

# PT-G7509 Series

## IEC 61850-3 9G-port full Gigabit managed rackmount Ethernet switches



- > 9 combo 10/100/1000BaseT(X) or 100/1000BaseSFP slot Gigabit ports
- > IEC 61850-3, IEEE 1613 (power substations), and EN50155/EN50121-4 (railway applications) compliant
- > IEEE 1588 PTP for precise time synchronization of networks
- > Turbo Ring, Turbo Chain, and IEEE 802.1D-2004 RSTP/STP for Ethernet Redundancy
- > Isolated redundant power inputs with universal 24/48 VDC or 110/220 VDC/VAC power supply range
- > -40 to 85°C operating temperature range



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### Introduction

The PowerTrans PT-G7509 is equipped with 9 combo Gigabit Ethernet ports, making it ideal for upgrading an existing network to Gigabit speeds and building a new full Gigabit backbone. The PT-G7509 is designed to meet the demands of power substation automation systems (IEC 61850-3, IEEE 1613), traffic control systems (NEMA TS 2), and railway applications (EN50155/EN50121-4). Gigabit transmission increases bandwidth to provide higher performance and transfer large amounts of video, voice, and

data across a network quickly. The redundant Ethernet Turbo Ring, Turbo Chain, and RSTP/STP (IEEE 802.1w/D) functions increase system reliability and the availability of your network backbone. The choice of either front or rear wiring makes the PT-G7509 suitable for different types of application.

### Features and Benefits

- IPv6 Ready logo awarded (IPv6 Logo Committee certified)
- IEEE 1588 PTP (Precision Time Protocol) for precise time synchronization of networks
- DHCP Option 82 for IP address assignment with different policies
- Modbus/TCP industrial Ethernet protocol supported
- Turbo Ring, Turbo Chain, and IEEE 802.1D-2004 RSTP/STP
- IGMP snooping and GMRP for filtering multicast traffic from industrial Ethernet protocols
- IEEE 802.1Q VLAN and GVRP protocols 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 limits access to authorized MAC addresses only
- Port mirroring for online debugging
- Automatic warning by exception through email, relay output
- Automatic recovery of connected device's IP addresses
- Line-swap fast recovery
- Configurable by Web browser, Telnet/Serial console, Windows utility, and ABC-01 automatic backup configurator

### Specifications

#### Technology

**Standards:**  
 IEEE 802.3 for 10BaseT  
 IEEE 802.3u for 100BaseT(X) and 100Base FX  
 IEEE 802.3ab for 1000BaseT(X)  
 IEEE 802.3z for 1000BaseX  
 IEEE 802.3x for Flow Control  
 IEEE 802.1D for Spanning Tree Protocol  
 IEEE 802.1w for Rapid STP  
 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, SSH, Syslog, DHCP Option 66/67/82, LLDP, Modbus/TCP, IEEE 1588 PTP, IPv6, SNMP Inform

**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**

**RJ45 Ports:** 10/100/1000BaseT(X) auto negotiation speed  
**Fiber Ports:** 100/1000BaseSFP slot  
**Console Port:** RS-232 (RJ45)  
**System LED Indicators:** STAT, PWR1, PWR2, FAULT, MSTR/HEAD, CPLR/TAIL  
**Mode LED Indicators:** LNK/ACT, FDX/HDX, RING PORT, COUPLER PORT, SPEED  
**Alarm Contact:** 1 relay output with current carrying capacity of 3 A @ 30 VDC or 3 A @ 240 VAC

**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. 1.17 A @ 24 VDC  
 • Max. 0.59 A @ 48 VDC  
 • Max. 0.27/0.16 A @ 110/220 VDC  
 • Max. 0.61/0.35 A @ 110/220 VAC  
**Overload Current Protection:** Present  
**Connection:** 10-pin terminal blocks  
**Reverse Polarity Protection:** Present

**Physical Characteristics**

**Housing:** IP30 protection  
**Dimensions:** 440 x 44 x 254 mm (17.32 x 1.73 x 10.00 in)  
**Weight:** 3300 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)

**Regulatory Approvals**

**Safety:** UL60950-1, CSA C22.2 No. 60950-1, EN60950-1  
**EMI:** FCC Part 15, CISPR (EN55022) class A  
**Power Automation:** IEC 61850-3, IEEE 1613  
**Traffic Control:** NEMA TS2  
**Rail Traffic:** EN50155, EN50121-4

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

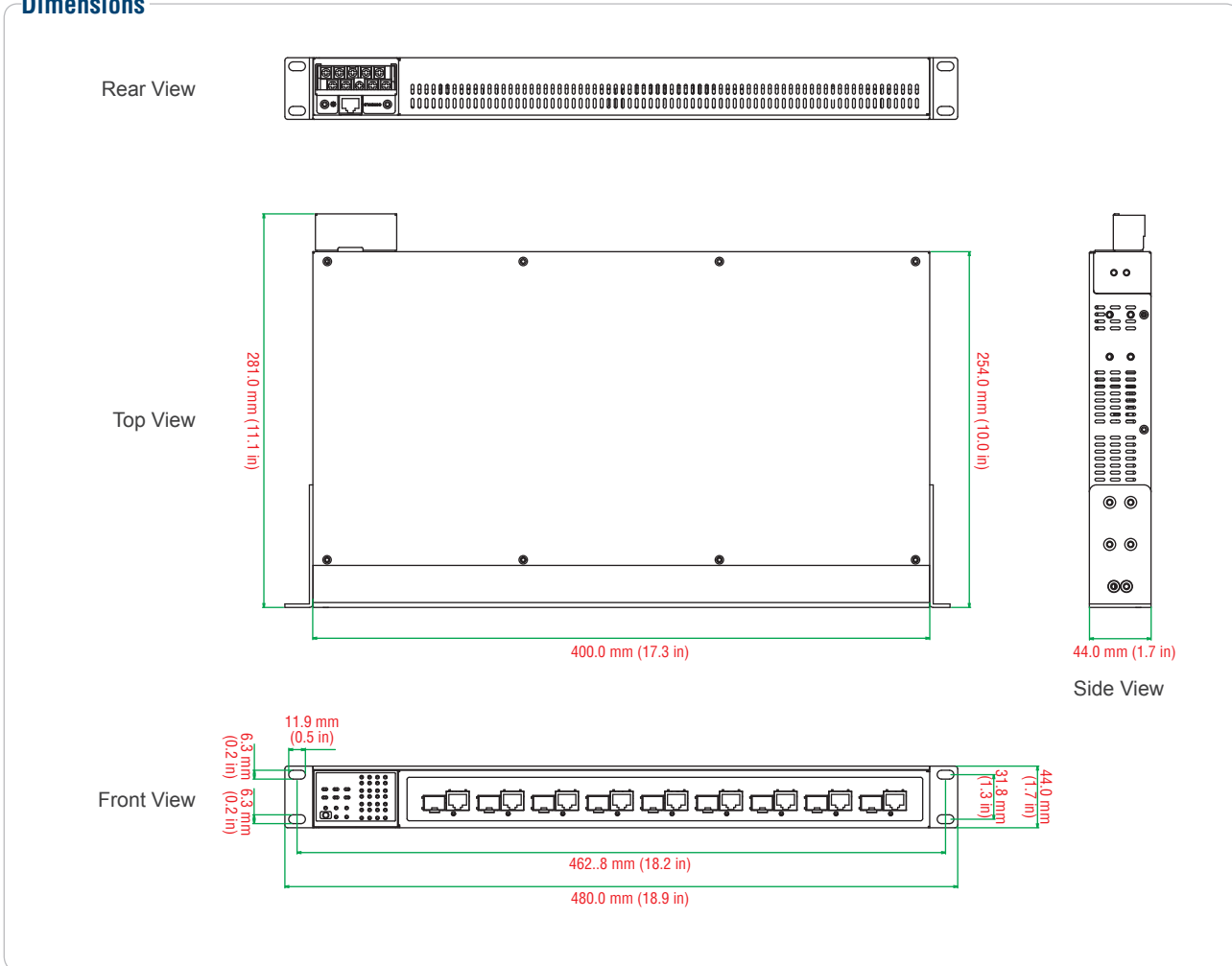
**Warranty**

**Warranty Period:** 5 years  
**Details:** See [www.moxa.com/warranty](http://www.moxa.com/warranty)



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**Dimensions**



**: Ordering Information**

**PT-G7509 Full Gigabit Managed Rackmount Ethernet Switch System**

The PT-G7509 switch system consists of 9 combo 10/100/1000BaseT(X) or 100/1000BaseSFP slot Gigabit ports and the switch can be used in a temperature range from -40 to 85°C.

Note: See page 1-69 for SFP-1G/1FE series Gigabit/fast Ethernet SFP module product information.

Available Models		Power Supply					
Front Cabling, Front Display	Rear Cabling, Front Display	Isolated Power Supply 1			Isolated Power Supply 2		
		24 VDC (18 to 36 V)	48 VDC (36 to 72 V)	HV: 88 to 300 VDC and 85 to 264 VAC	24 VDC (18 to 36 V)	48 VDC (36 to 72 V)	HV: 88 to 300 VDC and 85 to 264 VAC
PT-G7509-F-24	PT-G7509-R-24	1	-	-	-	-	-
PT-G7509-F-24-24	PT-G7509-R-24-24	1	-	-	1	-	-
PT-G7509-F-24-48	PT-G7509-R-24-48	1	-	-	-	1	-
PT-G7509-F-24-HV	PT-G7509-R-24-HV	1	-	-	-	-	1
PT-G7509-F-48	PT-G7509-R-48	-	1	-	-	-	-
PT-G7509-F-48-48	PT-G7509-R-48-48	-	1	-	-	1	-
PT-G7509-F-48-HV	PT-G7509-R-48-HV	-	1	-	-	-	1
PT-G7509-F-HV	PT-G7509-R-HV	-	-	1	-	-	-
PT-G7509-F-HV-HV	PT-G7509-R-HV-HV	-	-	1	-	-	1

PT-G7509-F series  
(Front Cabling, Front Display)



PT-G7509-R series  
(Rear Cabling, Front Display)



**Optional Accessories** (can be purchased separately)

**MXview:** Moxa industrial network management software with 50, 100, 250, or 500 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

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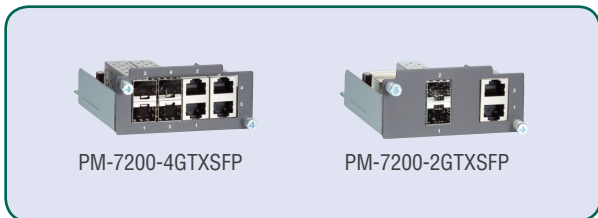
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# PM-7200 Series

*Gigabit and fast Ethernet modules for PT and IKS series switches*

## Specifications

### Gigabit Ethernet Interface Modules, PM-7200-2G/4G series



#### Interface

**RJ45 Ports:** 10/100/1000BaseT(X) auto negotiation speed, and auto MDI/MDI-X connection

**Fiber Ports:** 1000BaseSFP slots

**Note:** The PM-7200-2G/4G series Gigabit Ethernet combo modules support 2 or 4 SFP slots. See page 1-69 to select the SFP-1G series Gigabit Ethernet modules for your application.

### Fast Ethernet Interface Modules, PM-7200 series



\* See page 1-69 to select SFP-1G/1FE series Gigabit Ethernet and fast Ethernet modules.

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**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 or SFP LC connector)

**PoE Ports:** IEEE 802.3af Power-over-Ethernet Technology, provide up to 15.4 watts per port

**M12 Ports:** 10/100BaseT(X) auto negotiation speed, and auto MDI/MDI-X connection

**Optical Fiber**

	100BaseFX		
	Multi-mode	Single-mode	Single-mode, 80 km
Wavelength	1300 nm	1310 nm	1550 nm
Max. TX	-10 dBm	0 dBm	0 dBm
Min. TX	-20 dBm	-5 dBm	-5 dBm
RX Sensitivity	-32 dBm	-34 dBm	-34 dBm
Link Budget	12 dB	29 dB	29 dB
Typical Distance	5 km a 4 km b	40 km c	80 km d
Saturation	-6 dBm	-3 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
- d. 9/125 μm single-mode fiber optic cable (80 km)

**Ordering Information**

**Rackmount Ethernet Switch System and Interface Module Compatibility Chart**

	Interface Modules																											
	PM-7200-4GTXSFP	PM-7200-2GTXSFP	PM-7200-1MSC	PM-7200-1MST	PM-7200-2MSC	PM-7200-2MST	PM-7200-1SSC	PM-7200-2SSC	PM-7200-8TX	PM-7200-2MSC4TX	PM-7200-2MST4TX	PM-7200-2SSC4TX	PM-7200-4MSC2TX	PM-7200-4MST2TX	PM-7200-4SSC2TX	PM-7200-6MSC	PM-7200-6MST	PM-7200-6SSC	PM-7200-1MSC6TX	PM-7200-1MST6TX	PM-7200-1SSC6TX	PM-7200-1LSC6TX	PM-7200-8PoE	PM-7200-8SFP*	PM-7200-4M12	PM-7200-4MST	PM-7200-4MSC	PM-7200-4SSC
PT-7828	✓	✓	-	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓
PT-7728	✓	✓	-	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓
PT-7710	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	-	-	-
IKS-6726	-	✓	-	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	-	-	-
IKS-6726-PoE	-	✓	-	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
IKS-6324	-	✓	✓	✓	✓	✓	✓	✓	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

\* If you are using an SFP-1FELLC module, the operating temperature is limited to -40 to 75°C (-40 to 167°F).

**Gigabit Ethernet Modules for PT and IKS Series Rackmount Ethernet Switches, PM-7200-2G/4G Series**

Available Models	Port Interface
	Combo Port, 10/100/1000BaseT(X) or 1000BaseSFP*
PM-7200-2GTXSFP	2
PM-7200-4GTXSFP	4

\*The PM-7200-2G/4G series Gigabit Ethernet combo modules support 2 or 4 SFP slots.

### Fast Ethernet Modules for PT and IKS Series Rackmount Ethernet Switches, PM-7200 Series

Available Models	Port Interface							
	10/100BaseT(X)			100BaseFX				100BaseSFP
	TP	PoE	M12	Multi-mode, SC Connector	Multi-mode, ST Connector	Single-mode, SC Connector	Single-mode, SC Connector, 80 km	
PM-7200-8TX	8	-	-	-	-	-	-	-
PM-7200-6MSC	-	-	-	6	-	-	-	-
PM-7200-6MST	-	-	-	-	6	-	-	-
PM-7200-6SSC	-	-	-	-	-	6	-	-
PM-7200-4MSC2TX	2	-	-	4	-	-	-	-
PM-7200-4MST2TX	2	-	-	-	4	-	-	-
PM-7200-4SSC2TX	2	-	-	-	-	4	-	-
PM-7200-2MSC4TX	4	-	-	2	-	-	-	-
PM-7200-2MST4TX	4	-	-	-	2	-	-	-
PM-7200-2SSC4TX	4	-	-	-	-	2	-	-
PM-7200-1LSC6TX	6	-	-	-	-	-	1	-
PM-7200-2MSC	-	-	-	2	-	-	-	-
PM-7200-2MST	-	-	-	-	2	-	-	-
PM-7200-2SSC	-	-	-	-	-	2	-	-
PM-7200-1MSC	-	-	-	1	-	-	-	-
PM-7200-1MST	-	-	-	-	1	-	-	-
PM-7200-1SSC	-	-	-	-	-	1	-	-
PM-7200-1MSC6TX	6	-	-	1	-	-	-	-
PM-7200-1MST6TX	6	-	-	-	1	-	-	-
PM-7200-1SSC6TX	6	-	-	-	-	1	-	-
PM-7200-8PoE	-	8	-	-	-	-	-	-
PM-7200-8SFP	-	-	-	-	-	-	-	8
PM-7200-4M12	-	-	4	-	-	-	-	-
PM-7200-4MST	-	-	-	-	4	-	-	-
PM-7200-4MSC	-	-	-	4	-	-	-	-
PM-7200-4SSC	-	-	-	-	-	4	-	-

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