MV-HV                  | TN-5518-2GTX-MV-HV-T              | 16                            | 2                                  | -   | -   | 1   | -   | -   | -   | 1   |
| TN-5518-2GTX-HV-HV                  | TN-5518-2GTX-HV-HV-T              | 16                            | 2                                  | -   | -   | -   | 1   | -   | -   | 1   |
| TN-5518-2GTXBP-LV-LV                | TN-5518-2GTXBP-LV-LV-T            | 16                            | -                                  | 2   | 1   | -   | -   | 1   | -   | -   |
| TN-5518-2GTXBP-LV-MV                | TN-5518-2GTXBP-LV-MV-T            | 16                            | -                                  | 2   | 1   | -   | -   | -   | 1   | -   |
| TN-5518-2GTXBP-LV-HV                | TN-5518-2GTXBP-LV-HV-T            | 16                            | -                                  | 2   | 1   | -   | -   | -   | -   | 1   |
| TN-5518-2GTXBP-MV-MV                | TN-5518-2GTXBP-MV-MV-T            | 16                            | -                                  | 2   | -   | 1   | -   | -   | 1   | -   |
| TN-5518-2GTXBP-MV-HV                | TN-5518-2GTXBP-MV-HV-T            | 16                            | -                                  | 2   | -   | 1   | -   | -   | -   | 1   |
| TN-5518-2GTXBP-HV-HV                | TN-5518-2GTXBP-HV-HV-T            | 16                            | -                                  | 2   | -   | -   | 1   | -   | -   | 1   |

\*GTX: Giga Ethernet Copper port  
\*GTXBP: Giga Ethernet Copper port with bypass relay

**Optional Accessories** (must be purchased separately)  
**Power Cords, M12 Connectors, Protective Caps:** See page 2-22  
**MXview:** Moxa industrial network management software with 50, 100, 250, 500, or 1000 nodes  
**EDS-SNMP OPC Server Pro:** OPC server software that works with all SNMP devices  
**ABC-01-M12:** Configuration backup and restoration tool for TN series managed Ethernet switches, 0 to 60°C operating temperature

- Package Checklist**
- TN-5510 or TN-5518 series switch
  - M12-to-DB9 console port cable
  - 2 protective caps for console and relay output ports
  - Panel mounting kit
  - Documentation and software CD
  - Hardware installation guide
  - Warranty card