

EN 50155 16/16+2G-port layer 3 Gigabit managed Ethernet switches



Features and Benefits

- Layer 3 routing interconnects multiple LAN segments
- 4 Fast Ethernet ports and 2 optional Gigabit ports with bypass relay function
- Isolated power with 24 to 110 VDC power supply range
- Complies with all EN 50155 mandatory test items¹
- -40 to 75°C operating temperature range
- Turbo Ring and Turbo Chain (recovery time < 20 ms @ 250 switches), and STP/RSTP/MSTP for network redundancy

Certifications



EN 50155



EN 50121-4



Introduction

The ToughNet TN-5800A Series switches are high-performance M12 Layer 3 Ethernet switches that support Layer 3 routing to facilitate the deployment of applications across networks. By using M12 and other circular connectors, the TN-5800A Series ensures tight, robust connections and reliability against environmental disturbances, such as vibration and shock. TN-5800A Series switches provide isolated power with 24 to 110 VDC power input range, which allows you to use the same model at different sites around the globe.

In addition, TN-5800A Series switches provide up to 16 Fast Ethernet M12 ports with 4 bypass relay ports, and 2 Gigabit Ethernet ports with bypass relay function. Furthermore, the -40 to 75°C operating temperature and IP54-rated water and dust resistant enclosure allow deployment in harsh environments. The TN-5800A Series Ethernet switches are compliant with mandatory sections of EN 50155, covering operating temperature, power input voltage, surge, ESD, and vibration, as well as conformal coating and power insulation, making the switches suitable for a variety of industrial applications.

Additional Features and Benefits

- Layer 3 switching functionality to divide a large network into hierarchical subnets and allow data and information to communicate across networks
- Leading EN 50155 L3 Ethernet switches for rolling stock applications
- DHCP Option 82 for IP address assignment with different policies
- Turbo Ring, Turbo Chain, and STP/RSTP/MSTP for network redundancy
- IGMP snooping and GMRP for filtering multicast traffic
- IEEE 802.1Q VLAN, and GVRP to ease network planning
- EtherNet/IP and Modbus TCP industrial Ethernet protocols supported
- QoS (IEEE 802.1p/1Q and ToS/DiffServ) allows real-time traffic classification and prioritization
- IEEE 802.3ad, LACP for optimum bandwidth utilization
- TACACS+, SNMPv3, IEEE 802.1X, HTTPS, and SSH to enhance network security
- SNMPv1/v2c/v3 for different levels of network management
- RMON for proactive and efficient network monitoring
- Bandwidth management to prevent unpredictable network status
- Lock port allows access by only authorized MAC addresses
- Port mirroring for online debugging
- Automatic warning by exception through email and relay output
- Line-swap fast recovery
- 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
- Loop protection to prevent network loops

Specifications

Input/Output Interface

Alarm Contact Channels

2 x relay output in one M12 A-coded 5-pin male connector with current carrying capacity of 1 A @ 30 VDC

1. This product is suitable for rolling stock railway applications, as defined by the EN 50155 standard. For a more detailed statement, click here: www.moxa.com/doc/specs/EN_50155_Compliance.pdf

Ethernet Interface

10/100/1000BaseT(X) Ports (M12 X-coded 8-pin female connector with bypass relay)	TN-5818A-2GTXBP Series: 2
10/100BaseT(X) Ports (M12 D-coded 4-pin female connector)	12
10/100BaseT(X) Ports (M12 D-coded 4-pin female connector with bypass relay)	4
Standards	IEEE 802.1D-2004 for Spanning Tree Protocol IEEE 802.1s for Multiple Spanning Tree Protocol IEEE 802.1w for Rapid Spanning Tree Protocol IEEE 802.1X for authentication IEEE 802.3 for 10BaseT TN-5818A-2GTXBP Series: IEEE 802.3ab for 1000BaseT(X) IEEE 802.3ad for Port Trunk with LACP IEEE 802.3u for 100BaseT(X) and 100BaseFX IEEE 802.3x for flow control

Ethernet Software Features

Filter	802.1Q, GMRP, GVRP, IGMP v1/v2/v3, Port-based VLAN, QinQ VLAN, Static Multicast
Configuration Options	Command Line Interface (CLI), Command Line Interface (CLI) through Serial/Telnet/SSH, Web Console (HTTP/HTTPS), Windows Utility
Industrial Protocols	EtherNet/IP Adapter (Slave), Modbus TCP Server (Slave)
Management	Back Pressure Flow Control, DHCP Option 66/67/82, Flow control, HTTP, IPv4, LLDP, Port Mirror, QoS/CoS/ToS, RARP, RMON, SMTP, SNMP Inform, SNMPv1/v2c/v3, Syslog, Telnet
MIB	Bridge MIB, Ethernet-like MIB, MIB-II, P-BRIDGE MIB, Q-BRIDGE MIB, RMON MIB Groups 1, 2, 3, 9, RSTP MIB
Multicast Routing	DVMRP, PIM-DM
Redundancy Protocols	Link Aggregation, RSTP, STP, Turbo Chain, Turbo Ring v1/v2
Routing Redundancy	VRRP
Security	Broadcast storm protection, HTTPS/SSL, Port Lock, RADIUS, Rate Limit, SSH
Time Management	IEEE 1588 PTP v1/v2, NTP Server/Client, SNTP

Switch Properties

IGMP Groups	256
Max. No. of VLANs	64
Priority Queues	4
VLAN ID Range	VID 1 to 4094

LED Interface

LED Indicators	STATE, PWR1, PWR2, FAULT, 10/100/1000M
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Serial Interface

Console Port	M12 A-coded male connector
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Power Parameters

Input Current	TN-5816A Series: 1.1 A @ 24 VDC, 0.23 A @ 110 VDC TN-5818A Series: 1.24 A @ 24 VDC, 0.24 A @ 110 VDC
Input Voltage	24/36/48/72/96/110 VDC

No. of Power Inputs	2
Operating Voltage	16.8 to 137.5 VDC
Overload Current Protection	Supported
Power Connector	M23 connector
Reverse Polarity Protection	Supported

Physical Characteristics

Housing	Metal
IP Rating	IP54
Dimensions	250 x 181.4 x 115 mm (9.84 x 7.14 x 4.53 in)
Weight	TN-5816A Series: 2,290 g (5.62 lb) TN-5818A Series: 3,160 g (6.97 lb)
Installation	DIN-rail mounting (optional), Wall mounting (standard)
Protection	PCB conformal coating

Environmental Limits

Operating Temperature	-40 to 75°C (-40 to 167°F)
Storage Temperature (package included)	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5 to 95% (non-condensing)
Altitude	2000 m

Standards and Certifications

EMS	IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 2 kV; Signal: 2 kV IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF
Freefall	IEC 60068-2-31
Radio Frequency	FCC
Railway	EN 50121-4, EN 50155, IEC 60571
Railway Fire Protection	EN 45545-2
Safety	EN 60950-1, UL 508
Shock	IEC 60068-2-27, IEC 61373, EN 50155
Vibration	IEC 60068-2-64, IEC 61373, EN 50155

Declaration

Green Product	RoHS, CRoHS, WEEE
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MTBF

Time	TN-5816A Series: 577,026 hrs TN-5818A Series: 525,091 hrs
Standards	Telcordia SR332

Warranty

Warranty Period	5 years
Details	See www.moxa.com/warranty

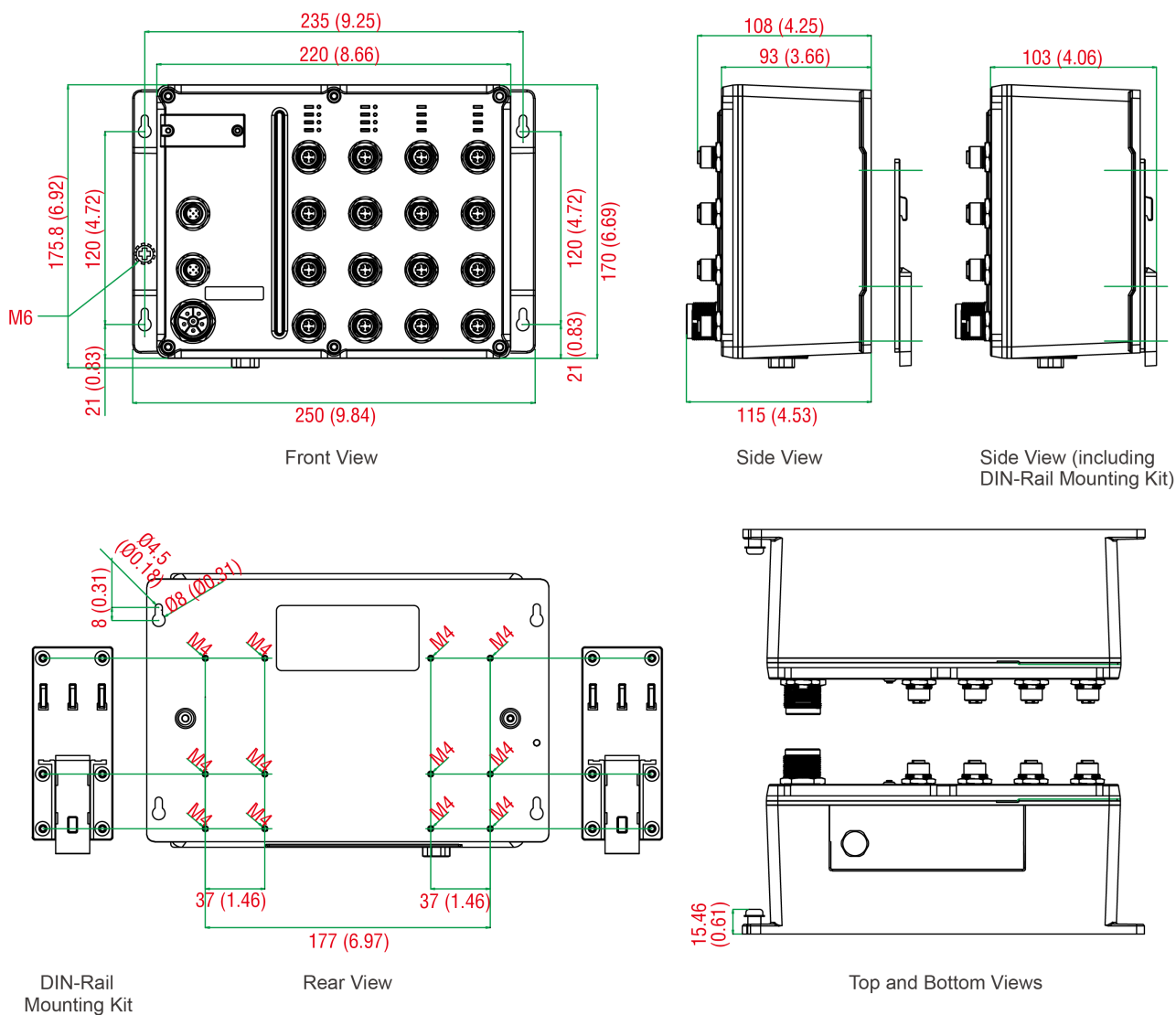
Package Contents

Device	1 x TN-5800A Series switch
Cable	1 x M12-to-DB9 console port
Installation Kit	2 x cap, female, plastic, for M12 port 1 x wall-mounting kit
Documentation	1 x document and software CD 1 x quick installation guide 1 x warranty card

Dimensions

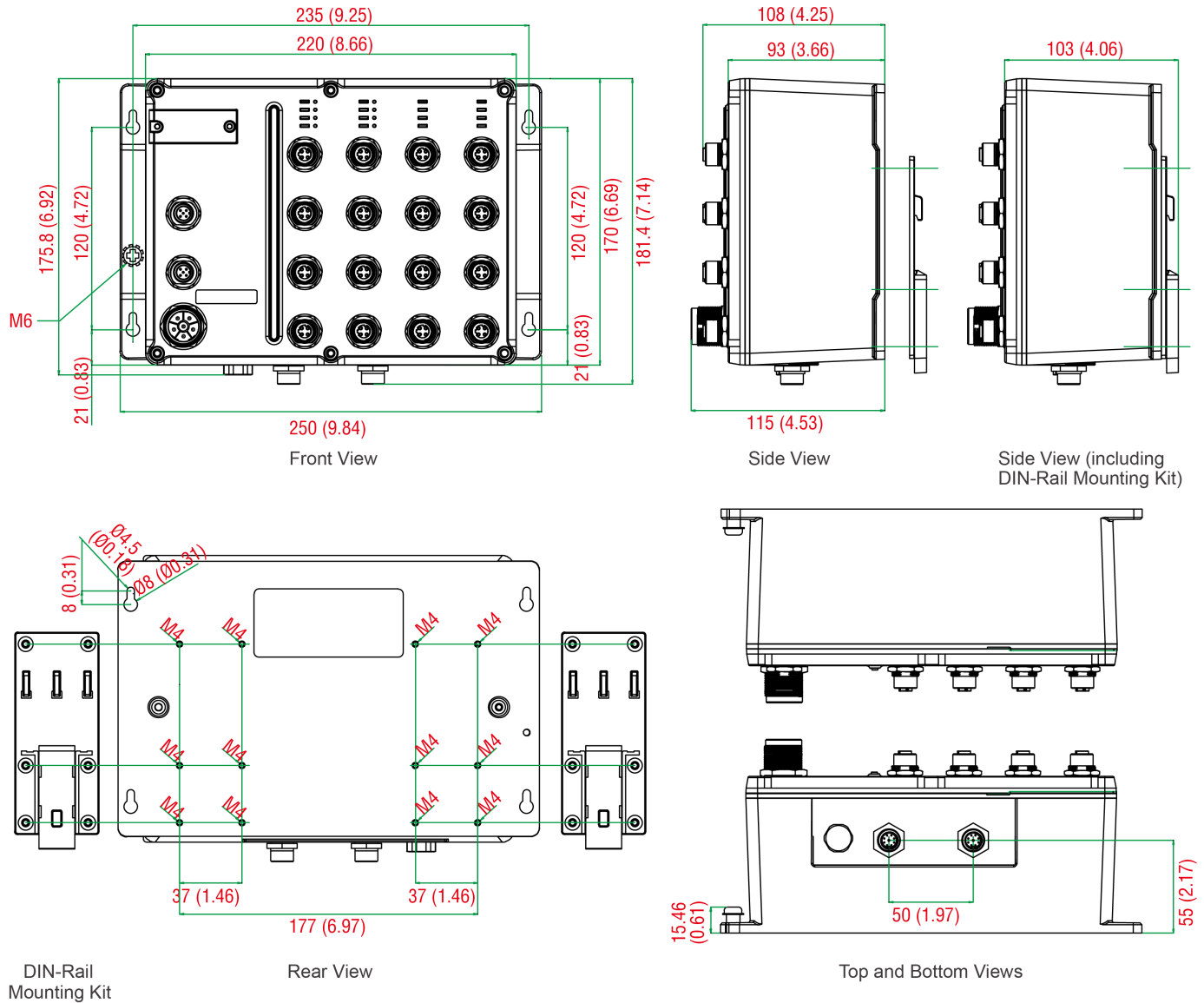
TN-5816A Series

Unit: mm (inch)



TN-5818A Series

Unit: mm (inch)



Ordering Information

Model Name	10/100/1000BaseT(X) Ports, M12 X-coded 8-pin Female Connector with Bypass Relay	10/100BaseT(X) Ports, M12 D-Coded Female Connector with Bypass Relay	10/100BaseT(X) Ports, M12 D-Coded Female Connector	Power Input	Input Voltage	Conformal Coating
TN-5816ABP-WV-T	-	4	12	Redundant dual inputs	24/36/48/96/110 VDC	-
TN-5816ABP-WV-CT-T	-	4	12	Redundant dual inputs	24/36/48/96/110 VDC	✓
TN-5818A-2GTXPB-WV-T	2	4	12	Redundant dual inputs	24/36/48/96/110 VDC	-
TN-5818A-2GTXPB-WV-CT-T	2	4	12	Redundant dual inputs	24/36/48/96/110 VDC	✓

Accessories (sold separately)

Storage Kits

ABC-01-M12	Configuration backup and restoration tool with M12 connector for managed Ethernet switches and wireless APs/Bridges/Clients, 0 to 60°C operating temperature
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Cables

CBL-M12D(MM4P)/RJ45-100 IP67	M12-to-RJ45 cable, IP67-rated, 1 m
CBL-M23(FF6P)/OPEN-BK-100 IP67	M23 to 6-pin power cable, IP67-rated female 6-pin M23 connector, IP67, 1 m
CBL-M12DMM4PM12DMM4P-BK-100-IP67	M12-to-M12 Cat-5E STP Ethernet cable, 4-pin D-coded M12 connector, IP67, 1 m
CBL-M12XMM8P-Y-100-IP67	M12-to-M12 Cat-5 UTP Ethernet cable, 8-pin male X-coded crimp type M12 connector, IP67, 1 m Applicable Models: TN-5818A-2GTXBP-WV-T TN-5818A-2GTXBP-WV-CT-T
CBL-M12XMM8P-Y-300-IP67	M12-to-M12 Cat-5 UTP Ethernet cable, 8-pin male X-coded crimp type M12 connector, IP67, 3 m Applicable Models: TN-5818A-2GTXBP-WV-T TN-5818A-2GTXBP-WV-CT-T
CBL-M12XMM8PRJ45-Y-200-IP67	M12-to-RJ45 Cat-5 UTP Ethernet cable, 8-pin male X-coded crimp type M12 connector, IP67, 2 m Applicable Models: TN-5818A-2GTXBP-WV-T TN-5818A-2GTXBP-WV-CT-T

Connectors

M12A-5P-IP68	A-coded screw-in sensor connector, female, IP68, 4.05 cm
M12D-4PMM-IP67	M12 D-coded connector, QUICKON type, 4-pin male, IP67
M12D-4P-IP68	M12 D-coded screw-in sensor connector, male, IP68
A-PLG-WPM23-01-IP67	M23 cable connector, female 6-pin, crimp type, IP67
M12X-8PMM-IP67-HTG	X-coded screw-in Gigabit Ethernet connector, 8-pin male M12 connector, IP67 Applicable Models: TN-5818A-2GTXBP-WV-T TN-5818A-2GTXBP-WV-CT-T

DIN-Rail Mounting Kits

DK-DC50131-01	DIN-rail mounting kit, 6 screws
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M12 Connector Caps

A-CAP-M12F-M	Metal cap for M12 female connector
A-CAP-M12M-M	Metal cap for M12 male connector

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