

# PT-G7828 系列

## IEC 61850-3 28 埠 Layer3 全 Gigabit 模組化網管型乙太網路交換器



### 特色與優點

- 針對 EMC，符合 IEC 61850-3 Edition 2 Class 2
- 支援熱插拔網路介面及電源模組，允許不斷電下連續運作
- 內建 MMS Server，採用 IEC 61850-90-4 交換器資料模型，適用於 Power SCADA
- 支援 IEEE 1588 (PTP) 硬體時間戳記

### 認證



EN 50121-4



### 簡介

PT-G7828 模組化交換器最多可提供 28 個 Gigabit 連接埠，包括 4 個固定連接埠、6 個介面模組插槽，以及 2 個電源模組插槽，確保適用多種應用的彈性。PT-G7828 系列專為滿足不斷變化的網路需求而設計，其中包括可熱插拔的模組設計，讓您無需關機即可變更或新增裝置。

多重乙太網路模組（RJ45、SFP 和 PoE）及電源模組（24/48 VDC、110/220 VAC/VDC）提供更大靈活性，適用不同操作條件。交換器支援完整的 Gigabit 平台，提供足夠的頻寬來設定乙太網路骨幹。各項認證包括 IEC 61850 Edition2 Class2，以確保高可用性及廣泛用途。

### 規格

#### Ethernet Interface

|                                            |                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10/100/1000BaseT(X) Ports (RJ45 connector) | 2                                                                                                                                                                                                                                                                                                                                                                                                               |
| 100/1000BaseSFP Ports                      | 2                                                                                                                                                                                                                                                                                                                                                                                                               |
| Module                                     | 6                                                                                                                                                                                                                                                                                                                                                                                                               |
| Slot Combination                           | See the LM-7000H datasheet for Gigabit Ethernet module and PoE+ module information                                                                                                                                                                                                                                                                                                                              |
| Standards                                  | IEEE 802.3 for 10BaseT<br>IEEE 802.3u for 100BaseT(X) and 100BaseFX<br>IEEE 802.3ab for 1000BaseT(X)<br>IEEE 802.3z for 1000BaseX<br>IEEE 802.1D-2004 for Spanning Tree Protocol<br>IEEE 802.1w for Rapid Spanning Tree Protocol<br>IEEE 802.1p for Class of Service<br>IEEE 802.1Q for VLAN Tagging<br>IEEE 802.1X for authentication<br>IEEE 802.3ad for Port Trunk with LACP<br>IEEE 802.3x for flow control |

## Ethernet Software Features

|                      |                                                                                                                                                                                                                                                                    |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Management           | IPv4/IPv6<br>SNMP Inform<br>SNMPv1/v2c/v3<br>DHCP Server/Client<br>DHCP Option 66/67/82<br>BOOTP<br>TFTP<br>LLDP<br>RARP<br>HTTP<br>HTTPS<br>Telnet<br>Flow control<br>Back Pressure Flow Control<br>Port Mirroring<br>Fiber check<br>Dying Gasp<br>SMTP<br>Syslog |
| MIB                  | MIB-II<br>Ethernet-like MIB<br>Bridge MIB<br>P-BRIDGE MIB<br>Q-BRIDGE MIB<br>RSTP MIB<br>RMON MIB Groups 1, 2, 3, 9                                                                                                                                                |
| Filter               | 802.1Q<br>GMRP<br>GVRP<br>IGMP v1/v2/v3<br>QinQ VLAN                                                                                                                                                                                                               |
| Redundancy Protocols | Link Aggregation<br>MSTP<br>RSTP<br>STP<br>Turbo Chain<br>Turbo Ring v1/v2<br>V-ON<br>MRP                                                                                                                                                                          |
| Security             | RADIUS<br>TACACS+<br>SSH<br>Port Lock<br>Broadcast storm protection<br>MAB authentication<br>Sticky MAC<br>Access control list                                                                                                                                     |
| Time Management      | NTP Server/Client<br>SNTP<br>IEEE 1588v2 PTP (hardware-based)                                                                                                                                                                                                      |
| Power Substation     | IEC 61850 QoS<br>GOOSE Check                                                                                                                                                                                                                                       |
| Industrial Protocols | EtherNet/IP<br>Modbus TCP                                                                                                                                                                                                                                          |
| Unicast Routing      | Static Route<br>RIPV1/V2<br>OSPF                                                                                                                                                                                                                                   |
| Multicast Routing    | DVMRP<br>PIM-DM                                                                                                                                                                                                                                                    |
| Routing Redundancy   | VRRP                                                                                                                                                                                                                                                               |

Switch Properties

|                    |               |
|--------------------|---------------|
| Priority Queues    | 8             |
| Max. No. of VLANs  | 256           |
| VLAN ID Range      | VID 1 to 4094 |
| IGMP Groups        | 4096          |
| MAC Table Size     | 16 K          |
| Packet Buffer Size | 12 Mbits      |
| Jumbo Frame Size   | 9.6 KB        |

Serial Interface

|              |               |
|--------------|---------------|
| Console Port | RS-232 (RJ45) |
|--------------|---------------|

USB Interface

|              |            |
|--------------|------------|
| Storage Port | USB Type A |
|--------------|------------|

## Power Parameters

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Input Voltage     | <p>With PWR-HV-P48 installed:<br/>110/220 VDC/VAC for the switch system<br/>48 VDC for PoE system (53 to 57 VDC is recommended for PoE+ devices)</p> <p>With PWR-LV-P48 installed:<br/>24/48 VDC for the switch system<br/>48 VDC for PoE system (53 to 57 VDC is recommended for PoE+ devices)</p> <p>With PWR-HV-NP installed:<br/>110/220 VDC/VAC for the switch system</p> <p>With PWR-LV-NP installed:<br/>24/48 VDC for the switch system</p>                                                                                                                                                                                                                                                                                                                                                                                         |
| Operating Voltage | <p>With PWR-HV-P48 installed:<br/>88 to 300 VDC, 90 to 264 VAC for the switch system<br/>46 to 57 VDC for PoE systems</p> <p>With PWR-LV-P48 installed:<br/>18 to 72 VDC for the switch system<br/>46 to 57 VDC for PoE systems</p> <p>With PWR-HV-NP installed:<br/>88 to 300 VDC, 90 to 264 VAC for the switch system</p> <p>With PWR-LV-NP installed:<br/>18 to 72 VDC for the switch system</p>                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Input Current     | <p>With PWR-HV-P48 installed:<br/>PWR input current (switch system)<br/>Max. 0.11 A @ 110 VDC<br/>Max. 0.06 A @ 220 VDC<br/>Max. 0.29 A @ 110 VAC<br/>Max. 0.18 A @ 220 VAC<br/>EPS input current (PoE system)<br/>Max. 0.53 A @ 48 VDC<br/>(excluding power consumption of PoE devices)</p> <p>With PWR-LV-P48 installed:<br/>PWR input current (switch system)<br/>Max. 0.53 A @ 24 VDC<br/>Max. 0.28 A @ 48 VDC<br/>EPS input current (PoE system)<br/>Max. 0.53 A @ 48 VDC<br/>(excluding power consumption of PoE devices)</p> <p>With PWR-HV-NP installed:<br/>PWR input current (switch system)<br/>Max. 0.11 A @ 110 VDC<br/>Max. 0.06 A @ 220 VDC<br/>Max. 0.29 A @ 110 VAC<br/>Max. 0.18 A @ 220 VAC</p> <p>With PWR-LV-NP installed:<br/>PWR input current (switch system)<br/>Max. 0.53 A @ 24 VDC<br/>Max. 0.28 A @ 48 VDC</p> |

## Physical Characteristics

|              |                                             |
|--------------|---------------------------------------------|
| IP Rating    | IP30                                        |
| Dimensions   | 443 x 44 x 280 mm (17.44 x 1.73 x 11.02 in) |
| Weight       | 3080 g (6.8 lb)                             |
| Installation | 19-inch rack mounting                       |

## Environmental Limits

|                                        |                            |
|----------------------------------------|----------------------------|
| Operating Temperature                  | -40 to 85°C (-40 to 185°F) |
| 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              | IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m<br>IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV<br>IEC 61000-4-5 Surge: Power: 4 kV; Signal: 4 kV<br>IEC 61000-4-6 CS: 10 V<br>IEC 61000-4-8 PFMF |
| Power Substation | IEC 61850-3 Edition 2 Class 2 (EMC)<br>IEEE 1613                                                                                                                                                                                            |
| Railway          | EN 50121-4                                                                                                                                                                                                                                  |
| Safety           | UL 62368-1<br>IEC 62368-1                                                                                                                                                                                                                   |

## MTBF

|           |                          |
|-----------|--------------------------|
| Time      | 583,604 hrs              |
| Standards | Telcordia (Bellcore), GB |

## Warranty

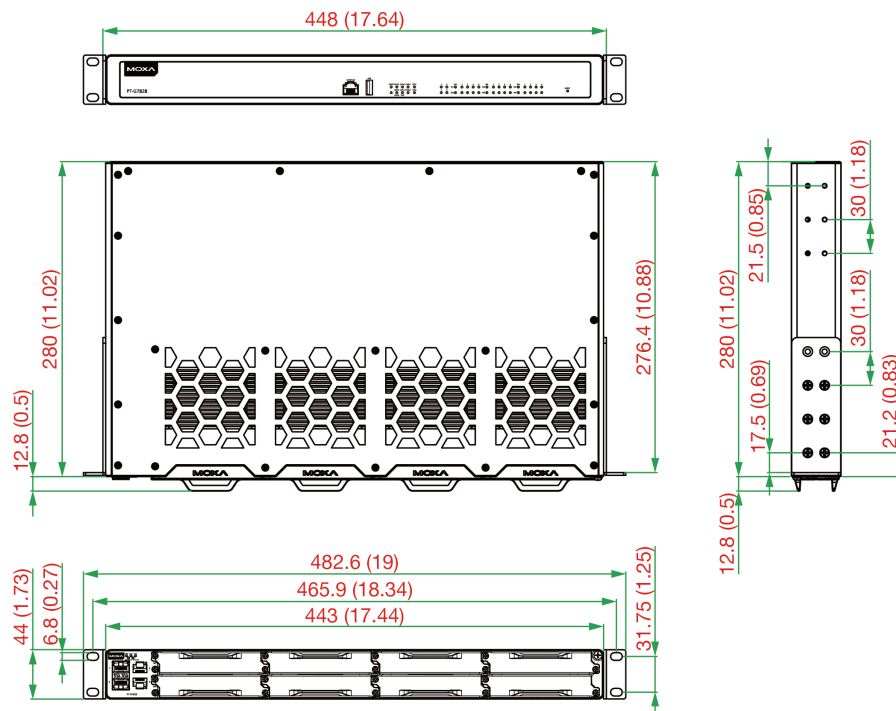
|                 |                                                                            |
|-----------------|----------------------------------------------------------------------------|
| Warranty Period | 5 years                                                                    |
| Details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

## Package Contents

|                  |                                                                                                                                                                                                     |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Device           | 1 x PT-G7828 Series switch                                                                                                                                                                          |
| Cable            | USB cable (Type A male to Micro USB type B)                                                                                                                                                         |
| Installation Kit | 2 x cap, for Micro-B USB port<br>1 x cap, metal, for ABC-02 USB storage port<br>2 x rack-mounting ear<br>2 x cap, plastic, for SFP slot                                                             |
| Documentation    | 1 x quick installation guide<br>1 x warranty card<br>1 x substance disclosure table<br>1 x product certificates of quality inspection, Simplified Chinese<br>1 x product notice, Simplified Chinese |
| Note             | SFP modules, modules from the LM-7000H Module Series, and/or modules from the PWR Power Module Series need to be purchased separately for use with this product.                                    |

## 尺寸

單位：公釐（英吋）



## 訂購資訊

| Model Name | Layer | 100/1000Base SFP Slots | 10/100/1000BaseT(X) Ports RJ45 Connector | PoE Ports, 10/100/1000Base T(X) RJ45 Connector | Operating Temp. |
|------------|-------|------------------------|------------------------------------------|------------------------------------------------|-----------------|
| PT-G7828   | 3     | 2 to 26                | 2 to 26                                  | 0 to 24                                        | -40 to 85°C     |

## 配件（選購）

### 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 |

### Power Supplies

|            |                                                                                       |
|------------|---------------------------------------------------------------------------------------|
| PWR-HV-P48 | Power supply module (110/220 VAC/VDC) with system power input, relay, PoE power input |
| PWR-LV-P48 | Power supply module (24/48 VDC) with system power input, relay, PoE power input       |
| PWR-HV-NP  | Power supply module (110/220 VAC/VDC) with system power input, relay                  |
| PWR-LV-NP  | Power supply module (24/48 VDC) with system power input, relay                        |

### LM-7000H Module Series

|                |                                                                               |
|----------------|-------------------------------------------------------------------------------|
| LM-7000H-4GTX  | Gigabit Ethernet module with 4 10/100/1000BaseT(X) ports                      |
| LM-7000H-4GSFP | Gigabit Ethernet module with 4 100/1000BaseSFP slots                          |
| LM-7000H-4GPoE | Gigabit Ethernet module with 4 10/100/1000BaseT(X) IEEE 802.3af/at PoE+ ports |
| LM-7000H-4TX   | Fast Ethernet module with 4 10/100BaseT(X) ports                              |
| LM-7000H-4PoE  | Fast Ethernet module with 4 10/100BaseT(X) IEEE 802.3af/at PoE+ ports         |

### 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 |
|--------------|-------------------------------------------------------------------------------------------------------------------|



## Software

|                   |                                                                                                |
|-------------------|------------------------------------------------------------------------------------------------|
| MXview-50         | Industrial network management software with a license for 50 nodes (by IP address)             |
| MXview-100        | Industrial network management software with a license for 100 nodes (by IP address)            |
| MXview-250        | Industrial network management software with a license for 250 nodes (by IP address)            |
| MXview-500        | Industrial network management software with a license for 500 nodes (by IP address)            |
| MXview-1000       | Industrial network management software with a license for 1000 nodes (by IP address)           |
| MXview-2000       | Industrial network management software with a license for 2000 nodes (by IP address)           |
| MXview Upgrade-50 | License expansion of MXview industrial network management software by 50 nodes (by IP address) |

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