

# PT-G510シリーズ

IEC 61850-3 10ポートレイヤ2フルギガビットPRP/HSRマネージドイーサネットスイッチ

## 機能と特長

- IEC 61850-3 Edition 2 Class 2準拠
- IEC 62439-3 Clause 4 (PRP) およびClause 5 (HSR) 準拠
- IEEE1588ハードウェアタイムスタンプ対応
- IEEE C37.238およびIEC 61850-9-3電源プロファイルをサポート
- 簡単なトラブルシューティングのためのGOOSEチェック
- Power SCADA用のIEC 61850-90-4スイッチデータモデリングに基づく内蔵MMSサーバー
- 動作温度範囲-40~75°C



## 認証



EN 50121-4



## 製品紹介

PT-G510シリーズは、ゼロ復旧時間の冗長性を要求するデジタル変電所のミッションクリティカルなアプリケーションに最高レベルのシステム可用性とデータ整合性を提供するように設計されています。PT-G510シリーズはPRP/HSRをサポートし、変電所およびプロセス自動化システムのシームレスな冗長性を実現します。時間が重要となるアプリケーション向けに、ハードウェアベースのIEEE 1588v2 PTPもサポートされています。PT-G510シリーズは、耐久性に優れた設計を特徴とし、変電所用途の厳しい要件を満たすIEC 61850-3エディション2クラス2認定を取得しています。

PT-G510シリーズには、8つの100/1000BaseT(X)イーサネットポートまたは2つの専用100/1000BaseSFP PRP/HSRポートを備えた100/1000BaseSFPスロットが搭載されており、PRP、HSR、MRP、STP、MSTP、RSTPを含む完全な冗長プロトコルスイートのサポートと組み合わせられて、ネットワークの信頼性を最大限に高めます。PT-G510シリーズは、GOOSEパケットを効率的に監視するためのGOOSEチェックをさらにサポートし、電力SCADAシステム用のIEC 61850-90-4スイッチデータモデリングに基づく組み込みMMSサーバーを備えています。

## 仕様

### 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)
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### USB Interface

Storage Port	USB Type A
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### 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) -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 IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 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 EN 61000-4-11</p>

Power Substation	IEC 61850-3 Edition 2.0 Class 2 IEEE 1613
Railway	EN 50121-4
Maritime	-WV models: DNV IEC 60945
Safety	IEC 62368-1 UL 62368-1

#### MTBF

Time	688,584 hrs
Standards	Telcordia (Bellcore) Standard TR/SR

#### Warranty

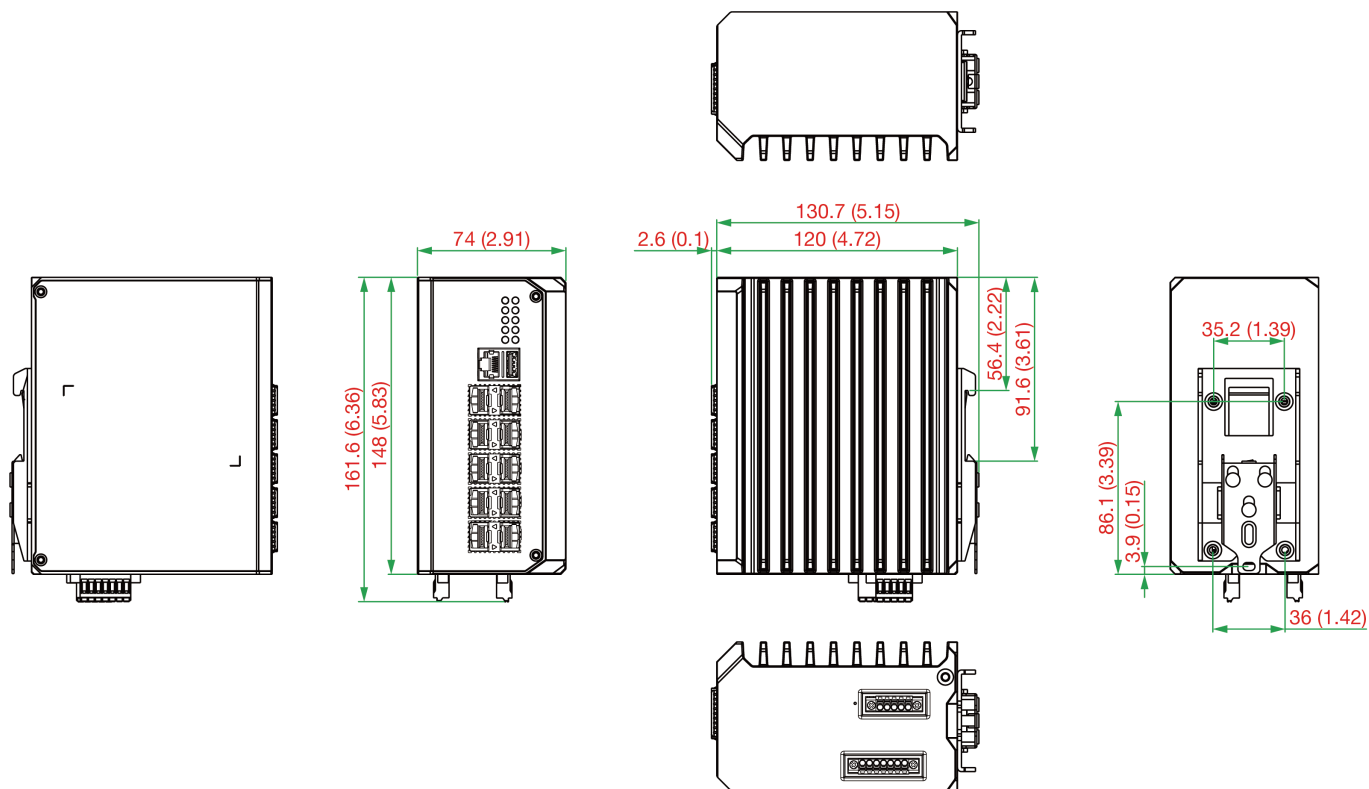
Warranty Period	5 years
Details	See <a href="http://www.moxa.com/jp/warranty">www.moxa.com/jp/warranty</a>

#### 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.

## 寸法

単位: mm (インチ)



## 注文情報

Model Name	100/1000BaseT(X) Ports (RJ45 Connector)	10/ 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	P	-40 to 75°C
PT-G510-8GSFP-PHR-WV-CT	-	10	24-48 VDC	P	-40 to 75°C
PT-G510-8GTX-PHR-HV-CT	8	2	110-220 VDC/VAC	P	-40 to 75°C
PT-G510-8GTX-PHR-WV-CT	8	2	24-48 VDC	P	-40 to 75°C
PT-G510-4GTx4GSFP-PHR-HV-CT	4	6	110-220 VDC/VAC	P	-40 to 75°C
PT-G510-4GTx4GSFP-PHR-WV-CT	4	6	24-48 VDC	P	-40 to 75°C

## アクセサリ (別売)

### 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-1GLHXLC	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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