

PT-G510 Series

IEC 61850-3 10-port Layer 2 full Gigabit PRP/HSR managed Ethernet switches



Features and Benefits

- IEC 61850-3 Edition 2 Class 2 compliant
- IEC 62439-3 Clause 4 (PRP) and Clause 5 (HSR) compliant
- IEEE 1588 hardware time stamp supported
- Supports IEEE C37.238 and IEC 61850-9-3 power profiles
- GOOSE Check for easy troubleshooting
- Built-in MMS server based on IEC 61850-90-4 switch data modeling for power SCADA
- -40 to 75°C operating temperature range

Certifications



Introduction

The PT-G510 Series is designed to deliver the highest level of system availability and data integrity for mission-critical applications in digital substations that demand zero-recovery-time redundancy. The PT-G510 Series supports PRP/HSR to achieve seamless redundancy for substations and process automation systems. Hardware-based IEEE 1588v2 PTP is also supported for time-critical applications. Featuring a highly durable design, the PT-G510 Series is certified for IEC 61850-3 Edition 2 Class 2 to fulfill demanding requirements in substation applications.

The PT-G510 Series comes with eight 100/1000BaseT(X) Ethernet ports or 100/1000BaseSFP slots with two dedicated 100/1000BaseSFP PRP/HSR ports combined with support for a complete redundancy protocol suite including PRP, HSR, MRP, STP, MSTP, and RSTP for maximum network reliability. The PT-G510 Series further supports GOOSE Check to efficiently monitor GOOSE packets and features a built-in MMS server based on IEC 61850-90-4 switch data modeling for power SCADA systems.

Specifications

Ethernet Interface

100/1000BaseT(X) Ports (RJ45 connector)	PT-G510-8GTX-PHR models: 8 PT-G510-4GTX4GSFP-PHR models: 4
100/1000BaseSFP Ports	PT-G510-8GSFP-PHR models: 10 PT-G510-4GTX4GSFP-PHR models: 6
Standards	IEEE 802.3u for 100BaseT(X) and 100BaseFX IEEE 802.3ab for 1000BaseT(X) IEEE 802.3z for 1000BaseX IEEE 802.1D-2004 for Spanning Tree Protocol IEEE 802.1w for Rapid Spanning Tree Protocol IEEE 802.1p for Class of Service IEEE 802.1Q for VLAN Tagging IEEE 802.1X for authentication IEEE 802.3ad for Port Trunk with LACP IEEE 802.3x for flow control

Ethernet Software Features

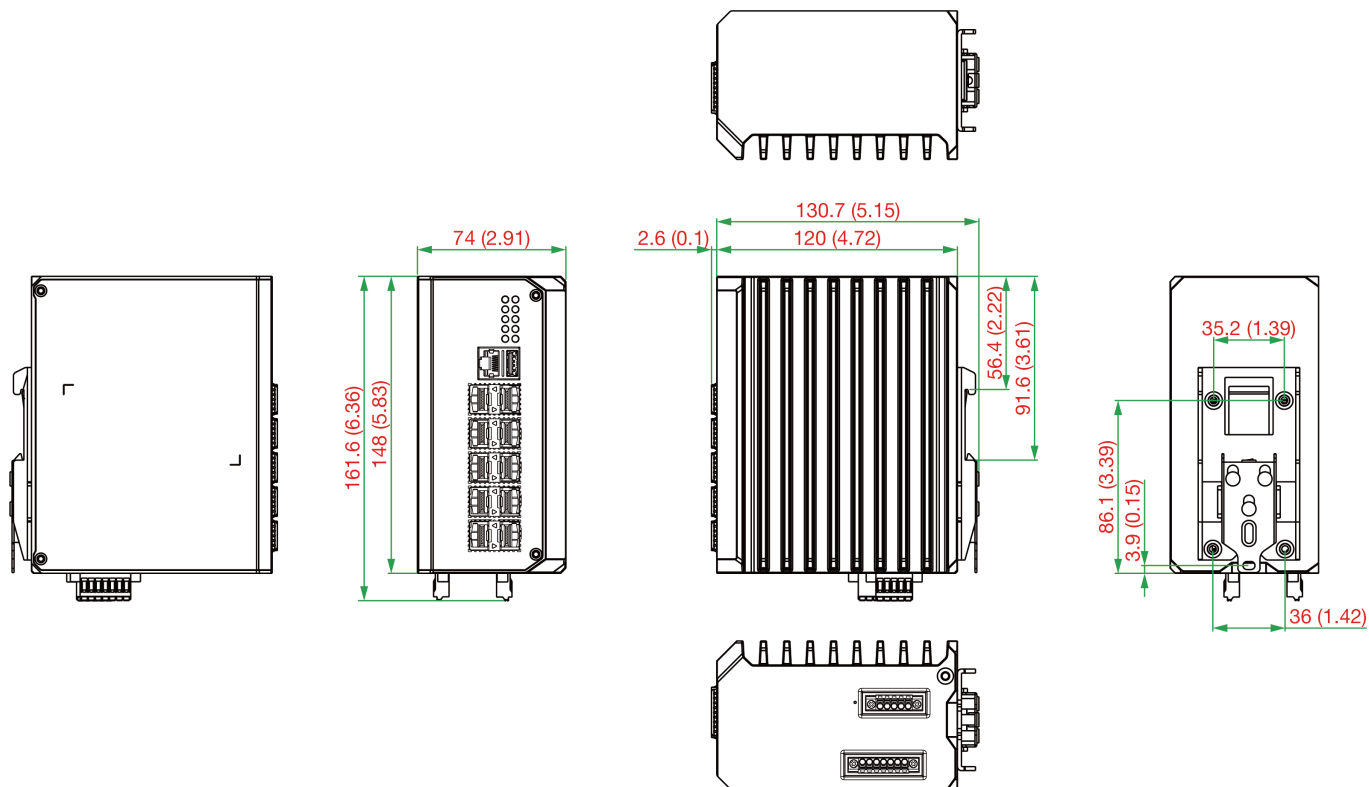
Management	<p>HTTPS Back Pressure Flow Control DHCP Option 66/67/82 Fiber check Flow control LLDP Port Mirror SNMP Inform BOOTP DHCP Server/Client HTTP IPv4/IPv6 RARP SMTP SNMPv1/v2c/v3 Syslog Telnet TFTP</p>
MIB	<p>MIB-II Ethernet-like MIB Bridge MIB P-BRIDGE MIB Q-BRIDGE MIB RSTP MIB RMON MIB Groups 1, 2, 3, 9</p>
Filter	<p>IGMP v1/v2/v3 GMRP GVRP 802.1Q QinQ VLAN</p>
Redundancy Protocols	<p>Link Aggregation MSTP RSTP STP Turbo Chain Turbo Ring MRP HSR PRP Coupling RSTP grouping</p>
Security	<p>RADIUS TACACS+ SSH Port Lock Broadcast storm protection MAB authentication Sticky MAC Access control list</p>
Time Management	<p>NTP Server/Client SNTP IEEE 1588v2 PTP (hardware-based)</p>
Power Substation	<p>GOOSE Check IEC 61850 QoS MMS</p>
Switch Properties	
Priority Queues	8
Max. No. of VLANs	256
VLAN ID Range	1 to 4094
RSTP Grouping ID Range	1 to 4094

IGMP Groups	4096
MAC Table Size	16 K
Packet Buffer Size	12 Mbits
Serial Interface	
Console Port	RS-232 (RJ45)
USB Interface	
Storage Port	USB Type A
Power Parameters	
Input Voltage	<p>-HV models: 110-220 VAC, 110-220 VDC (88 to 300 VDC, 85 to 264 VAC)</p> <p>-WV models: 24-48 VDC (18 to 72 VDC)</p> <p>Note: Both -HV and -WV models support dual power inputs with a single power module.</p>
Input Current	<p>-HV models: 0.5 A @ 110-220 VAC 0.3 A @ 110-220 VDC</p> <p>-WV models: 1.1 A @ 24-48 VDC</p>
Alarm Contact Channels	Resistive load: 1 A @ 24 VDC
Overload Current Protection	Supported
Reverse Polarity Protection	Supported
Physical Characteristics	
IP Rating	IP30
Dimensions (without ears)	74 x 148 x 120 mm (2.91 x 5.83 x 4.72 in)
Weight	1476 g (3.25 lb)
Installation	DIN-rail mounting
Environmental Limits	
Operating Temperature	<p>-40 to 75°C (-40 to 167°F)</p> <p>-40 to 85°C (-40 to 185°F) for 16 hrs (tested in accordance with IEC 60068-2-2)</p>
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 55032/35
EMI	CISPR 32, FCC Part 15B Class A
EMS	<p>IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV</p> <p>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m</p> <p>IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV</p> <p>IEC 61000-4-5 Surge: Power: 4 kV; Signal: 4 kV</p> <p>IEC 61000-4-6 CS: 10 V</p> <p>IEC 61000-4-8 PFMF</p> <p>EN 61000-4-11</p>
Power Substation	IEC 61850-3 Edition 2.0 Class 2

	IEEE 1613
Railway	EN 50121-4
Maritime	-VV models: DNV IEC 60945
Safety	IEC 62368-1 UL 62368-1
MTBF	
Time	688,584 hrs
Standards	Telcordia (Bellcore) Standard TR/SR
Warranty	
Warranty Period	5 years
Details	See www.moxa.com/warranty
Package Contents	
Device	1 x PT-G510 Series switch
Cable	1 x RJ45-to-DB9 console cable
Installation Kit	1 x DIN-rail kit 1 x cap, for type A USB port 6 or 10 x cap, plastic, for SFP port
Documentation	1 x quick installation guide 1 x warranty card 1 x substance disclosure table 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	100/1000BaseT(X) Ports (RJ45 Connector)	100/ 1000BaseBaseSFP Slots	Operating Voltage	Conformal Coating	Operating Temp.
PT-G510-8GSFP-PHR-HV	–	10	110-220 VDC/VAC	–	-40 to 75°C
PT-G510-8GSFP-PHR-WV	–	10	24-48 VDC	–	-40 to 75°C
PT-G510-8GTX-PHR-HV	8	2	110-220 VDC/VAC	–	-40 to 75°C
PT-G510-8GTX-PHR-WV	8	2	24-48 VDC	–	-40 to 75°C
PT-G510-4GTX4GSFP-PHR-HV	4	6	110-220 VDC/VAC	–	-40 to 75°C
PT-G510-4GTX4GSFP-PHR-WV	4	6	24-48 VDC	–	-40 to 75°C
PT-G510-8GSFP-PHR-HV-CT	–	10	110-220 VDC/VAC	✓	-40 to 75°C
PT-G510-8GSFP-PHR-WV-CT	–	10	24-48 VDC	✓	-40 to 75°C
PT-G510-8GTX-PHR-HV-CT	8	2	110-220 VDC/VAC	✓	-40 to 75°C
PT-G510-8GTX-PHR-WV-CT	8	2	24-48 VDC	✓	-40 to 75°C
PT-G510-4GTX4GSFP-PHR-HV-CT	4	6	110-220 VDC/VAC	✓	-40 to 75°C
PT-G510-4GTX4GSFP-PHR-WV-CT	4	6	24-48 VDC	✓	-40 to 75°C

Accessories (sold separately)

Software

MXview-50	MXview license for 50 nodes
MXview-100	MXview license for 100 nodes

MXview-250	MXview license for 250 nodes
MXview-500	MXview license for 500 nodes
MXview-1000	MXview license for 1000 nodes
MXview-2000	MXview license for 2000 nodes
MXview Upgrade-50	MXview license expansion for 50 nodes

Storage Kits

ABC-02-USB	Configuration backup and restoration tool, firmware upgrade, and log file storage tool for managed Ethernet switches and routers, 0 to 60°C operating temperature
ABC-02-USB-T	Configuration backup and restoration tool, firmware upgrade, and log file storage tool for managed Ethernet switches and routers, -40 to 75°C operating temperature

SFP Modules

SFP-1GTXRJ45-T	SFP module with 1 1000BaseT port with RJ45 connector for 100 m transmission, -40 to 75°C operating temperature
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, LC connector for 2/4 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-1GLHXLC-T	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, -40 to 85°C operating temperature
SFP-1GLSXLC	SFP module with 1 1000BaseLSX port with LC connector for 1km/2km transmission, 0 to 60°C operating temperature
SFP-1GLSXLC-T	SFP module with 1 1000BaseLSX port with LC connector for 1km/2km transmission, -40 to 85°C operating temperature
SFP-1GLXLC	SFP module with 1 1000BaseLX port with LC connector for 10 km transmission, 0 to 60°C operating temperature
SFP-1GLXLC-T	SFP module with 1 1000BaseLX port with LC connector for 10 km transmission, -40 to 85°C operating temperature
SFP-1GSXLC	SFP module with 1 1000BaseSX port with LC connector for 300m/550m transmission, 0 to 60°C operating temperature
SFP-1GSXLC-T	SFP module with 1 1000BaseSX port with LC connector for 300m/550m transmission, -40 to 85°C operating temperature
SFP-1GZXLC	SFP module with 1 1000BaseZX port with LC connector for 80 km transmission, 0 to 60°C operating temperature
SFP-1GZXLC-T	SFP module with 1 1000BaseZX port with LC connector for 80 km transmission, -40 to 85°C operating temperature

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