

# PT-G7509 Series

## IEC 61850-3 9G-port Layer 2 full Gigabit managed rackmount Ethernet switches



### Features and Benefits

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

### Certifications



## Introduction

The 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). Gigabit transmission increases bandwidth to provide higher performance and transfer large amounts of video, voice, and data across a network quickly. The redundant Ethernet technologies Turbo Ring, Turbo Chain, and RSTP/STP/MSTP (IEEE 802.1w/D/s) 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.

### Additional Features and Benefits

- Command line interface (CLI) for quickly configuring major managed functions
- VLAN Unaware: Supports priority-tagged frames to be received by specific devices
- 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 < 50 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 to prevent unpredictable network status
- Automatic warning by exception through email and relay output
- RMON for proactive and efficient network monitoring
- 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

### Cybersecurity 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
- RADIUS/TACACS+ allows you to manage passwords from a central location
- 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
- Disable one or more ports to block network traffic
- SNMPv3 provides encrypted authentication and access security

## Specifications

### Ethernet Interface

Cabling Direction	PT-G7509-F Series: Front cabling PT-G7509-R Series: Rear cabling
Combo Ports (10/100/1000BaseT(X) or 100/1000BaseSFP+)	9
Standards	IEEE 802.1D-2004 for Spanning Tree Protocol IEEE 802.1p for Class of Service IEEE 802.1Q for VLAN Tagging 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 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 IEEE 802.3z for 1000BaseSX/LX/LHX/ZX

### Ethernet Software Features

Filter	802.1Q, GMRP, GVRP, IGMP v1/v2c, Port-based VLAN, VLAN unaware
Industrial Protocols	EtherNet/IP, Modbus TCP
Management	Back Pressure Flow Control, BOOTP, DHCP Option 66/67/82, DHCP Server/Client, Flow control, HTTP, IPv4/IPv6, LLDP, Port Mirror, RARP, RMON, SMTP, SNMP Inform, SNMPv1/v2c/v3, Syslog, Telnet, TFTP
MIB	Bridge MIB, Ethernet-like MIB, MIB-II, P-BRIDGE MIB, Q-BRIDGE MIB, RMON MIB Groups 1, 2, 3, 9, RSTP MIB
Power Substation	IEC 61850 QoS, MMS
Redundancy Protocols	Link Aggregation, MSTP, RSTP, STP, Turbo Chain, Turbo Ring v1/v2
Security	HTTPS/SSL, TACACS+, Port Lock, RADIUS, SSH
Time Management	NTP Server/Client, SNTP

### Switch Properties

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

### Serial Interface

Console Port	RS-232 (RJ45)
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### Input/Output Interface

Alarm Contact Channels	Resistive load: 3 A @ 30 VDC, 240 VAC
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### Power Parameters

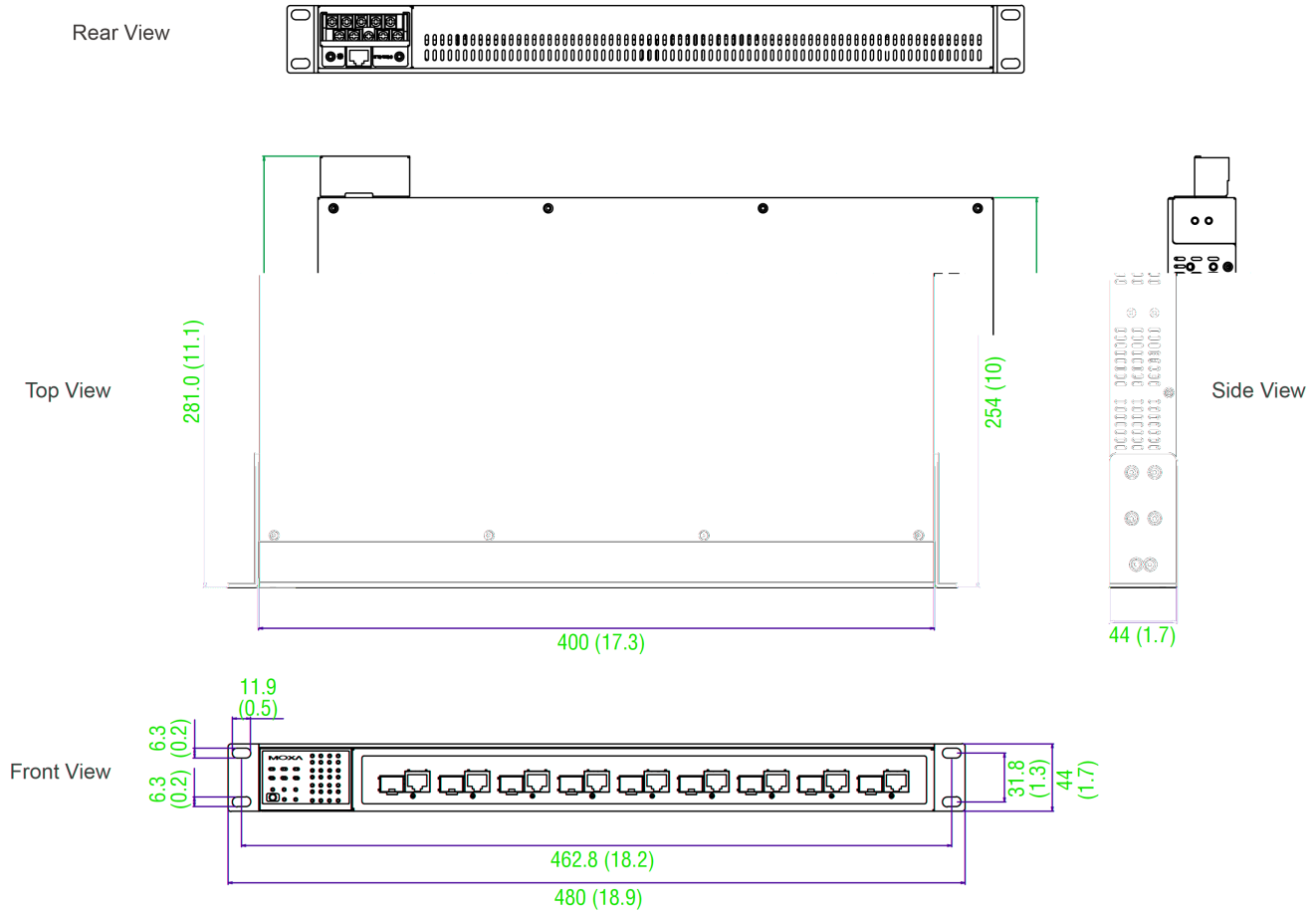
Connection	10-pin terminal block
Input Voltage	-24-24/-48-48/-HV-HV/-24-HV models: Redundant power modules PT-G7509-24 Series: 24 VDC (18 to 36 VDC) PT-G7509-48 Series: 48 VDC (36 to 72 VDC) PT-G7509-HV Series: 110/220 VAC/VDC (88 to 300 VAC, 85 to 264 VDC)
Overload Current Protection	Supported

Reverse Polarity Protection	Supported
Input Current	PT-G7509-24 Series: 1.08 A @ 24 VDC PT-G7509-48 Series: 0.55 A @ 48 VDC PT-G7509-HV Series: 0.57/0.33 A @ 110/220 VAC, 0.25/0.15 A @ 110/220 VDC
<b>Physical Characteristics</b>	
Housing	Aluminum
IP Rating	IP30
Dimensions (without ears)	440 x 44 x 254 mm (17.32 x 1.73 x 10.00 in)
Weight	3300 g (7.33 lb)
Installation	19-inch rack mounting
<b>Environmental Limits</b>	
Operating Temperature	-40 to 85°C (-40 to 185°F) Note: Cold start requires minimum of 100 VAC @ -40°C
Storage Temperature (package included)	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5 to 95% (non-condensing)
<b>Standards and Certifications</b>	
Safety	EN 60950-1, UL 60950-1, CSA C22.2 No. 60950-1
EMI	EN 55032 Class A, CISPR 32, FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV IEC 61000-4-3 RS: 80 MHz to 1 GHz: 35 V/m IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV IEC 61000-4-5 Surge: Power: 4 kV; Signal: 4 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF IEC 61000-4-11 DIPs
Power Substation	IEC 61850-3, IEEE 1613
<b>MTBF</b>	
Time	258,058 hrs
Standards	Telcordia SR332
<b>Warranty</b>	
Warranty Period	5 years
Details	See <a href="http://www.moxa.com/warranty">www.moxa.com/warranty</a>
<b>Package Contents</b>	
Device	1 x PT-G7509 Series switch
Cable	1 x DB9 female to RJ45 10-pin
Installation Kit	4 x cap, plastic, for RJ45 port 2 x rack-mounting ear

Documentation	1 x document and software CD 1 x quick installation guide 1 x warranty card 1 x product certificates of quality inspection, Simplified Chinese 1 x product notice, Simplified Chinese
Note	SFP modules need to be purchased separately for use with this product.

## Dimensions

Unit: mm (inch)



## Ordering Information

Model Name	Max. No. of Ports	Max. No. of Gigabit Ports	Cabling	Redundant Power Module	Input Voltage 1	Input Voltage 2	Operating Temp.
PT-G7509-F-HV	9	9	Front	-	110/220 VDC/ VAC (88-300 VDC or 85-264 VAC)	-	-45 to 85°C
PT-G7509-R-HV	9	9	Rear	-	110/220 VDC/ VAC (88-300 VDC or 85-264 VAC)	-	-45 to 85°C
PT-G7509-F-HV-HV	9	9	Front	✓	110/220 VDC/ VAC (88-300 VDC or 85-264 VAC)	110/220 VDC/ VAC (88-300 VDC or 85-264 VAC)	-45 to 85°C
PT-G7509-R-HV-HV	9	9	Rear	✓	110/220 VDC/ VAC (88-300 VDC or 85-264 VAC)	110/220 VDC/ VAC (88-300 VDC or 85-264 VAC)	-45 to 85°C

Model Name	Max. No. of Ports	Max. No. of Gigabit Ports	Cabling	Redundant Power Module	Input Voltage 1	Input Voltage 2	Operating Temp.
PT-G7509-F-24	9	9	Front	-	24 VDC (18-38 VDC)	-	-45 to 85°C
PT-G7509-R-24	9	9	Rear	-	24 VDC (18-38 VDC)	-	-45 to 85°C
PT-G7509-F-24-24	9	9	Front	✓	24 VDC (18-38 VDC)	24 VDC (18-38 VDC)	-45 to 85°C
PT-G7509-R-24-24	9	9	Rear	✓	24 VDC (18-38 VDC)	24 VDC (18-38 VDC)	-45 to 85°C
PT-G7509-F-24-HV	9	9	Front	✓	24 VDC (18-38 VDC)	110/220 VDC/ VAC (88-300 VDC or 85-264 VAC)	-45 to 85°C
PT-G7509-R-24-HV	9	9	Rear	✓	24 VDC (18-38 VDC)	110/220 VDC/ VAC (88-300 VDC or 85-264 VAC)	-45 to 85°C
PT-G7509-F-48	9	9	Front	-	48 VDC (36-72 VDC)	-	-45 to 85°C
PT-G7509-R-48	9	9	Rear	-	48 VDC (36-72 VDC)	-	-45 to 85°C
PT-G7509-F-48-48	9	9	Front	✓	48 VDC (36-72 VDC)	48 VDC (36-72 VDC)	-45 to 85°C
PT-G7509-R-48-48	9	9	Rear	✓	48 VDC (36-72 VDC)	48 VDC (36-72 VDC)	-

## Accessories (sold separately)

### Software

MXview	Industrial network management software designed for converged automation networks
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### SFP Modules

SFP-1FELLC-T	SFP module with 1 100Base single-mode with LC connector for 80 km transmission, -40 to 85°C operating temperature
SFP-1FEMLC-T	SFP module with 1 100Base multi-mode with LC connector for 4 km transmission, -40 to 85°C operating temperature
SFP-1FESLC-T	SFP module with 1 100Base single-mode with LC connector for 40 km transmission, -40 to 85°C operating temperature
SFP-1G10ALC	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 10 km transmission; TX 1310 nm, RX 1550 nm, 0 to 60°C operating temperature
SFP-1G10ALC-T	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 10 km transmission; TX 1310 nm, RX 1550 nm, -40 to 85°C operating temperature
SFP-1G10BLC	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 10 km transmission; TX 1550 nm, RX 1310 nm, 0 to 60°C operating temperature
SFP-1G10BLC-T	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 10 km transmission; TX 1550 nm, RX 1310 nm, -40 to 85°C operating temperature
SFP-1G20ALC	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 20 km transmission; TX 1310 nm, RX 1550 nm, 0 to 60°C operating temperature
SFP-1G20ALC-T	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 20 km transmission; TX 1310 nm, RX 1550 nm, -40 to 85°C operating temperature
SFP-1G20BLC	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 20 km transmission; TX 1550 nm, RX 1310 nm, 0 to 60°C operating temperature
SFP-1G20BLC-T	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 20 km transmission; TX 1550 nm, RX 1310 nm, -40 to 85°C operating temperature

SFP-1G40ALC	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 40 km transmission; TX 1310 nm, RX 1550 nm, 0 to 60°C operating temperature
SFP-1G40ALC-T	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 40 km transmission; TX 1310 nm, RX 1550 nm, -40 to 85°C operating temperature
SFP-1G40BLC	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 40 km transmission; TX 1550 nm, RX 1310 nm, 0 to 60°C operating temperature
SFP-1G40BLC-T	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 40 km transmission; TX 1550 nm, RX 1310 nm, -40 to 85°C operating temperature
SFP-1GEZXC	SFP module with 1 1000BaseEZXC port with LC connector for 110 km transmission, 0 to 60°C operating temperature
SFP-1GEZXC-120	SFP module with 1 1000BaseEZXC port with LC connector for 120 km transmission, 0 to 60°C operating temperature
SFP-1GLHLC	SFP module with 1 1000BaseLH port with LC connector for 30 km transmission, 0 to 60°C operating temperature
SFP-1GLHLC-T	SFP module with 1 1000BaseLH port with LC connector for 30 km transmission, -40 to 85°C operating temperature
SFP-1GLHXC	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, 0 to 60°C operating temperature
SFP-1GLHXC-T	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, -40 to 85°C operating temperature
SFP-1GLSXC	SFP module with 1 1000BaseLSX port with LC connector for 500 m transmission, 0 to 60°C operating temperature
SFP-1GLSXC-T	SFP module with 1 1000BaseLSX port with LC connector for 500 m transmission, -40 to 85°C operating temperature
SFP-1GLXC	SFP module with 1 1000BaseLX port with LC connector for 10 km transmission, 0 to 60°C operating temperature
SFP-1GLXC-T	SFP module with 1 1000BaseLX port with LC connector for 10 km transmission, -40 to 85°C operating temperature
SFP-1GSXC	SFP module with 1 1000BaseSX port with LC connector for 300/550 m transmission, 0 to 60°C operating temperature
SFP-1GSXC-T	SFP module with 1 1000BaseSX port with LC connector for 300/550 m transmission, -40 to 85°C operating temperature
SFP-1GZXC	SFP module with 1 1000BaseZX port with LC connector for 80 km transmission, 0 to 60°C operating temperature
SFP-1GZXC-T	SFP module with 1 1000BaseZX port with LC connector for 80 km transmission, -40 to 85°C operating temperature

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