

# PT-7728 Series

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



The certification logos shown here apply to some or all of the products in this section. For details, see "Regulatory Approvals" under "Specifications" below.

- > IEC 61850-3, IEEE 1613 (power substations), NEMA TS2 (traffic control systems), and EN50121-4 (railway applications) compliant
- > Turbo Ring and RSTP/STP for Ethernet Redundancy
- > Isolated redundant power inputs with universal 24/48 VDC or 110/220 VDC/VAC power supply range
- > Modular design lets you choose from a variety of media combinations
- > -40 to 85°C operating temperature range



### Introduction

The PowerTrans PT-7728 is designed to meet the demands of power substation automation systems (IEC 61850-3, IEEE 1613), traffic control systems (NEMA TS2), and railway applications (EN50121-4). The PT-7728'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/wiring costs.

The modular design of the PT-7728 also makes network planning easy, and allows greater flexibility by letting you install up to 4 Gigabit ports and 24 fast Ethernet ports. Along with the optional front or rear wiring, these features together make the PT-7728 suitable for a variety of industrial applications.

### Features and Benefits

- IPv6 Ready logo awarded (IPv6 Logo Committee certified)
- IEEE 1588 PTP (Precision Time Protocol) for precise time synchronization of networks
- DHCP Option 82 for IP address assignment with different policies
- Modbus/TCP industrial Ethernet protocol supported
- Turbo Ring and RSTP/STP (IEEE 802.1w/D)
- IGMP snooping and GMRP for filtering multicast traffic from industrial Ethernet protocols
- IEEE 802.1Q VLAN and GVRP protocols to ease network planning
- QoS (IEEE 802.1p/1Q) and TOS/DiffServ to increase determinism
- IEEE 802.3ad, LACP for optimum bandwidth utilization
- IEEE 802.1X, HTTPS, and SSH to enhance network security
- SNMPv1/v2c/v3 for different levels of network management
- RMON for efficient network monitoring and proactive capability
- Bandwidth management prevents unpredictable network status
- Lock port limits access to authorized MAC addresses only
- Port mirroring for online debugging
- Automatic warning by exception through email, relay output
- Automatic recovery of connected device's IP addresses
- Line-swap fast recovery
- Configurable by Web browser, Telnet/Serial console, Windows utility, and ABC-01 automatic backup configurator

### Specifications

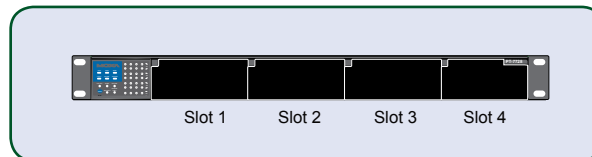
#### Technology

##### 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 1000BaseSX/LX/LHX/ZX  
 IEEE 802.3x for Flow Control  
 IEEE 802.1D for Spanning Tree Protocol  
 IEEE 802.1w for Rapid STP  
 IEEE 802.1Q for VLAN Tagging  
 IEEE 802.1p for Class of Service  
 IEEE 802.1X for Authentication  
 IEEE 802.3ad for Port Trunk with LACP

**Protocols:** IGMPv1/v2 device, GMRP, GVRP, SNMPv1/v2c/v3, DHCP Server/Client, DHCP Option 66/67/82, BootP, TFTP, SNMP, SMTP, RARP, RMON, HTTP, HTTPS, Telnet, SSH, Syslog, LLDP, Modbus/TCP, IEEE 1588 PTP, IPv6

#### Modular Rackmount Ethernet Switch System, PT-7728



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

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

#### 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 any combination of 4, 6, 7, or 8-port PM-7200 fast Ethernet modules with 10/100BaseT(X) (TP/M12 interface), 100BaseFX (SC/ST 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, MASTER, COUPLER

**Module LED Indicators:** LNK/ACT, FDX/HDX, RING 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 in)

**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)

### Regulatory Approvals

**Safety:** UL60950-1, CSA C22.2 No. 60950-1, EN60950-1 (Pending)

**EMI:** FCC Part 15, CISPR (EN55022) class A

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

**Maritime:** DNV (Pending), GL (Pending)

**Traffic Control:** NEMA TS2

**Rail Traffic:** EN50155/EN50121-4

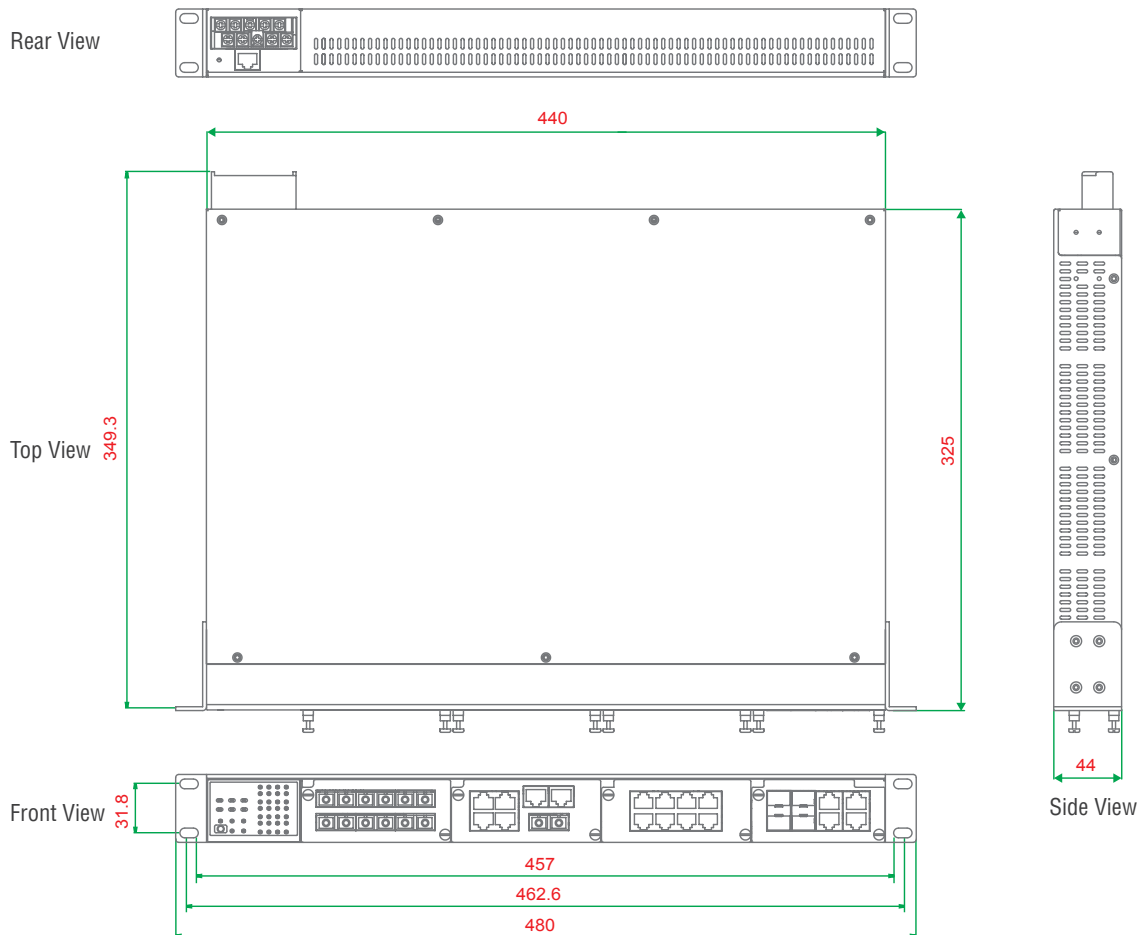
*Note: Please check Moxa's website for the most up-to-date certification status.*

### Warranty

**Warranty Period:** 5 years

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

### Dimensions (unit = mm)



## Ordering Information

Step 1: Select Ethernet switch system

Step 2: Select interface modules

PT-7728 with power supply



PM-7200 modules  
(Gigabit or fast Ethernet)

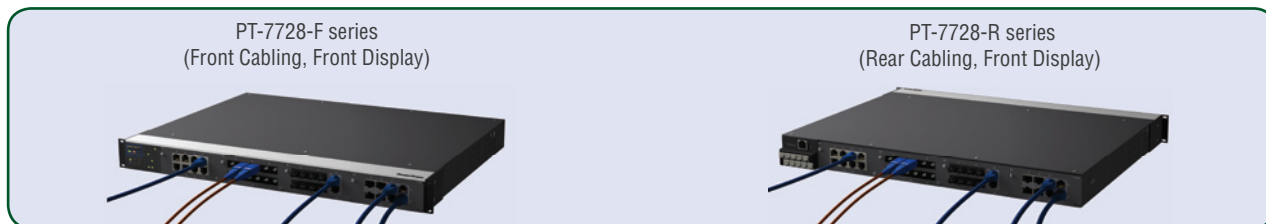
Note: The PT-7728 Ethernet switch system is delivered without interface module. See page 4-31 to choose PM-7200 interface modules.

### PT-7728 Modular Rackmount Ethernet Switch System

The PT-7728 switch system consists of 18 modular managed rackmount Ethernet switch systems with 3 slots for fast Ethernet modules, and 1 slot for a Gigabit Ethernet module. A total of 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, Front Display	Rear Cabling, Front Display	Isolated Power Supply 1			Isolated Power Supply 2		
		24 VDC (18 to 36 V)	48 VDC (36 to 72 V)	HV: 88 to 300 VDC and 85 to 264 VAC	24 VDC (18 to 36 V)	48 VDC (36 to 72 V)	HV: 88 to 300 VDC and 85 to 264 VAC
PT-7728-F-24	PT-7728-R-24	1	---	---	---	---	---
PT-7728-F-24-24	PT-7728-R-24-24	1	---	---	1	---	---
PT-7728-F-24-48	PT-7728-R-24-48	1	---	---	---	1	---
PT-7728-F-24-HV	PT-7728-R-24-HV	1	---	---	---	---	1
PT-7728-F-48	PT-7728-R-48	---	1	---	---	---	---
PT-7728-F-48-48	PT-7728-R-48-48	---	1	---	---	1	---
PT-7728-F-48-HV	PT-7728-R-48-HV	---	1	---	---	---	1
PT-7728-F-HV	PT-7728-R-HV	---	---	1	---	---	---
PT-7728-F-HV-HV	PT-7728-R-HV-HV	---	---	1	---	---	1

Note: The PT-7728 Ethernet switch systems provide 1 slot for a Gigabit Ethernet interface modules and 3 slots for fast Ethernet interface modules. See page 4-31 to select the PM-7200 Gigabit Ethernet and fast Ethernet interface modules that you need for your own application.



### Gigabit/Fast Ethernet Modules for the PT-7728

Product Model	Interface Module																								
	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
Slot 1	---	---	---	---	---	---	---	---	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	---	✓	✓	
Slot 2	---	---	---	---	---	---	---	---	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	---	✓	✓	
Slot 3	---	---	---	---	---	---	---	---	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	---	✓	✓	
Slot 4	✓	✓	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

### Optional Accessories (can be purchased separately)

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

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