

TN-4900 系列

EN 50155 Gigabit 安全路由器



特色與優點

- 8 Gigabit 連接埠和最多 12 PoE (乙太網供電) 連接埠
- IEC 61375 ETBN 功能 (ETBN 型號)
- 雙旁路繼電器 (dual bypass relay)
- 隔離式電源輸入範圍介於 24 至 110 VDC
- 符合所有 EN 50155 規範強制性測試項目¹
- -40°C 至 70°C 操作溫度範圍
- 符合 IEC 62443-4-2:2019²

認證



EN 50155



EN 50121-4



簡介

ToughNet TN-4900 系列專為軌道車輛乙太網路而設計，係為一組高效 M12 路由器，具有 8 Gigabit 連接埠和最多 4 旁路繼電器埠。這些路由器具有防火牆、ETBN 和路由功能，以便跨網路部署應用程式。TN-4900 系列路由器採用 M12 和其他圓形連接器 (Circular Connector)，確保緊密耐用的連線能力，在振動和衝擊等環境干擾下可保證穩定性。

TN-4900 系列支援 24 至 110 VDC 的寬範圍大功率，並可在 -40 至 70°C 的溫度下持久運作。此外，這些路由器符合 EN 50155 的強制性要求，使其適用於各種工業級應用。

附加特色與優點

- 基於 IEC 61375-2-3、61375-2-5 標準的 ETBN
- 基於 IEC 62443-4-2:2019 標準的網路安全 特色
- 保護網路並過濾不可信網路的防火牆
- 路由功能可將大型網路分成 階層式子網路，便於資料和資訊在網路間 進行傳輸
- NAT 讓 IP 管理簡易化，不同車輛中的終端設備可使用相同的 IP 位址
- 領先業界的 EN 50155 乙太網路交換器，適合軌道車輛應用
- 透過 Turbo Ring和 RSTP/STP 協定支援網路備援
- 面板安裝
- 線路切換快速恢復
- 自動恢復連線設備的 IP 位址
- LLDP (連結層發現協定) 在網路管理軟體中用以進行自動拓撲探索
- 透過網頁瀏覽器、Telnet/序列主控台、CLI (命令列介面) 和 Windows 公共程式進行配置

規格

Ethernet Interface

10/100/1000BaseT(X) Ports (M12 X-coded 8-pin female connector)	TN-4908 non-PoE non-ETBN Models: 8 TN-4908 non-PoE ETBN Models: 4 TN-4908 PoE non-ETBN Models: 4 TN-4916 PoE non-ETBN models: 4
10/100/1000BaseT(X) Ports (M12 X-coded 8-pin female connector with bypass relay)	ETBN Models: 4
PoE Ports (10/100BaseT(X), M12 D-coded 4-pin female connector)	TN-4916 PoE Models: 8

1. 此產品適用於符合 EN 50155 標準所定義的所有軌道車輛應用。按此處取得更詳細內容：www.moxa.com/doc/specs/EN_50155_Compliance.pdf
2. 預計將於 2023 年第二季末準備就緒。

PoE Ports (100/1000BaseT(X), M12 X-coded 8-pin female connector)	PoE Models: 4
Standards	IEEE 802.1Q for VLAN Tagging IEEE 802.1w for Rapid Spanning Tree Protocol IEEE 802.3af/at for PoE/PoE+ output IEEE 802.3ab for 1000BaseT(X) IEEE 802.1X for authentication IEEE 802.1D-2004 for Spanning Tree Protocol IEEE 802.3x for flow control IEEE 802.3u for 100BaseT(X) IEEE 802.1p for Class of Service IEEE 802.3 for 10BaseT
Ethernet Software Features	
Configuration Options	Command Line Interface (CLI) through Serial/Telnet/SSH Web Console (HTTP/HTTPS) Windows Utility
Filter	IGMP v1/v2 Static Multicast 802.1Q
Management	Back Pressure Flow Control SNMP Inform LLDP Syslog HTTP Flow control SMTP QoS/CoS/ToS Port Mirror SNMP Trap SNMPv1/v2c/v3 IPv4 Telnet DHCP server TFTP RARP Account Management
Redundancy Protocols	RSTP Static Port Trunk Turbo Ring v2 STP
Routing Redundancy	VRRP
Security	Port Lock SSH Broadcast storm protection TACACS+ Local Account Accessibility HTTPS/SSL
Time Management	SNTP NTP Server/Client
Unicast Routing	RIPV1/V2 OSPF Static Route
Multicast Routing	Static Route

DoS and DDoS Protection

Technology	NMAP-ID Scan ARP-Flood SYN/FIN Scan Null Scan ICMP-Death FIN Scan SYN-Flood NEWWithout-SYN Scan Xmas Scan NMAP-Xmas Scan SYN/RST Scan
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Firewall

Filter	ICMP MAC address Ethernet protocols Ports IP address DDoS
Quick Automation Profiles	Telnet HTTP RADIUS PROFINET EtherCAT IPsec SSH PPTP IEC 60870-104 FOUNDATION Fieldbus L2TP EtherNet/IP LonWorks DNP Modbus TCP FTP
Stateful Inspection	Router firewall Transparent (bridge) firewall
Throughput	Max. 500,000 packets per second

Switch Properties

IGMP Groups	256
MAC Table Size	16 K
Max. No. of VLANs	16
VLAN ID Range	VID 1 to 4094

LED Interface

LED Indicators	STATE, PWR1, PWR2, FAULT, 10/100/1000M, PoE
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NAT

Features	1-to-1 Port forwarding N-to-1
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Serial Interface

Console Port	RS-232 (M12 B-coded 5-pin female connector)
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USB Interface

M12 Connector	M12 A-coded 5-pin female (for ABC-02 USB storage)
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Power Parameters

Input Current	TN-4908 Non-PoE Models: 0.68 A @ 24 V TN-4908 PoE Models: 3.6 A @ 24 V TN-4916 PoE Models: 5.9 A @ 24 V
Input Voltage	24/36/48/72/96/110 VDC Redundant dual inputs No. of power inputs: 2
Operating Voltage	16.8 to 137.5 VDC
Overload Current Protection	Supported
Power Connector	M12 K-coded 5-pin male connector
Reverse Polarity Protection	Supported
Total PoE Power Budget	TN-4908 PoE Models: 50 W TN-4916 PoE Models: 95 W

Physical Characteristics

Housing	Metal
Dimensions	TN-4908 Non-PoE Models: 160 x 115 x 70 mm (6.30 x 4.53 x 2.76 in) TN-4908 PoE Models: 160 x 115 x 100 mm (6.30 x 4.53 x 3.94 in) TN-4916 PoE Models: 206 x 115 x 100 mm (8.10 x 4.53 x 3.94 in)
IP Rating	IP40
Weight	TN-4908 Non-PoE Models: 1120 g (2.47 lb) TN-4908 PoE Models: 1640 g (3.62 lb) TN-4916 PoE Models: 1990 g (4.39 lb)
Installation	Wall mounting
Protection	Optional PCB conformal coating

Environmental Limits

Operating Temperature	-40 to 70°C (-40 to 158°F)
Storage Temperature (package included)	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5 to 95% (non-condensing)

Standards and Certifications

EMC	EN 55032, EN 55035
EMS	IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV 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	IEC 62368, UL 62368

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-4908 Non-PoE Models: 795,840 hrs TN-4908 Non-PoE ETBN Models: 648,903 hrs TN-4908 PoE Models: 644,898 hrs TN-4908 PoE ETBN Models: 545,021 hrs TN-4916 PoE Models: 550,148 hrs TN-4916 PoE ETBN Models: 472,578 hrs
Standards	Telcordia SR332

Warranty

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

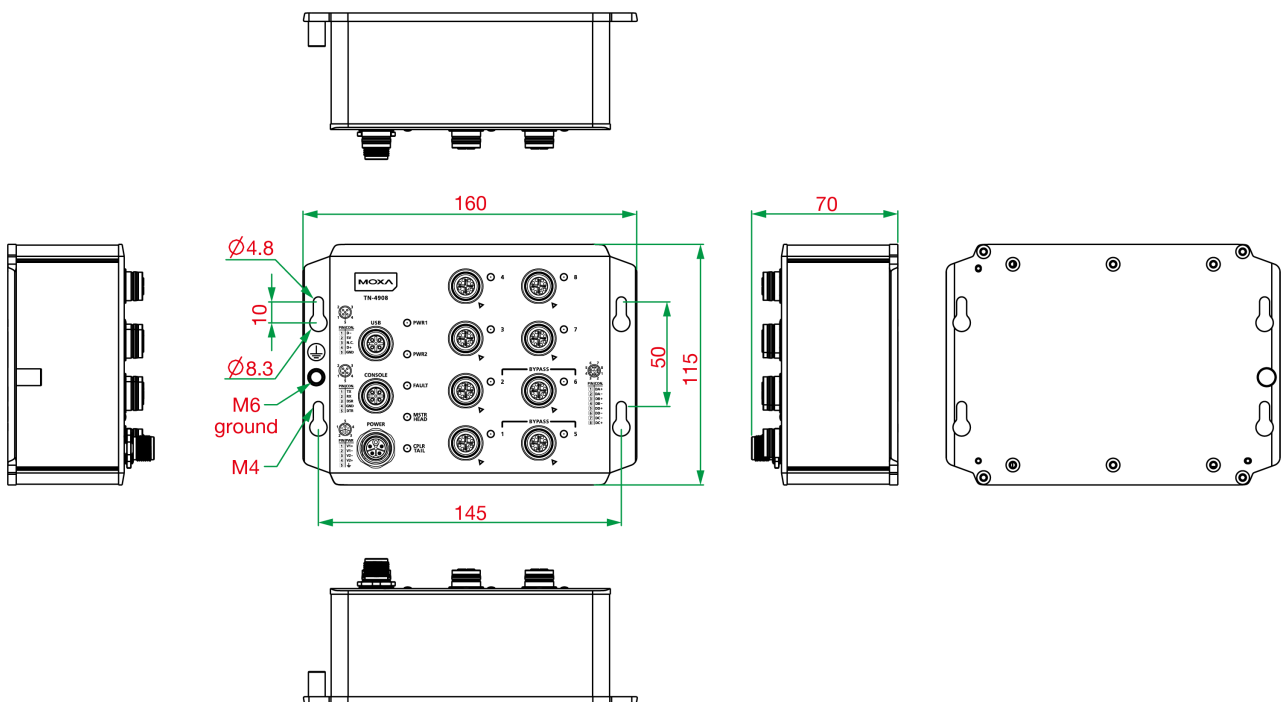
Package Contents

Device	1 x TN-4900 Series router
Installation Kit	2 x cap, male, metal, for M12 port (Console and USB storage ports, fixed on switch) 4/8 x cap, male, metal, for M12 port (Ethernet ports, fixed on switch) 1 x wall-mounting kit
Documentation	1 x quick installation guide 1 x warranty card

尺寸

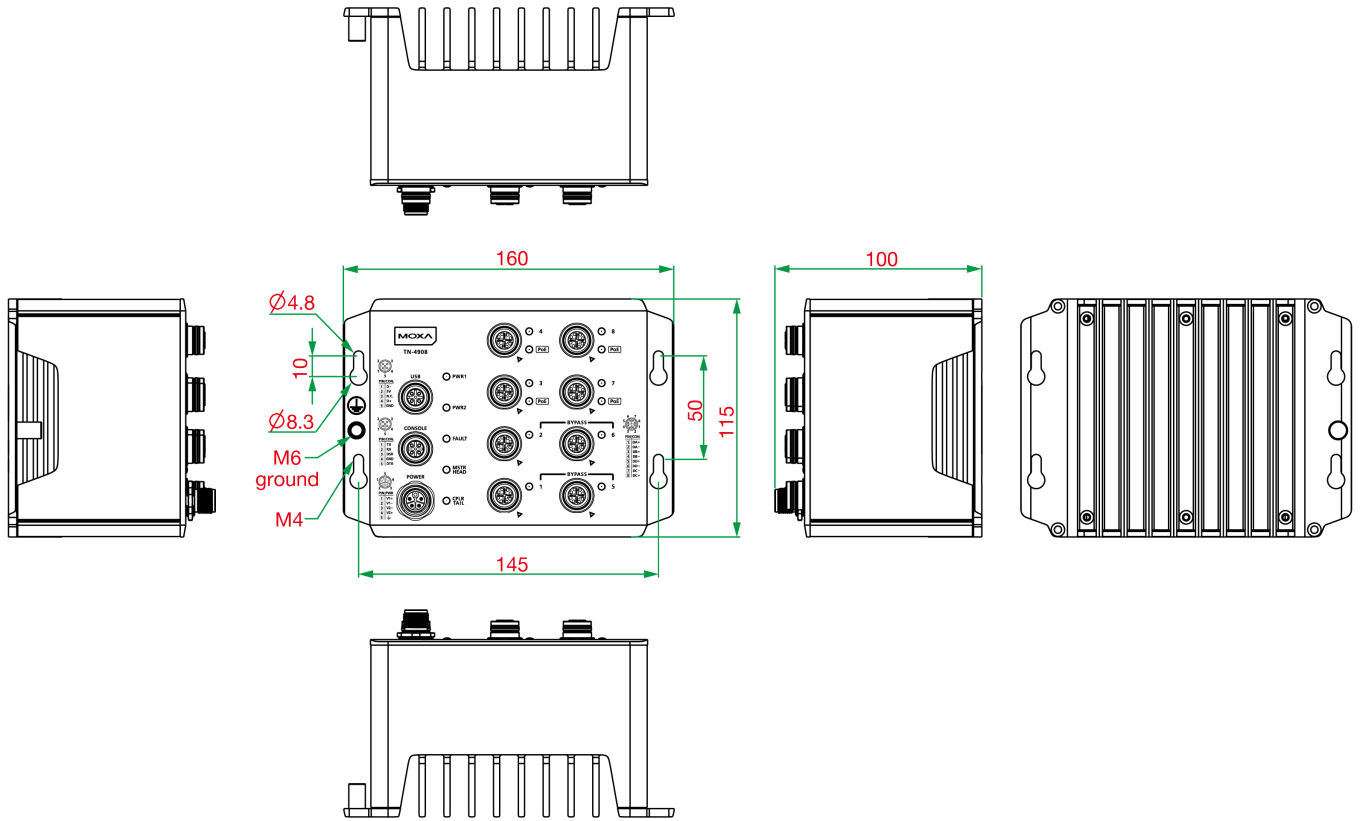
TN-4908 Non-PoE 型號

單位：公釐



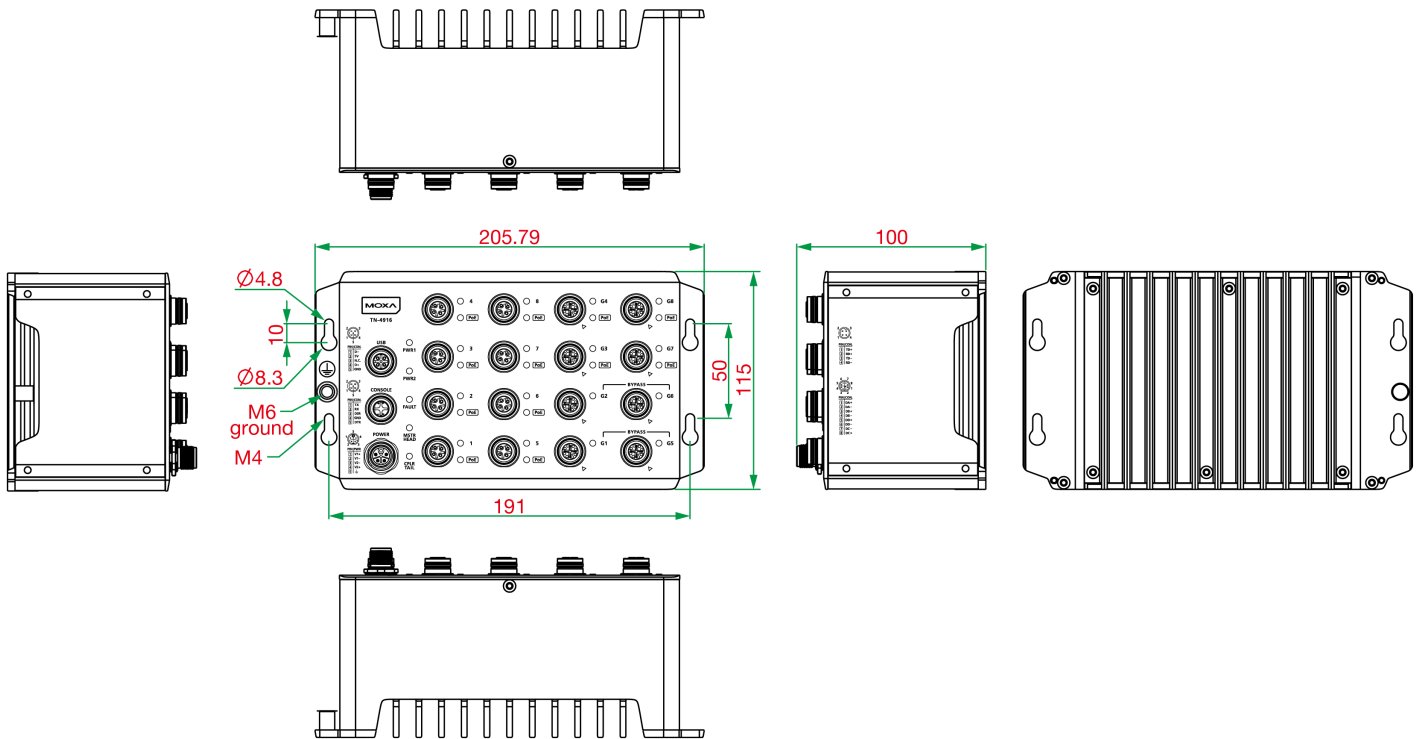
TN-4908 PoE 型號

單位：公釐



TN-4916 PoE 型號

單位：公釐



訂購資訊

型號名稱	防火牆	ETBN	10/100BaseT(X) PoE (乙太網供電) 連接埠、M12 D-coded 4-pin 排針母座	10/100/1000BaseT(X) Ports、M12 X-coded 排針母座	100/1000BaseT(X) 連接埠、M12 X-coded 8-pin 排針母座附 Bypass Relay	10/100/1000BaseT(X) (乙太網供電) 連接埠、M12 X-coded 8-pin 排針母座	敷形塗層
TN-4908-8GTX-WV-T	P	-	-	8	-	-	-
TN-4908-8GTX-WV-CT-T	P	-	-	8	-	-	P
TN-4908-ETBN-4GTX-4GTXBP-WV-T	-	P	-	4	4	-	-
TN-4908-ETBN-4GTX-4GTXBP-WV-CT-T	-	P	-	4	4	-	P
TN-4908-ETBN-F-4GTX-4GTXBP-WV-T	P	P	-	4	4	-	-
TN-4908-ETBN-F-4GTX-4GTXBP-WV-CT-T	P	P	-	4	4	-	P
TN-4908-4GPoE-4GTX-WV-T	P	-	-	4	-	4	-
TN-4908-4GPoE-4GTX-WV-CT-T	P	-	-	4	-	4	P
TN-4908-ETBN-4GPoE-4GTXBP-WV-T	-	P	-	-	4	4	-
TN-4908-ETBN-4GPoE-4GTXBP-WV-CT-T	-	P	-	-	4	4	P
TN-4908-ETBN-F-4GPoE-4GTXBP-WV-T	P	P	-	-	4	4	-
TN-4908-ETBN-F-4GPoE-4GTXBP-WV-CT-T	P	P	-	-	4	4	P
TN-4916-8PoE-4GPoE-4GTX-WV-T	-	-	8	4	-	4	-
TN-4916-8PoE-4GPoE-4GTX-WV-CT-T	-	-	8	4	-	4	P
TN-4916-ETBN-8PoE-4GPoE-4GTXBP-WV-T	-	P	8	-	4	4	-
TN-4916-ETBN-8PoE-4GPoE-4GTXBP-WV-CT-T	-	P	8	-	4	4	P
TN-4916-ETBN-F-8PoE-4GPoE-4GTXBP-WV-T	P	P	8	-	4	4	-
TN-4916-ETBN-F-8PoE-4GPoE-4GTXBP-WV-CT-T	P	P	8	-	4	4	P

配件 (選購)

M12 Connector Caps

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

Connectors

M12X-8PMM-IP67-HTG	X-coded screw-in Gigabit Ethernet connector, 8-pin male M12 connector, IP67
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Cables

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
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
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
CBL-M12BMM5PF9-BK-150-IP68	B-coded male M12-to-5-pin DB9 console cable, IP68-rated, 1.5 m
CBL-M12KFF5POPEN-O-150-IP67	K-coded female M12-to-5-pin open wire M12 power cable, IP67-rated, 1.5 m

Storage Kits

ABC-02-P-USB-M12-CT-T	USB-based configuration backup and restoration tool with M12 connector for Moxa's ToughNet series of managed Ethernet switches and wireless APs/bridges/clients, -40 to 75°C operating temperature, conformal coating
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