# PT-G7828 Series

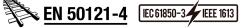
## IEC 61850-3 28-port Layer 3 full gigabit modular managed Ethernet switches

#### **Features and Benefits**

- IEC 61850-3 Edition 2 Class 2 compliant
- Hot-swappable interface and power modules for continuous operation
- Built-in MMS server based on IEC 61850-90-4 switch data modeling for power SCADA
- · IEEE 1588 hardware time stamp supported



#### Certifications









#### Introduction

The PT-G7828 modular switches provide up to 28 Gigabit ports, including 4 fixed ports, 6 interface module slots, and 2 power module slots to ensure sufficient flexibility for a variety of applications. The PT-G7828 Series is designed to meet evolving network requirements, including a hotswappable module design that enables you to change or add devices without shutting down your device.

The multiple Ethernet modules (RJ45, SFP, and PoE) and power units (24/48 VDC, 110/220 VAC/VDC) provide even greater flexibility as well as suitability for different operating conditions. The switches support a full Gigabit platform that provides enough bandwidth to set up an Ethernet backbone. Certifications include IEC 61850 Edition 2 Class 2 to ensure high availability and wide usage.

#### **Specifications**

#### **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 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	IPv4/IPv6, SNMP Inform, SNMPv1/v2c/v3, DHCP Server/Client, DHCP Option 66/67/82, BOOTP, TFTP, LLDP, RARP, HTTP, HTTPS, Telnet, Flow control, Back Pressure Flow Control, Port Mirror, Fiber check, Dying Gasp, SMTP, Syslog
MIB	MIB-II, Ethernet-like MIB, Bridge MIB, P-BRIDGE MIB, Q-BRIDGE MIB, RSTP MIB, RMON MIB Groups 1, 2, 3, 9
Filter	802.1Q, GMRP, GVRP, IGMP v1/v2/v3, QinQ VLAN
Redundancy Protocols	Link Aggregation, MSTP, RSTP, STP, Turbo Chain, Turbo Ring v1/v2, V-ON



Time Management NTP Server/Client, SNTP, IEEE 1588/2 PTP (hardware-based) Power Substation IEC 61860 QoS, GOOSE Cheok Industrial Protocols EtherNet/IP, Modbus TCP Unicast Routing Static Routing DVMRP, PIM-DM Routing Redundancy VRRP Switch Properties Profrty Queues 8 Max. No. of YLANIs 512 VLAI ID Range VID 11 to 4994 IGMP Groups 4096 MAC Table Size 16 K Packet Buffer Size 12 Micros 12 Micro USB Type B USB Interface Console Port Micro USB Type B USB Interface USB Interface Storage Port USB Type A Power Parameters Input Voltage 24/48 VDC, 110/220 VDC/VAC Operating Voltage 48 to 57 VDC (> 53 VDC for PoE+ output recommended) Input Current With PIM-LV-P48 Installed: PVR Input current (switch system) Max. 0.43 A 8 2 VDC Max. 0.25 A 8 48 VDC Max. 0.27 A 8 220 VDC Max. 0.25 A 8 48 VDC Exploration (switch system) Max. 0.17 A 8 220 VDC Max. 0.18 A 8 44 VDC Max. 0.17 A 8 220 VDC Max. 0.18 A 8 44 VDC Max. 0.18 A 8 44 VDC Max. 0.18 A 8 220 VDC M	Security	RADIUS, TACACS+, SSH, Port Lock, Broadcast storm protection, MAB authentication, Sticky MAC, Access control list
Industrial Protocols  Unicast Routing  Static Route, RIPVI/V2, OSPF  Multicast Routing  Routing Redundancy  VRRP  Switch Proporties  Prionty Queues  8  Max. No. of VLANs  512  VLAN ID Range  VID 1 to 4094  IGMP Groups  MAC Table Size  16 K  Packet Buffer Size  12 Mbits  Jumbo Frame Size  Serial Interface  Console Port  Micro USB Type B  USB Interface  Storage Port  USB Type A  Power Parameters  Input Voltage  46 to 57 VDC (> 58 VDC (or PoE+ output recommended)  with PWR-LV-P48 installed: PWR Input current (witch system)  Max. 0.12 A et al VDC  (excluding power consumption of PoE devices)  Physical Characteristics  IP Rating  IVARP V ARR PARE A SPEED (AVER)  INDUSTRIP (AVER)  INDUST	Time Management	NTP Server/Client, SNTP, IEEE 1588v2 PTP (hardware-based)
Unicast Routing Multicast Routing Multicast Routing Routing Redundancy VRRP  Switch Proporties  Priority Queues 8 Max. No. of VLANs 512 VLAN ID Range VID 1 to 4094 IGMP Groups MAC Table Size 18 K Packet Buffer Size 19 K Packet Buffer Size 10 KB Serial Interface Console Port Micro USB Type B  USB Interface Storage Port USB Type A  Power Parameters Input Voltage 18 to 57 VDC (~ 58 VDC (~ F POE+ output recommended) Input Current With PWR-IL-V-88 installed: PWR input current (switch system) Max. 0.12 A et al VDC Max. 0.17 A et 220 VDC Max. 0.18 A et 20 VDC (excluding power consumption of PoE devices)  Physical Characteristics IP Rating IP Rating IP Rating IP Rating I PASION IN TABLE STATEMENT IN THE ST	Power Substation	IEC 61850 QoS, GOOSE Check
Multicast Routing  Routing Redundancy  VRRP  Switch Properties  Priority Quoues  8  Max. No. of VLANs  512  VLAN ID Range  VID 1 to 4094  IGMP Groups  MAC Table Size  16 K  Packet Buffer Size  12 Mbits  Jumbo Frame Size  9.6 KB  Serial Interface  Console Port  Micro USB Type B  USB Interface  Storage Port  USB Interface  Storage Port  Vary Parameters  Input Voltage  24/48 VDC, 110/220 VDC/VAC  Operating Voltage  Max. 0.45 a 64 8 VDC  With PWR-LV-P48 installed: PWR input current (switch system) Max. 0.53 A 6 48 VDC  (excluding power consumption of PoE devices)  Physical Characteristics  IP Rating  IP Rating  IP Storage Pore  18  8  8  8  8  8  8  8  8  8  8  8  8	Industrial Protocols	EtherNet/IP, Modbus TCP
Routing Redundancy  Switch Properties  Priority Queues  8  Max. No. of VLANs  512  VLAN ID Range  VID 1 to 4094  IGMP Groups  4096  MAC Tables Size  16 K  Packet Buffer Size  12 Mbits  Jumbo Frame Size  Serial Interface  Console Port  Micro USB Type B  USB Interface  Storage Port  USB Interface  Storage Port  USB Type A  Power Parameters  Input Voltage  24/48 VDC, 110/220 VDC/VAC  Operating Voltage  46 to 57 VDC (> 58 VDC for PoE+ output recommended)  Input Current  with PWR-LV-P48 installed: PWR input current ((witch system) Max. 0.49 A et a VDC Max. 0.25 A et a VDC Ma	Unicast Routing	Static Route, RIPV1/V2, OSPF
Switch Properties Priority Queues 8 Max. No. of VLANs 512 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 Micro USB Type B  USB Interface Storage Port USB Type A  Power Parameters Input Voltage 24/48 VDC, 110/220 VDC/VAC Operating Voltage 46 to 57 VDC (> 53 VDC for PoE+ output recommended)  with PWR-LV-P48 installed: PWF input current (PoE system) Max. 0.49 A @ 24 VDC Max. 0.256 A @ 48 VDC EPS input current (FOE system) Max. 0.49 A @ 24 VDC Max. 0.256 A @ 48 VDC EPS input current (switch system) Max. 0.12 A @ 110 VDC Max. 0.256 A @ 48 VDC EPS input current (switch system) Max. 0.12 A @ 110 VDC Max. 0.250 A @ 48 VDC EPS input current (switch system) Max. 0.12 A @ 110 VDC Max. 0.250 A @ 48 VDC EPS input current (switch system) Max. 0.12 A @ 110 VDC Max. 0.250 A @ 48 VDC EPS input current (switch system) Max. 0.12 A @ 110 VDC Max. 0.250 A @ 48 VDC EPS input current (switch system) Max. 0.12 A @ 110 VDC Max. 0.250 A @ 48 VDC EPS input current (switch system) Max. 0.12 A @ 110 VDC Max. 0.250 A @ 48 VDC EPS input current (switch system) Max. 0.12 A @ 110 VDC Max. 0.250 A @ 48 VDC EPS input current (switch system) Max. 0.12 A @ 110 VDC Max. 0.250 A @ 48 VDC EPS input current (switch system) Max. 0.12 A @ 110 VDC Max. 0.250 A @ 48 VDC EPS input current (switch system) Max. 0.12 A @ 110 VDC Max. 0.12 A @ 110 VDC Max. 0.250 A @ 48 VDC EPS input current (switch system) Max. 0.12 A @ 110 VDC Max. 0.250 A @ 48 VDC EPS input current (switch system) Max. 0.12 A @ 110 VDC Max. 0.250 A @ 48 VDC EPS input current (switch system) Max. 0.12 A @ 110 VDC Max. 0.12 A @ 110 VDC Max. 0.250 A @ 48 VDC EPS input current (switch system) Max. 0.12 A @ 110 VDC Max. 0.250 A @ 48 VDC EPS input current (switch system) Max. 0.12 A @ 110 VDC Max. 0.12	Multicast Routing	DVMRP, PIM-DM
Priority Queues  Max. No. of VLANs  512  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  Micro USB Type B  USB Interface  Storage Port  USB Type A  Power Parameters  Input Voltage  24/48 VDC, 110/220 VDC/VAC  Operating Voltage  46 to 57 VDC (> 53 VDC for PoE+ output recommended)  with PWR-LV-P48 installed: PWR input current (switch aystem) Max. 0.49 A @ 24 VDC Max. 0.25 A @ 48 VDC EFS input current (POE system) Max. 0.49 A @ 48 VDC EFS input current (switch aystem) Max. 0.12 A @ 110 VDC Max. 0.22 A @ 110 VAC Max. 0.12 A @ 110 VDC Max. 0.22 A @ 110 VAC Max. 0.12 A @ 110 VDC Max. 0.22 A @ 110 VAC Max. 0.12 A @ 110 VAC Max. 0.13 A @ 100 VAC Max. 0.14 A @ 220 VDC FS input current (switch aystem) Max. 0.29 A @ 110 VAC Max. 0.14 A @ 220 VDC Max. 0.15 A @ 48 VDC EFS input current (switch aystem) Max. 0.29 A @ 110 VAC Max. 0.14 A @ 220 VDC Max. 0.15 A @ 100 VBC Max. 0.15 A @ 100 VBC Max. 0.16 A @ 220 VBC Max. 0.18 A @ 220 VAC Max. 0.18 A @ 220 VAC Max. 0.18 A @ 220 VBC Max. 0.18 A @	Routing Redundancy	VRRP
Max. No. of VLANs  512  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  Micro USB Type B  USB Interface  Storage Port  USB Type A  Power Parameters  Input Voltage  24/48 VDC, 110/220 VDC/VAC  Operating Voltage  46 to 57 VDC (> 53 VDC for PoE+ output recommended)  Input Current  With PWR-LV-P48 installed: PWR input current (evitch system) Max. 0.25 A @ 48 VDC ESS input current (PoE system) Max. 0.25 A @ 48 VDC ESS input current (PoE system) Max. 0.12 A @ 110 VDC Max. 0.29 A @ 110 VAC Max. 0.21 A @ 22 VDC Max. 0.29 A @ 110 VAC Max. 0.21 A @ 22 VDC Max. 0.29 A @ 110 VAC Max. 0.18 A @ 220 VDC Max. 0.29 A @ 110 VAC Max. 0.29 A @ 110 V	Switch Properties	
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  Micro USB Type B  USB Interface  Storage Port  USB Type A  Power Parameters  Input Voltage  24/48 VDC, 110/220 VDC/VAC  Operating Voltage  45 to 57 VDC (> 53 VDC for PoE+ output recommended)  Input Current  with PWR-LV-P48 installed: PWR input current (switch system) Max 0.49 A © 24 VDC EPS input current (PDE system) Max 0.45 A © 48 VDC EPS input current (PDE system) Max 0.42 A © 110 VDC Max 0.25 A © 48 VDC EPS input current (switch system) Max 0.42 A © 110 VDC Max 0.25 A © 14 VDC EPS input current (switch system) Max 0.42 A © 110 VDC Max 0.25 A © 14 VDC EPS input current (switch system) Max 0.42 A © 110 VDC Max 0.29 A	Priority Queues	8
IGMP Groups  MAC Table Size  16 K  Packet Buffer Size  12 Mbits  Jumbo Frame Size  9.6 KB  Serial Interface  Console Port  Micro USB Type B  USB Interface  Storage Port  USB Type A  Power Parameters Input Voltage  24/48 VDC, 110/220 VDC/VAC  Operating Voltage  A6 to 57 VDC (> 53 VDC for PoE+ output recommended)  with PWR-LV-P48 installed: PWR input current (switch system) Max. 0.49 A @ 24 VDC EPS input current (PoE system) Max. 0.53 A @ 48 VDC (excluding power consumption of PoE devices)  with PWR-HV-P48 installed: PWR input current (witch system) Max. 0.53 A @ 48 VDC EPS input current (witch system) Max. 0.54 A @ 220 VDC Max. 0.54 A @ 48 VDC EPS input current (PoE system) Max. 0.54 A @ 48 VDC EPS input current (PoE system) Max. 0.18 A @ 220 VAC EPS input current (PoE system) Max. 0.53 A @ 48 VDC (excluding power consumption of PoE devices)  Physical Characteristics IP Rating  IP Rating  IP 30	Max. No. of VLANs	512
MAC Table Size  Packet Buffer Size  12 Mbits  Jumbo Frame Size  9.6 KB  Serial Interface  Console Port  Micro USB Type B  USB Interface  Storage Port  USB Type A  Power Parameters  Input Voltage  Operating Voltage  Input Current  With PWR-LV-P48 installed: PWR input current (switch system) Max. 0.53 A @ 48 VDC (excluding power consumption of PoE devices)  Physical Characteristics  IP Rating  12 Mbits  13 Mbits  14 Mbits  14 Mbits  15 Mbits  16 K  16	VLAN ID Range	VID 1 to 4094
Packet Buffer Size 12 Mbits  Jumbo Frame Size 9.6 KB  Serial Interface  Console Port Micro USB Type B  USB Interface  Storage Port USB Type A  Power Parameters  Input Voltage 24/48 VDC, 110/220 VDC/VAC  Operating Voltage 46 to 57 VDC (> 53 VDC for PoE+ output recommended)  Input Current With PWR-LV-P48 installed: PWR input current (switch system) Max. 0.25 A @ 48 VDC EPS input current (PoE system) Max. 0.53 A @ 48 VDC (excluding power consumption of PoE devices)  with PWR-HV-P48 installed: PWR input current (with system) Max. 0.53 A @ 48 VDC (excluding power consumption of PoE devices)  with PWR-HV-P48 installed: PWR input current (with system) Max. 0.53 A @ 48 VDC (excluding power consumption of PoE devices)  PWR input current (switch system) Max. 0.53 A @ 84 VDC EPS input current (switch system) Max. 0.54 @ 220 VDC Max. 0.59 A @ 110 VDC Max. 0.59 A @ 110 VDC Max. 0.59 A @ 110 VDC Max. 0.59 A @ 100 VDC Max. 0.59 A @ 48 VDC EPS input current (PoE system) Max. 0.53 A @ 48 VDC EPS input current (PoE system) Max. 0.53 A @ 48 VDC EPS input current (PoE system) Max. 0.59 A @ 48 VDC EPS input current (PoE system) Max. 0.59 A @ 48 VDC EPS input current (PoE system) Max. 0.59 A @ 48 VDC EPS input current (PoE system) Max. 0.59 A @ 48 VDC EPS input current (PoE system) Max. 0.59 A @ 48 VDC EPS input current (PoE system) Max. 0.59 A @ 48 VDC EPS input current (PoE system) Max. 0.59 A @ 48 VDC EPS input current (PoE system) Max. 0.59 A @ 48 VDC EPS input current (PoE system) Max. 0.59 A @ 48 VDC EPS input current (PoE system) Max. 0.59 A @ 48 VDC EPS input current (PoE system) Max. 0.59 A @ 48 VDC EPS input current (PoE system) Max. 0.59 A @ 48 VDC EPS input current (PoE system) Max. 0.59 A @ 48 VDC EPS input current (PoE system) Max. 0.59 A	IGMP Groups	4096
Jumbo Frame Size  Serial Interface  Console Port  Micro USB Type B  USB Interface  Storage Port  USB Type A  Power Parameters Input Voltage  24/48 VDC, 110/220 VDC/VAC  Operating Voltage  46 to 57 VDC (> 53 VDC for PoE+ output recommended)  Input Current  with PWR-LV-P48 installed: PWR input current (switch system) Max. 0.49 A @ 24 VDC Max. 0.25A @ 48 VDC EPS input current (PoE system) Max. 0.53 A @ 48 VDC (excluding power consumption of PoE devices)  with PWR-HV-P48 installed: PWR input current (PoE system) Max. 0.53 A @ 48 VDC EPS input current (PoE system) Max. 0.72 A @ 110 VDC Max. 0.29 A @ 110 VAC Max. 0.29 A @ 110 VAC Max. 0.18 A @ 220 VAC EPS input current (PoE system) Max. 0.53 A @ 48 VDC (excluding power consumption of PoE devices)	MAC Table Size	16 K
Serial Interface  Console Port  Micro USB Type B  USB Interface  Storage Port  USB Type A  Power Parameters  Input Voltage  24/48 VDC, 110/220 VDC/VAC  Operating Voltage  46 to 57 VDC (> 53 VDC for PoE+ output recommended)  Input Current  with PWR-LV-P48 installed: PWR input current (switch system) Max. 0.49 A @ 24 VDC Max. 0.25A @ 48 VDC (excluding power consumption of PoE devices)  with PWR-HV-P48 installed: PWR input current (switch system) Max. 0.53 A @ 48 VDC (excluding power consumption of PoE devices)  with PWR-HV-P48 installed: PWR input current (switch system) Max. 0.12 A @ 110 VDC Max. 0.12 A @ 110 VDC Max. 0.12 A @ 202 VDC EPS input current (PoE system) Max. 0.153 A @ 202 VAC EPS input current (PoE system) Max. 0.153 A @ 48 VDC (excluding power consumption of PoE devices)  Physical Characteristics IP Rating  IP30	Packet Buffer Size	12 Mbits
Console Port  USB Type A  Power Parameters  Input Voltage  24/48 VDC, 110/220 VDC/VAC  Operating Voltage  46 to 57 VDC (> 53 VDC for PoE+ output recommended)  Input Current  with PWR-LV-P48 installed: PWR input current (switch system) Max. 0.49 A @ 24 VDC EPS input current (PoE system) Max. 0.55 A @ 48 VDC EPS input current (switch system) With PWR-HV-P48 installed: PWR input current (switch system) Max. 0.55 A @ 48 VDC EPS input current (switch system) Max. 0.55 A @ 48 VDC EPS input current (switch system) Max. 0.55 A @ 48 VDC EPS input current (PoE system) Max. 0.12 A @ 110 VDC Max. 0.29 A @ 110 VDC Max. 0.29 A @ 110 VAC Max. 0.13 A @ 220 VDC Max. 0.29 A @ 110 VAC Max. 0.13 A @ 220 VAC EPS input current (PoE system) Max. 0.53 A @ 48 VDC (excluding power consumption of PoE devices)  Physical Characteristics  IP Rating  IP30	Jumbo Frame Size	9.6 KB
USB Interface  Storage Port  USB Type A  Power Parameters  Input Voltage  24/48 VDC, 110/220 VDC/VAC  Operating Voltage  46 to 57 VDC (> 53 VDC for PoE+ output recommended)  Input Current  with PWR-LV-P48 installed: PWR input current (switch system) Max. 0.49 A @ 24 VDC EPS input current (PoE system) Max. 0.53 A @ 48 VDC (excluding power consumption of PoE devices)  with PWR-HV-P48 installed: PWR input current (switch system) Max. 0.53 A @ 48 VDC (excluding power consumption of PoE devices)  with PWR-HV-P48 installed: PWR input current (switch system) Max. 0.12 A @ 110 VDC Max. 0.07 A @ 220 VDC Max. 0.029 A @ 110 VAC Max. 0.18 A @ 220 VAC EPS input current (PoE system) Max. 0.53 A @ 48 VDC (excluding power consumption of PoE devices)  Physical Characteristics  IP Rating  IP 30	Serial Interface	
Storage Port  Power Parameters  Input Voltage  24/48 VDC, 110/220 VDC/VAC  Operating Voltage  46 to 57 VDC (> 53 VDC for PoE+ output recommended)  Input Current  with PWR-LV-P48 installed: PWR input current (switch system) Max. 0.49 A @ 24 VDC Max. 0.25A @ 48 VDC (excluding power consumption of PoE devices)  with PWR-HV-P48 installed: PWR input current (poE system) Max. 0.53 A @ 48 VDC (excluding power consumption of PoE devices)  with PWR-HV-P48 installed: PWR input current (switch system) Max. 0.12 A @ 110 VDC Max. 0.07 A @ 220 VDC Max. 0.02 A @ 110 VAC Max. 0.18 A @ 220 VAC EPS input current (PoE system) Max. 0.53 A @ 48 VDC (excluding power consumption of PoE devices)  Physical Characteristics  IP Rating  IP30	Console Port	Micro USB Type B
Power Parameters  Input Voltage 24/48 VDC, 110/220 VDC/VAC  Operating Voltage 46 to 57 VDC (> 53 VDC for PoE+ output recommended)  Input Current with PWR-LV-P48 installed: PWR input current (switch system) Max. 0.49 A @ 24 VDC Max. 0.25A @ 48 VDC EPS input current (PoE system) Max. 0.53 A @ 48 VDC (excluding power consumption of PoE devices)  with PWR-HV-P48 installed: PWR input current (switch system) Max. 0.12 A @ 110 VDC Max. 0.12 A @ 110 VDC Max. 0.12 A @ 110 VDC Max. 0.12 A @ 110 VAC Max. 0.13 A @ 220 VDC Max. 0.18 A @ 220 VAC EPS input current (PoE system) Max. 0.53 A @ 48 VDC (excluding power consumption of PoE devices)	USB Interface	
Input Voltage  24/48 VDC, 110/220 VDC/VAC  Operating Voltage  46 to 57 VDC (> 53 VDC for PoE+ output recommended)  with PWR-LV-P48 installed:     PWR input current (switch system)     Max. 0.49 A @ 24 VDC     Max. 0.25A @ 48 VDC     EPS input current (PoE system)     Max. 0.53 A @ 48 VDC     (excluding power consumption of PoE devices)  with PWR-HV-P48 installed:     PWR input current (switch system)     Max. 0.12 A @ 110 VDC     Max. 0.12 A @ 110 VDC     Max. 0.12 A @ 110 VDC     Max. 0.29 A @ 110 VAC     Max. 0.18 A @ 220 VAC     EPS input current (PoE system)     Max. 0.53 A @ 48 VDC     (excluding power consumption of PoE devices)  Physical Characteristics  IP Rating  IP30	Storage Port	USB Type A
Operating Voltage  46 to 57 VDC (> 53 VDC for PoE+ output recommended)  with PWR-LV-P48 installed: PWR input current (switch system) Max. 0.49 A @ 24 VDC Max. 0.53 A @ 48 VDC EPS input current (PoE system) Max. 0.53 A @ 48 VDC (excluding power consumption of PoE devices)  with PWR-HV-P48 installed: PWR input current (switch system) Max. 0.12 A @ 110 VDC Max. 0.07 A @ 220 VDC Max. 0.07 A @ 220 VDC Max. 0.12 A @ 110 VAC Max. 0.12 A @ 110 VAC Max. 0.13 A @ 48 VDC (excluding power consumption of PoE devices)  Physical Characteristics  IP Rating  IP30	Power Parameters	
Input Current  with PWR-LV-P48 installed: PWR input current (switch system) Max. 0.49 A @ 24 VDC Max. 0.25A @ 48 VDC EPS input current (PoE system) Max. 0.53 A @ 48 VDC (excluding power consumption of PoE devices)  with PWR-HV-P48 installed: PWR input current (switch system) Max. 0.12 A @ 110 VDC Max. 0.12 A @ 110 VDC Max. 0.07 A @ 220 VDC Max. 0.07 A @ 220 VDC Max. 0.18 A @ 220 VAC EPS input current (PoE system) Max. 0.53 A @ 48 VDC (excluding power consumption of PoE devices)  Physical Characteristics IP Rating  IP30	Input Voltage	24/48 VDC, 110/220 VDC/VAC
PWR input current (switch system) Max. 0.49 A @ 24 VDC Max. 0.25A @ 48 VDC EPS input current (PoE system) Max. 0.53 A @ 48 VDC (excluding power consumption of PoE devices)  with PWR-HV-P48 installed: PWR input current (switch system) Max. 0.12 A @ 110 VDC Max. 0.07 A @ 220 VDC Max. 0.07 A @ 220 VDC Max. 0.18 A @ 220 VAC EPS input current (PoE system) Max. 0.53 A @ 48 VDC (excluding power consumption of PoE devices)  Physical Characteristics  IP Rating  IP30	Operating Voltage	46 to 57 VDC (> 53 VDC for PoE+ output recommended)
IP Rating IP30	Input Current	PWR input current (switch system) Max. 0.49 A @ 24 VDC Max. 0.25A @ 48 VDC EPS input current (PoE system) Max. 0.53 A @ 48 VDC (excluding power consumption of PoE devices)  with PWR-HV-P48 installed: PWR input current (switch system) Max. 0.12 A @ 110 VDC Max. 0.07 A @ 220 VDC Max. 0.29 A @ 110 VAC Max. 0.18 A @ 220 VAC EPS input current (PoE system) Max. 0.53 A @ 48 VDC
	Physical Characteristics	
Dimensions 443 x 44 x 280 mm (17.44 x 1.73 x 11.02 in)	IP Rating	IP30
	Dimensions	443 x 44 x 280 mm (17.44 x 1.73 x 11.02 in)

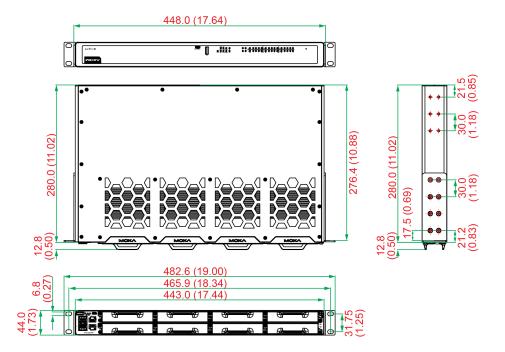


Weight	3080 g (6.8 lb)
Installation	19-inch rack mounting
Environmental Limits	
Operating Temperature	-40 to 85°C (-40 to 185°F)
Storage Temperature (package included)	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5 to 95% (non-condensing)
Standards and Certifications	
EMC	EN 55032/24
EMI	CISPR 32, FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 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
Power Substation	IEC 61850-3 Edition 2.0 Class 2, IEEE 1613
Railway	EN 50121-4
Safety	UL 62368-1, EN 62368-1
мтвғ	
Time	449,542 hrs
Standards	Telcordia (Bellcore), GB
Warranty	
Warranty Period	5 years
Details	See www.moxa.com/warranty
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 1 x cap, metal, for ABC-02 USB storage port 2 x rack-mounting ear 2 x cap, plastic, for SFP slot
Documentation	<ul> <li>1 x quick installation guide</li> <li>1 x warranty card</li> <li>1 x substance disclosure table</li> <li>1 x product certificates of quality inspection, Simplified Chinese</li> <li>1 x product notice, Simplified Chinese</li> </ul>
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.



## **Dimensions**

Unit: mm (inch)



## **Ordering Information**

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

## **Accessories (sold separately)**

## 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

#### 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
SFP-1FEMLC-T	SFP module with 1 100Base multi-mode with LC connector for 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-1GEZXLC	SFP module with 1 1000BaseEZX port with LC connector for 110 km transmission, 0 to 60°C operating temperature
SFP-1GEZXLC-120	SFP module with 1 1000BaseEZX 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

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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