

# PT-7828 Series

## IEC 61850-3 / EN51055 24+4G-port Layer 3 Gigabit modular managed rackmount Ethernet switches



- > IEC 61850-3, IEEE 1613 (power substations), and EN 50155, EN 50121-4 (railway applications) compliant
- > Turbo Ring, Turbo Chain, RSTP/STP, and MSTP\* for network redundancy
- > VLAN Unaware: Supports priority-tagged frames to be received by specific IEDs
- > Up to 12 ports with M12 connectors
- > Isolated redundant power inputs with universal 24/48 VDC or 110/220 VDC/VAC power supply range
- > Supports multicast routing protocols PIM-DM/DVMRP\*
- > NERC CIP compliance
- > -40 to 85°C operating temperature range

\*Available in Q3, 2011



### Introduction

The PowerTrans PT-7828 switches are high performance Layer 3 Ethernet switches that support Layer 3 routing functionality to facilitate the deployment of applications across networks. The PT-7828 switches are also designed to meet the strict demands of power substation automation systems (IEC 61850-3, IEEE 1613), and railway applications (EN50155/EN50121-4).

The PT-7828's Gigabit and fast Ethernet backbone, redundant ring, and 24/48 VDC or 110/220 VDC/VAC dual isolated redundant power supplies increase the reliability of your communications and save on cabling and wiring costs. The modular design of the PT-7828 makes network planning easy, and allows greater flexibility by letting you install up to 4 Gigabit ports and 24 fast Ethernet ports. Optional front or rear wiring makes the PT-7828 switches suitable for a variety of applications.

### General Features and Benefits

- Layer 3 switching functionality to divide a large network into hierarchical subnets and allow data and information to communicate across networks
- Command Line Interface (CLI) for quickly configuring major managed functions\*
- IPv6 Ready logo awarded (IPv6 Logo Committee certified)
- Software-based IEEE 1588 PTP V2\* (Precision Time Protocol) for precise time synchronization of networks
- DHCP Option 82 for IP address assignment with different policies
- EtherNet/IP\* and Modbus/TCP industrial Ethernet protocols supported
- Turbo Ring, Turbo Chain, and RSTP/STP, and MSTP for network redundancy
- Supports multicast routing protocols PIM-DM/DVMRP\*

- VLAN Unaware: Supports priority-tagged frames to be received by specific IEDs
- Supports advanced VLAN capability with Q-in-Q tagging\*
- IGMP snooping and GMRP for filtering multicast traffic from industrial Ethernet protocols
- IEEE 802.3ad, LACP for optimum bandwidth utilization
- Bandwidth management prevents unpredictable network status
- Multi-port mirroring for online debugging
- Automatic warning by exception through email, relay output
- RMON for efficient network monitoring and proactive capability
- 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

\*Available in Q3, 2011

### Cyber-security 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
- Disable one or more ports to block network traffic

- 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
- Radius/TACACS+ allows you to manage passwords from a central location (available in Q1 Y2011)
- SNMPv3 provides encrypted authentication and access security

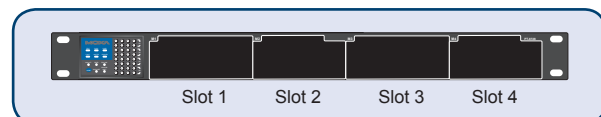
### Specifications

#### 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-2004\* for Spanning Tree Protocol

### Layer 3 Modular Rackmount Ethernet Switch System, PT-7828



IEEE 802.1s\* for Multiple Spanning Tree Protocol  
 IEEE 802.1w for Rapid STP  
 IEEE 802.1Q for VLAN Tagging  
 IEEE 802.1p for Class of Service

**Protocols:** IGMPv1/v2, GMRP, GVRP, SNMPv1/v2c/v3, DHCP Server/Client, BootP, TFTP, SNTP, SMTP, RARP, RMON, RIP V1/V2, HTTP, HTTPS, Telnet, SSH, Syslog, DHCP Option 66/67/82, LLDP, Modbus/TCP, IEEE 1588 PTP V2\*, SNMP Inform, NTP Server/Client\*

**Layer 3 Switching:** Static routing, RIP V1/V2, OSPF, VRRP for router redundancy

**MIB:** MIB-II, Ethernet-like MIB, P-BRIDGE MIB, Q-BRIDGE MIB, Bridge MIB, RSTP MIB, RMON MIB Groups 1, 2, 3, 9

**Flow Control:** IEEE 802.3x flow control, back pressure flow control

\*Available in Q3, 2011

### Switch Properties

**Priority Queues:** 4  
**Max. Number of Available VLANs:** 64  
**VLAN ID Range:** VID 1 to 4094  
**IGMP Groups:** 256

### Interface

**Fast Ethernet:** Slots 1, 2, and 3 for combinations of 2, 4, 6, 7, or 8-port PM-7200 fast Ethernet modules with 10/100BaseT(X) (TP/M12 interface), 100BaseFX (SC/ST/MTRJ connector), or 100BaseSFP.

**Gigabit Ethernet:** Slot 4 for 2 or 4-port PM-7200 Gigabit Ethernet combo module, 10/100/1000BaseT(X) or 1000BaseSFP

**Console Port:** RS-232 (RJ45)

**System LED Indicators:** STAT, PWR1, PWR2, FAULT, MSTR/HEAD, CPLR/TAIL

**Mode LED Indicators:** LNK/ACT, FDX/HDX, RING/CHAIN 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. 2.58 A @ 24 VDC
- Max. 1.21 A @ 48 VDC
- Max. 0.64/0.33 A @ 110/220 VDC
- Max. 0.53/0.28 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 325 mm (17.32 x 1.73 x 12.80)

**Weight:** 5900 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)

### Standards and Certifications

**Safety:** UL 60950-1, CSA C22.2 No. 60950-1, EN 60950-1

**EMI:** FCC Part 15 Subpart B Class A, EN 55022 Class A

**Power Automation:** IEC 61850-3, IEEE 1613

**Rail Traffic:** EN 50155, EN 50121-4

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

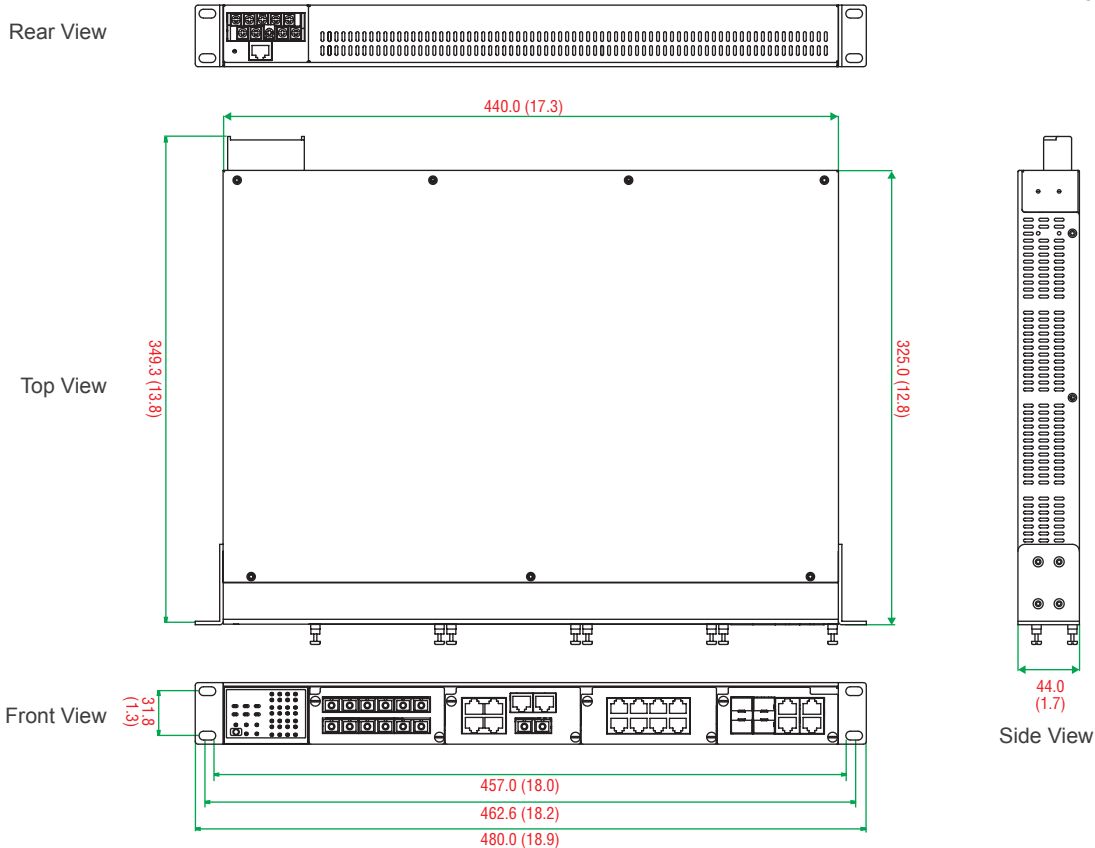
### Warranty

**Warranty Period:** 5 years

**Details:** See [www.moxa.com/warranty](http://www.moxa.com/warranty)

### Dimensions

Unit: mm (inch)



## Ordering Information

Step 1: Select Ethernet switch system

Step 2: Select interface modules

PT-7828 with power supply



PM-7200 module  
(Gigabit or fast Ethernet)

Note: The PT-7828 Ethernet switch system is delivered without interface modules. See page 2-42 to choose PM-7200 interface modules.

### PT-7828 Layer 3 Modular Rackmount Ethernet Switch System

The PT-7828 switch system consists of 18 Layer 3 modular managed rackmount Ethernet switch systems, each with 3 slots for fast Ethernet modules, and 1 slot for a Gigabit Ethernet module. A total of 28 or 24+4G ports can be installed, and the switch can be used in a temperature range from -40 to 85°C.

| Available Models                |                                | Power Supply            |                        |   |                         |                        |   |
|---------------------------------|--------------------------------|-------------------------|------------------------|---|-------------------------|------------------------|---|
| Front Cabling,<br>Front Display | Rear Cabling,<br>Front Display | Isolated Power Supply 1 |                        |   | Isolated Power Supply 2 |                        |   |
|                                 |                                | 24 VDC<br>(18 to 36 V)  | 48 VDC<br>(36 to 72 V) | HV: 88 to 300<br>VDC and 85 to<br>264 VAC | 24 VDC<br>(18 to 36 V)  | 48 VDC<br>(36 to 72 V) | HV: 88 to 300<br>VDC and 85 to<br>264 VAC |
| PT-7828-F-24                    | PT-7828-R-24                   | 1                       | –                      | –   | –                       | –                      | –   |
| PT-7828-F-24-24                 | PT-7828-R-24-24                | 1                       | –                      | –   | 1                       | –                      | –   |
| PT-7828-F-24-48                 | PT-7828-R-24-48                | 1                       | –                      | –   | –                       | 1                      | –   |
| PT-7828-F-24-HV                 | PT-7828-R-24-HV                | 1                       | –                      | –   | –                       | –                      | 1   |
| PT-7828-F-48                    | PT-7828-R-48                   | –                       | 1                      | –   | –                       | –                      | –   |
| PT-7828-F-48-48                 | PT-7828-R-48-48                | –                       | 1                      | –   | –                       | 1                      | –   |
| PT-7828-F-48-HV                 | PT-7828-R-48-HV                | –                       | 1                      | –   | –                       | –                      | 1   |
| PT-7828-F-HV                    | PT-7828-R-HV                   | –                       | –                      | 1   | –                       | –                      | –   |
| PT-7828-F-HV-HV                 | PT-7828-R-HV-HV                | –                       | –                      | 1   | –                       | –                      | 1   |

Note: The PT-7828 Layer 3 Ethernet switch systems provide combinations of 1 slot for a Gigabit Ethernet interface module, 3 slots for fast Ethernet interface modules. See page 2-42 to select the PM-7200 Gigabit Ethernet and fast Ethernet interface modules for your own application.

PT-7828-F series  
(Front Cabling, Front Display)



PT-7828-R series  
(Rear Cabling, Front Display)



### Gigabit/Fast Ethernet Modules for the PT-7828

|        | 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-7200-1LSC6TX | PM-7200-1MST6TX | PM-7200-1SSC6TX | PM-7200-1MSC6TX | PM-7200-8PoE | PM-7200-8SFP | PM-7200-4M12 | PM-7200-2MTRJ | PM-7200-8MTRJ | PM-7200-4MST-FL | PM-7200-4TX-PTP | PM-7200-4MST-PTP | PM-7200-4MSC-PTP | PM-7200-1BNC2MST-PTP |
| Slot 1 | –                 | –               | –            | –            | –            | –            | –            | –            | ✓           | ✓               | ✓               | ✓               | ✓               | ✓               | ✓               | ✓            | ✓            | ✓            | ✓               | ✓               | ✓               | ✓               | –            | ✓            | ✓            | ✓             | ✓             | –               | –               | –                | –                | –                    |
| Slot 2 | –                 | –               | –            | –            | –            | –            | –            | –            | ✓           | ✓               | ✓               | ✓               | ✓               | ✓               | ✓               | ✓            | ✓            | ✓            | ✓               | ✓               | ✓               | ✓               | –            | ✓            | ✓            | ✓             | ✓             | –               | –               | –                | –                | –                    |
| Slot 3 | –                 | –               | –            | –            | –            | –            | –            | –            | ✓           | ✓               | ✓               | ✓               | ✓               | ✓               | ✓               | ✓            | ✓            | ✓            | ✓               | ✓               | ✓               | ✓               | –            | ✓            | ✓            | ✓             | ✓             | –               | –               | –                | –                | –                    |
| Slot 4 | ✓                 | ✓               | –            | –            | –            | –            | –            | –            | –           | –               | –               | –               | –               | –               | –               | –            | –            | –            | –               | –               | –               | –               | –            | –            | –            | –             | –             | –               | –               | –                | –                | –                    |

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

**MXview:** Moxa industrial network management software with 50, 100, 250, 500, or 1000 nodes

**EDS-SNMP OPC Server Pro:** OPC server software that works with all SNMP devices

**ABC-01 Series:** Configuration backup and restoration tool for managed Ethernet switches, 0 to 60°C operating temperature

#### Package Checklist

- PT-7828 series switch
- RJ45-to-DB9 console port cable
- Protective caps for unused ports
- 2 rackmount ears
- Documentation and software CD
- Hardware installation guide
- Warranty card

# PM-7200 Series

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

## Specifications



PM-7200-4GTXSFP



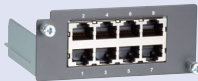
PM-7200-2GTXSFP

### 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 1-87 to select the SFP-1G series Gigabit Ethernet modules for your application.



PM-7200-8TX



PM-7200-6MSC  
PM-7200-6SSC



PM-7200-6MST



PM-7200-4MSC2TX  
PM-7200-4SSC2TX



PM-7200-4MST2TX



PM-7200-2MSC4TX  
PM-7200-2SSC4TX



PM-7200-2MST4TX



PM-7200-1LSC6TX



PM-7200-2MSC  
PM-7200-2SSC



PM-7200-2MST



PM-7200-1MSC  
PM-7200-1SSC



PM-7200-1MST



PM-7200-1MST6TX



PM-7200-1MSC6TX  
PM-7200-1SSC6TX



PM-7200-8PoE



PM-7200-8SFP\*



PM-7200-4M12



PM-7200-2MTRJ



PM-7200-8MTRJ



PM-7200-4MST-FL



PM-7200-4TX-PTP



PM-7200-4MST-PTP



PM-7200-4MSC-PTP



PM-7200-1BNC2MST-PTP

\* See page 1-87 and 1-89 to select SFP-1G/1FE series Gigabit Ethernet and fast Ethernet modules.

### 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/MTRJ 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






**BNC Ports:** Time clock signal PPS (pulses per second) output for IEEE 1588 time synchronization

### 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 <sup>a</sup><br>4 km <sup>b</sup> | 40 km <sup>c</sup> | 80 km <sup>d</sup> |
| 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

|  |  |  |   |  |
|--|--|--|---|--|
| <b>PT-7828/PT-7728-PTP/PT-7728</b><br><br>Slot 1 Slot 2 Slot 3 Slot 4 | <b>PT-7710</b><br><br>Slot 1 Slot 2 | <b>IKS-6726</b><br><br>Slot 1 Slot 2 Slot 3 | <b>IKS-6726-8PoE</b><br><br>Slot 1 Slot 2 | <b>IKS-6324</b><br><br>Slot 1 |
|--|--|--|---|--|

|                    |           | 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-7200-2MTRJ | PM-7200-8MTRJ | PM-7200-4MST-FL | PM-7200-4TX-PTP | PM-7200-4MST-PTP | PM-7200-4MSC-PTP | PM-7200-1BNC2MST-PTP |
| PT-7828<br>PT-7728 | Slots 1-3 | -                 | -               | -            | -            | -            | -            | -            | -            | ✓           | ✓               | ✓               | ✓               | ✓               | ✓               | ✓               | ✓            | ✓            | ✓            | ✓               | ✓               | ✓               | ✓               | -            | ✓             | ✓            | ✓             | ✓             | ✓               | -               | -                | -                | -                    |
|                    | Slot 4    | ✓                 | ✓               | -            | -            | -            | -            | -            | -            | -           | -               | -               | -               | -               | -               | -               | -            | -            | -            | -               | -               | -               | -               | -            | -             | -            | -             | -             | -               | -               | -                | -                | -                    |
| PT-7728-PTP        | Slots 1-3 | -                 | -               | -            | -            | -            | -            | -            | -            | ✓           | ✓               | ✓               | ✓               | ✓               | ✓               | ✓               | ✓            | ✓            | ✓            | ✓               | ✓               | ✓               | ✓               | -            | ✓             | ✓            | ✓             | ✓             | ✓               | ✓               | ✓                | ✓                | -                    |
|                    | Slot 4    | ✓                 | ✓               | -            | -            | -            | -            | -            | -            | -           | -               | -               | -               | -               | -               | -               | -            | -            | -            | -               | -               | -               | -               | -            | -             | -            | -             | -             | -               | -               | -                | -                | ✓                    |
| PT-7710            | Slot 1    | -                 | -               | -            | -            | -            | -            | -            | -            | ✓           | ✓               | ✓               | ✓               | ✓               | ✓               | ✓               | ✓            | ✓            | ✓            | ✓               | ✓               | ✓               | ✓               | ✓            | ✓             | ✓            | ✓             | ✓             | ✓               | ✓               | ✓                | ✓                | -                    |
|                    | Slot 2    | -                 | ✓               | ✓            | ✓            | ✓            | ✓            | ✓            | ✓            | -           | -               | -               | -               | -               | -               | -               | -            | -            | -            | -               | -               | -               | -               | -            | -             | -            | -             | -             | -               | -               | -                | -                | -                    |
| IKS-6726           | Slots 1-2 | -                 | -               | -            | -            | -            | -            | -            | -            | ✓           | ✓               | ✓               | ✓               | ✓               | ✓               | ✓               | ✓            | ✓            | ✓            | ✓               | ✓               | ✓               | ✓               | ✓            | ✓             | ✓            | ✓             | ✓             | ✓               | ✓               | ✓                | ✓                | -                    |
|                    | Slot 3    | -                 | ✓               | -            | -            | -            | -            | -            | -            | -           | -               | -               | -               | -               | -               | -               | -            | -            | -            | -               | -               | -               | -               | -            | -             | -            | -             | -             | -               | -               | -                | -                | -                    |
| IKS-6726-8PoE      | Slot 1    | -                 | -               | -            | -            | -            | -            | -            | -            | ✓           | ✓               | ✓               | ✓               | ✓               | ✓               | ✓               | ✓            | ✓            | ✓            | ✓               | ✓               | ✓               | ✓               | ✓            | ✓             | ✓            | ✓             | ✓             | ✓               | ✓               | ✓                | ✓                | -                    |
|                    | Slot 2    | -                 | ✓               | -            | -            | -            | -            | -            | -            | -           | -               | -               | -               | -               | -               | -               | -            | -            | -            | -               | -               | -               | -               | -            | -             | -            | -             | -             | -               | -               | -                | -                | -                    |
| IKS-6324           | Slot 1    | -                 | ✓               | ✓            | ✓            | ✓            | ✓            | ✓            | ✓            | -           | -               | -               | -               | -               | -               | -               | -            | -            | -            | -               | -               | -               | -               | -            | -             | -            | -             | -             | -               | -               | -                | -                | -                    |

\* 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   |

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

| Available Models     | Port Interface |     |     |                          |                          |                            |                           |                                  |   |            |                           |
|----------------------|----------------|-----|-----|--------------------------|--------------------------|----------------------------|---------------------------|----------------------------------|---|------------|---------------------------|
|                      | 10/100BaseT(X) |     |     | 100BaseFX                |                          |                            |                           |                                  |   | 100BaseSFP | PPS output, BNC connector |
|                      | TP             | PoE | M12 | Multi-mode, SC Connector | Multi-mode, ST Connector | Multi-mode, MTRJ 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-7200-8SFP         | -              | -   | -   | -                        | -                        | -                          | -                         | -                                | 8 | -          |                           |
| PM-7200-4M12         | -              | -   | 4   | -                        | -                        | -                          | -                         | -                                | - | -          |                           |
| PM-7200-2MTRJ        | -              | -   | -   | -                        | -                        | 2                          | -                         | -                                | - | -          |                           |
| PM-7200-8MTRJ        | -              | -   | -   | -                        | -                        | 8                          | -                         | -                                | - | -          |                           |
| PM-7200-4MST-FL      | -              | -   | -   | -                        | 4                        | -                          | -                         | -                                | - | -          |                           |
| PM-7200-4TX-PTP      | 4              | -   | -   | -                        | -                        | -                          | -                         | -                                | - | -          |                           |
| PM-7200-4MST-PTP     | -              | -   | -   | -                        | 4                        | -                          | -                         | -                                | - | -          |                           |
| PM-7200-4MSC-PTP     | -              | -   | -   | 4                        | -                        | -                          | -                         | -                                | - | -          |                           |
| PM-7200-1BNC2MST-PTP | -              | -   | -   | -                        | 2                        | -                          | -                         | -                                | - | 1          |                           |
| PM-7200-8PoE         | -              | 8   | -   | -                        | -                        | -                          | -                         | -                                | - | -          |                           |