PT-7528 Series

IEC 61850-3 28-port modular managed rackmount Ethernet switches

> IEC 61850-3, IEEE 1613 (power substations) compliant
> Turbo Ring and Turbo Chain (recovery time < 20 ms @ 250 switches), RSTP/STP, and MSTP for network redundancy
> VLAN Unaware: Supports priority-tagged frames to be received by specific IEDs
> Isolated redundant power inputs with universal 24/48 VDC or 110/220 VDC/VAC power supply range
> -40 to 85°C operating temperature range

Turbo Ring
Self-Healing Ethernet

Turbo Chain
Beyond Redundant Ring

RoHS READY   IEC 61850-3 / IEEE 1613   CE   FC

: Introduction

The PowerTrans PT-7528 is designed to meet the demands of power substation automation systems (IEC 61850-3, IEEE 1613). The PT-7528's Fast Ethernet backbone, redundant ring, and 24/48 VDC or 110/220 VDC/VAC dual isolated redundant power supplies increase the reliability of your communications and save on cabling/wiring costs.

The modular design of the PT-7528 also makes network planning easy, and allows greater flexibility by letting you install up to 4 modular fiber ports and 24 fixed 10/100BaseT(X) RJ45 ports. Along with the optional front or rear wiring, these features together make the PT-7528 suitable for a variety of industrial applications.

General Features and Benefits

- IPv6 Ready logo awarded (IPv6 Logo Committee certified)
- Software-based IEEE 1588 PTP V2 (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
- Multi-port mirroring for online debugging
- 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 802.1s 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, BootP, TFTP, SNTP, SMTP, RARP, RMON, HTTP, HTTPS, Telnet, Syslog, DHCP Option 66/67/82, SSH, LLDP, IEEE 1588 PTP V2, EtherNet/IP, Modbus/TCP, SNMP Inform, 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

Interface
Fiber Ports: 1 slot for 1, 2 or 4-port PM-7500 fiber module
Fast Ethernet: 24 fixed RJ45 ports with 10/100BaseT(X)
Console Port: RS-232 (RJ45)
System LED Indicators: STAT, PWR1, PWR2, FAULT, MSTR/HEAD, CPLR/TAIL
Mode LED Indicators: LNK/ACT, SPEED
Alarm Contact: 1 relay output with current carrying capacity of 3 A @ 30 VDC or 3 A @ 240 VAC

Power Requirements
Input Voltage:
• WV: 24/48 VDC (18 to 72 V)
• HV: 110/220 VDC/VAC (88 to 300 VDC, 85 to 264 VAC)
Input Current: (all ports are equipped with fiber)

• Max. 0.689 A @ 24 VDC
• Max. 0.338 A @ 48 VDC
• Max. 0.134/0.069 A @ 110/220 VDC
• Max. 0.332/0.2 A @ 110/220 VAC
Overload Current Protection: Present
Connection: 10-pin terminal blocks
Reverse Polarity Protection: Present

Physical Characteristics
Housing: IP40 protection
Dimensions: 440 x 44 x 325 mm (17.32 x 1.73 x 12.80 in)
Weight: 4900 g
Installation: 19'' rack mounting

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)
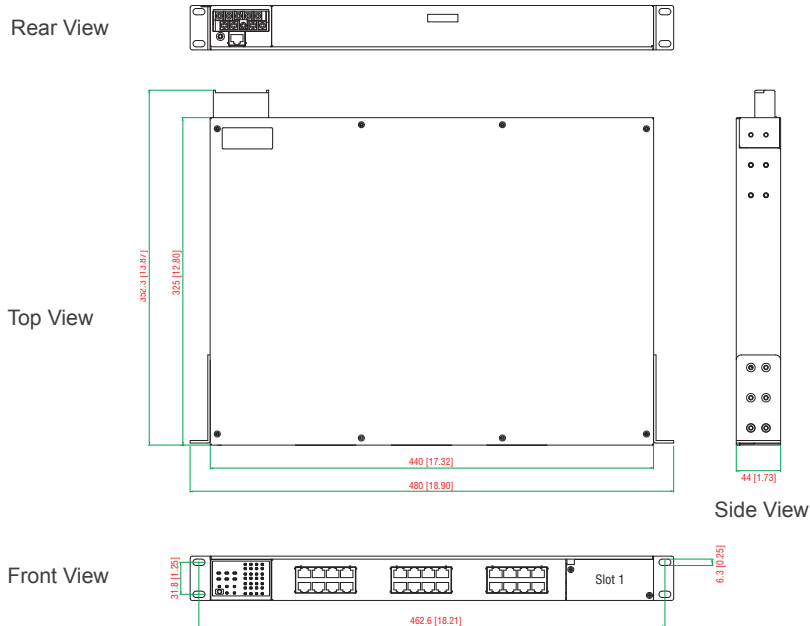
Standards and Certifications
Safety: UL 60950-1 (pending), CSA C22.2 No. 60950-1 (pending), EN 60950-1 (pending)
EMI: FCC Part 15 Subpart B Class A, EN 55022 Class A
Power Automation: IEC 61850-3, IEEE 1613

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

Dimensions

Unit: mm (inch)

Rear View

Top View

325 [12.80]

7 [13.5 /] 295

440 [17.32]
480 [18.90]

Side View

44 [1.73]

Front View

31.8 [1.25]

Slot 1

6.3 [0.25]

462.6 [18.21]

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: Ordering Information

Step 1: Select Ethernet switch system

Step 2: Select interface modules

PT-7528 with power supply

→

PM-7500 modules
(Ethernet modules)

Note: The PT-7528 Ethernet switch system is delivered without interface module. See next page to choose PM-7500 interface modules.

PT-7528 Modular Rackmount Ethernet Switch System

The PT-7528 switch system consists of 10 modular managed rackmount Ethernet switch systems with 1 slot for PM-7500 fiber module, and 24 fixed RJ45 ports with 10/100BaseT(X). A total of 28 ports can be installed, and the switch can be used in a temperature range from -40 to 85°C.

Available Models		Power Supply			
Front Cabling, Front Display	Rear Cabling, Front Display	Isolated Power Supply 1		Isolated Power Supply 2	
		WV	HV	WV	HV
PT-7528-F-WV	PT-7528-R-WV	1	-	-	-
PT-7528-F-WV-WV	PT-7528-R-WV-WV	1	-	1	-
PT-7528-F-WV-HV	PT-7528-R-WV-HV	1	-	-	1
PT-7528-F-HV	PT-7528-R-HV	-	1	-	-
PT-7528-F-HV-HV	PT-7528-R-HV-HV	-	1	-	**1**

Note: The PT-7528 Ethernet switch systems provide 1 slot for a selectable fiber interface module. See next page to select the PM-7500 fiber interface modules that you need for your own application.

PT-7528-F series
(Front Cabling, Front Display)

PT-7528-R series
(Rear Cabling, Front Display)
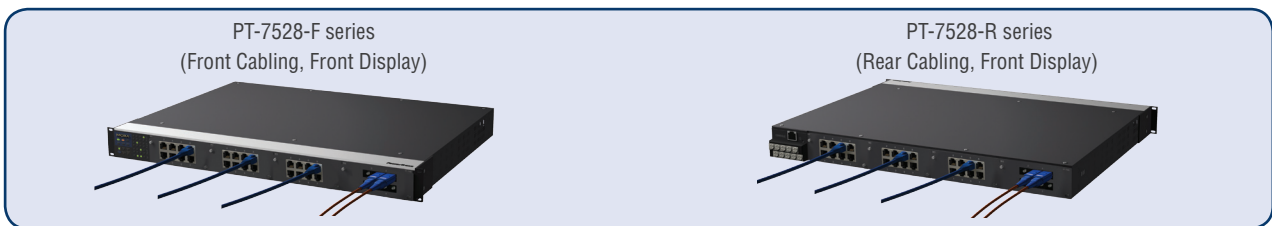
Optional Accessories (can be purchased separately)

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 Series: Configuration backup and restoration tool for managed Ethernet switches, 0 to 60°C operating temperature

Package Checklist

- PT-7528 switch
- RJ45-to-DB9 console port cable
- Protective caps for unused ports
- 2 rackmount ears
- Documentation and software CD
- Hardware installation guide
- Warranty card

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PM-7500 Series

Fast Ethernet modules for PT-7528 series rackmount Ethernet switches

: Specifications

Interface
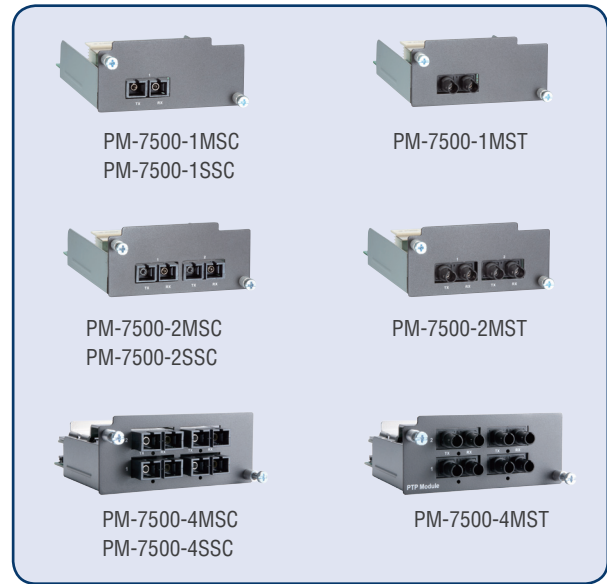**Fiber Ports:** 100BaseFX ports (MSC/MST/SSC connector)

Optical Fiber

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

Fast Ethernet Interface Modules, PM-7500 Series

PM-7500-1MSC
PM-7500-1SSC

PM-7500-1MST

PM-7500-2MSC
PM-7500-2SSC

PM-7500-2MST

PM-7500-4MSC
PM-7500-4SSC

PM-7500-4MST

: Ordering Information

Fast Ethernet Modules, PM-7500 Series

PM-7500 Interface Modules	
Slot 1	PM-7500-1MST
	PM-7500-2MST
	PM-7500-4MST
	PM-7500-1MSC
	PM-7500-2MSC
	PM-7500-4MSC
	PM-7500-1SSC
	PM-7500-2SSC
	PM-7500-4SSC

Rackmount Ethernet Switch System, PT-7528

Slot 1
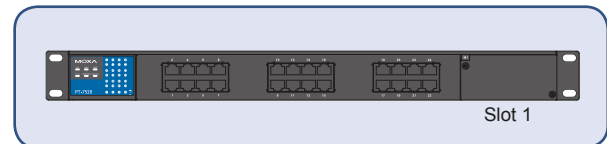
Package Checklist
- PM-7500 interface modules
- Warranty card