PT-508 Series
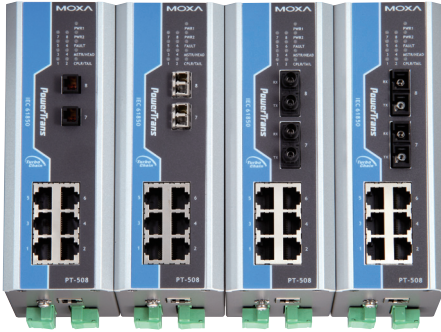
IEC 61850-3 8-port DIN-Rail managed Ethernet switches

> IEC 61850-3 and IEEE 1613 (power substations) compliant
> Turbo Ring and Turbo Chain(recovery time < 20 ms @ 250 switches), RSTP/STP, and MSTP for network redundancy
> Easy network management by web browser, CLI, Telnet/serial console, windows utility, and ABC-01
> Isolated redundancy for universal 24 VDC / 48 VDC power inputs
> Wide 110/220 VDC/VAC power supply range support
> Modbus/TCP, LLDP, SNMP Inform, QoS, IGMP snooping, VLAN, IEEE 802.1X, HTTPS, SNMPv3, and SSH supported
> -40 to 85°C operating temperature range

Turbo Ring — Self-Healing Ethernet
Turbo Chain — Beyond Redundant Ring

IEC 61850-3 / IEEE 1613   CE FC

: Introduction

The PowerTrans PT-508 is designed to meet the demands of power substation automation systems (IEC 61850-3, IEEE 1613). The PT-508's optical fiber Fast Ethernet backbone, redundant ring, redundant power inputs (24 VDC / 48 VDC), and isolated power (24 VDC / 48 VDC and 110/220 VDC/VAC) increase the reliability of your communications and save on cabling/wiring costs. In addition, the DIN rail and wallmount designs of the PT-508 make network planning easy, and allow greater flexibility by letting you install up to 8 Fast Ethernet ports for power distribution applications.

General Features and Benefits

- Command Line Interface (CLI) for quickly configuring major managed functions
- IPv6 Ready logo awarded (IPv6 Logo Committee certified)
- Software-based IEEE 1588v2 PTP (Precision Time Protocol) for precise time synchronization of networks
- VLAN Unaware: Supports priority-tagged frames to be received by specific IEDs
- DHCP Option 82 for IP address assignment with different policies
- EtherNet/IP and Modbus/TCP industrial Ethernet protocols supported
- Turbo Ring and Turbo Chain (recovery time < 20 ms @ 250 switches), RSTP/STP, and MSTP for network redundancy

- IGMP snooping and GMRP for filtering multicast traffic from industrial Ethernet protocols
- IEEE 802.3ad, LACP for optimum bandwidth utilization
- Bandwidth management prevents unpredictable network status
- Automatic warning by exception through email, relay output
- RMON for efficient network monitoring and proactive capability
- Automatic recovery of connected device's IP addresses
- Line-swap fast recovery
- Configurable by Web browser, Telnet/Serial console, CLI, Windows utility, and ABC-01 automatic backup configurator

Cyber-security Features

- User passwords with multiple levels of security protect against unauthorized configuration
- SSH/HTTPS is used to encrypt passwords and data
- Lock switch ports with 802.1X port-based network access control so that only authorized clients can access the port
- Disable one or more ports to block network traffic
- 802.1Q VLAN allows you to logically partition traffic transmitted between selected switch ports

- Secure switch ports so that only specific devices and/or MAC addresses can access the ports
- Radius/TACACS+ allows you to manage passwords from a central location
- SNMPv3 provides encrypted authentication and access security

: Specifications

Technology
Standards:
IEEE 802.3 for 10BaseT
IEEE 802.3u for 100BaseT(X) and 100Base FX
IEEE 802.3x for Flow Control
IEEE 802.1D for Spanning Tree Protocol
IEEE 802.1w for Rapid Spanning Tree Protocol
IEEE 802.1D-2004 for 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
IEEE 802.1s for Multiple Spanning Tree Protocol
Protocols: IGMPv1/v2, GMRP, GVRP, SNMPv1/v2c/v3, DHCP Server/Client, DHCP Option 66/67/82, BootP, TFTP, SNTP, SMTP, RARP, LACP, RMON, HTTP, HTTPS, Telnet, SSH, Syslog, EtherNet/IP, Modbus/TCP, SNMP Inform, LLDP, IEEE 1588v2 PTP, 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: IEEE 802.3x 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
MAC Table Size: 8 K
Packet Buffer Size: 1 Mbit

Interface
RJ45 Ports: 10/100BaseT(X) auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection
Fiber Ports: 100BaseFX ports (SC/ST/LC/MTRJ connector)
Console Port: RS-232 (RJ45)
LED Indicators: PWR1, PWR2 (DC models only), FAULT, MSTR/HEAD, CPLR/TAIL
Alarm Contact: 1 relay output with current carrying capacity of 1 A @ 24 VDC

Optical Fiber

	100BaseFX		
	Multi-mode	**Single-mode**	**MTRJ**
Wavelength	1300 nm	1310 nm	1300 nm
Max. TX	-10 dBm	0 dBm	-14 dBm
Min. TX	-20 dBm	-5 dBm	-20 dBm
RX Sensitivity	-32 dBm	-34 dBm	-33 dBm
Link Budget	12 dB	29 dB	13 dB
Typical Distance	5 km [a]	40 km [c]	2 km
	4 km [b]		
Saturation	-6 dBm	-3 dBm	-14 dBm

a. 50/125 μm, 800 MHz*km fiber optic cable
b. 62.5/125 μm, 500 MHz*km fiber optic cable
c. 9/125 μm single-mode fiber optic cable

Power Requirements
Input Voltage:
• 24 VDC (18 to 36 V)
• 48 VDC (36 to 72 V)
• 110/220 VDC/VAC (88 to 300 VDC, 85 to 264 VAC)
Input Current: (all ports are equipped with fiber)
• Max. 0.286 A @ 24 VDC
• Max. 0.13 A @ 48 VDC
• Max. 0.075/0.038 A @ 110/220 VDC
• Max. 0.06/0.031 A @ 110/220 VAC
Overload Current Protection: Present
Connection: 5-pin terminal block
Reverse Polarity Protection: Present

Physical Characteristics
Housing: IP40 protection
Dimensions: 60 x 160 x 110 mm (2.36 x 6.30 x 4.33 in)
Weight: 995 g
Installation: DIN-Rail mounting, wall mounting (with optional kit)

Environmental Limits
Operating Temperature: -40 to 85°C (-40 to 185°F), cold start requires min. of 100 VAC at -40°C
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

Standards and Certifications
Safety: UL 508
EMI: FCC Part 15 Subpart B Class A, EN 55022 Class A
Power Automation: IEC 61850-3, IEEE 1613
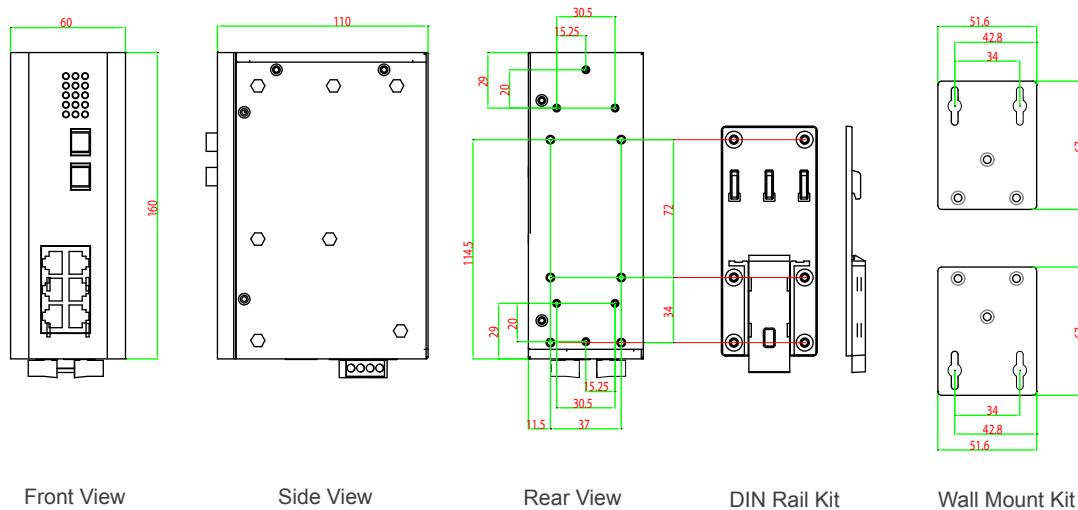Note: Please check Moxa's website for the most up-to-date certification status.

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

Dimensions

Unit: mm (inch)

Front View Side View Rear View DIN Rail Kit Wall Mount Kit

:: Ordering Information

DIN-Rail, Front Cabling, Front Display	Available Models			Port Interface						
	Power Supply			10/100 BaseT(X)	100BaseFX					
	24 VDC (18 to 36 V)	48 VDC (36 to 72 V)	HV: 88 to 300 VDC and 85 to 264 VAC		Multi-mode, SC Connector	Multi-mode, ST Connector	Multi-mode, LC Connector	Multi-mode, MTRJ Connector	Single-mode, SC Connector	Single-mode, LC Connector
PT-508-MM-SC-24	1	–	–	6	2	–	–	–	–	–
PT-508-MM-SC-48	–	1	–	6	2	–	–	–	–	–
PT-508-MM-SC-HV	–	–	1	6	2	–	–	–	–	–
PT-508-MM-ST-24	1	–	–	6	–	2	–	–	–	–
PT-508-MM-ST-48	–	1	–	6	–	2	–	–	–	–
PT-508-MM-ST-HV	–	–	1	6	–	2	–	–	–	–
PT-508-MM-LC-24	1	–	–	6	–	–	2	–	–	–
PT-508-MM-LC-48	–	1	–	6	–	–	2	–	–	–
PT-508-MM-LC-HV	–	–	1	6	–	–	2	–	–	–
PT-508-2MTRJ-24	1	–	–	6	–	–	–	2	–	–
PT-508-2MTRJ-48	–	1	–	6	–	–	–	2	–	–
PT-508-2MTRJ-HV	–	–	1	6	–	–	–	2	–	–
PT-508-SS-SC-24	1	–	–	6	–	–	–	–	2	–
PT-508-SS-SC-48	–	1	–	6	–	–	–	–	2	–
PT-508-SS-SC-HV	–	–	1	6	–	–	–	–	2	–
PT-508-SS-LC-24	1	–	–	6	–	–	–	–	–	2
PT-508-SS-LC-48	–	1	–	6	–	–	–	–	–	2
PT-508-SS-LC-HV	–	–	1	6	–	–	–	–	–	2

Note: 24 VDC, 48 VDC, and HV models support isolated power; only 24 VDC and 48 VDC models support redundant power inputs.
Note: Additional switch configurations with 3 or 4 fiber ports are available upon special request.

Optional Accessories (can be purchased separately)

MXview: Moxa industrial network management software with 50, 100, 250, 500, 1000, or 2000 nodes
EDS-SNMP OPC Server Pro: OPC server software that works with all SNMP devices
ABC-01: Configuration backup and restoration tool for managed Ethernet switches, 0 to 60°C operating temperature

Package Checklist

- PT-508 switch
- RJ45-to-DB9 console port cable
- DIN-Rail kit or wall mount ears (optional)
- 1 grounding cable
- Protective caps for unused ports
- Documentation and software CD
- Hardware installation guide
- Warranty card