PT-G7728/G7828
Quick Installation Guide

Edition 1.0, December 2017

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Package Checklist

Moxa's PT-G7728/G7828 industrial rackmount switch is shipped with the following items. If any of these items are missing or damaged, please contact your customer service representative for assistance.

- 1 PT-G7728 or G7828 switch
- USB cable (Type A male to Micro USB type B)
- 2 protective caps for unused ports, 3 protective caps for unused USB ports
- 2 rackmount ears
- Quick installation guide (printed)
- Substance Disclosure Table
- Product Certificate of Quality Inspection (Simplified Chinese)
- Product Notices (Simplified Chinese)
- Warranty card

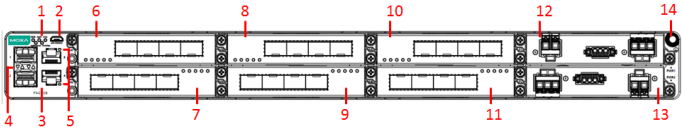
NOTE You can find information and software downloads on the relevant product pages located on Moxa's website: www.moxa.com

Default Settings

- Default IP address: 192.168.127.253
- Default Subnet Mask: 255.255.255.0
- Default Usernames: admin, user
- Default Password: moxa

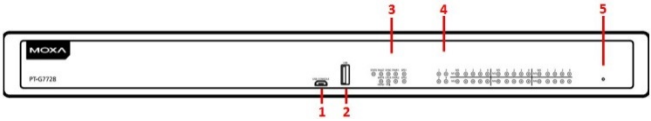
Panel Layouts

Front Panel



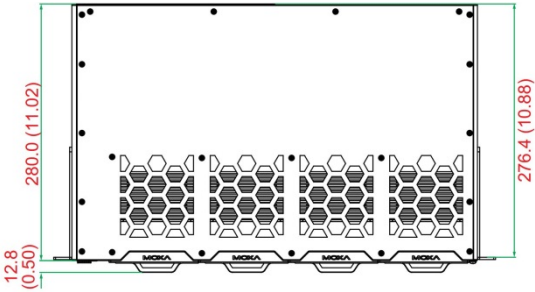
1. System status LEDs (from left to right)
   STATE LED indicator, MSTR/HEAD LED indicator, FAULT LED indicator, CPLR/Tail LED indicator, SYNC LED indicator
2. USB console port
3. 2 x 10/100/1000BaseT(X) and 2 x 100/1000Base SFP ports
4. 100/1000Base SFP port status LEDs
5. 10/100/1000 BaseT(X) port status LEDs
6. Ethernet module slot 1
7. Ethernet module slot 2
8. Ethernet module slot 3
9. Ethernet module slot 4
10. Ethernet module slot 5
11. Ethernet module slot 6
12. Power module slot 1
13. Power module slot 2
14. Grounding screw

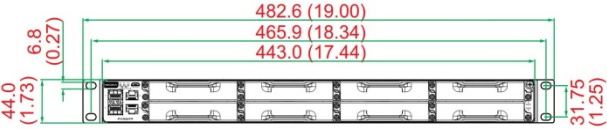
Rear View

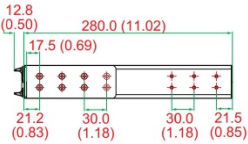


1. USB console port
2. USB storage port
3. System LED indicators
4. Module and port LED indicators
5. Rest button

Dimensions



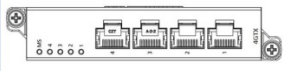




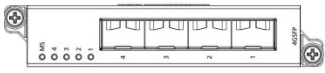
Unit: mm (inches)

Ethernet Modules

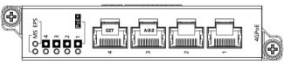
LM-7000H-4GTX



LM-7000H-4GSFP

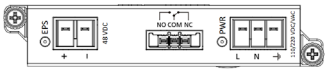


LM-7000H-4GPoE

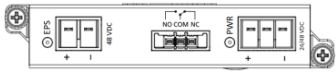


Power Modules

PWR-HV-P48



PWR-LV-P48



Rack Mounting Instructions

1. **Elevated Operating Temperature:** If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room temperature. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (Tma) specified by the manufacturer.

NOTE In order to ensure reliable operations, please make sure the operating temperature of the environment does not exceed the spec. When mounting a rack-mounted switch with other operating units in a cabinet without forced ventilation, it is recommended that 1U of space is reserved between each rack-mounted switch and/or device.

2. **Required Air Flow:** Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.
3. **Mechanical Loading:** Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
4. **Circuit Overloading:** Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
5. **Reliable Grounding:** Reliable grounding of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).

NOTE The rackmount ears can be installed on the front or rear of the PT-G7728/G7828 switch.

ATTENTION

Safety First!

Be sure to disconnect the power cord before installing and/or wiring your Ethernet Switch. Calculate the maximum possible current in each power wire and common wire. Observe all electrical codes dictating the maximum current allowable for each wire size. If the current goes above the maximum ratings, the wiring could overheat, which can cause serious damage to your equipment.

Connecting the Power Inputs

The PT-G7728/PT-G7828 switches support 2 types of power supply:

- PWR-HV-P48: one 110/220 VAC/VDC (90 to 264 VAC, 88 to 300 VDC), one 48VDC PoE power input for PoE+ ports.
- PWR-LV-P48: one 24/48 VDC (18 to 72 VDC), one 48 VDC PoE power input for PoE+ ports.

For the PWR-HV-P48, the 110/220 VAC/VDC power supplies provide power to the switch. Separate 48 VDC power supplies are required to provide power to all PoE+ ports (50 to 57 VDC is recommended for IEEE 802.3at devices).

For the PWR-LV-P48 models, the 24/48 VDC power supplies provide power to the switch. Separate 48 VDC power supplies are required to provide power to all PoE+ ports (50 to 57 VDC is recommended for IEEE 802.3at devices).

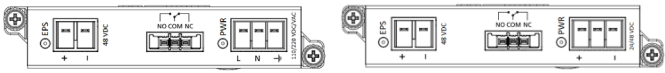
Wiring Requirements

WARNING

Do not disconnect modules or wires unless power has been switched off or the area is known to be non-hazardous. The device may only be connected to the supply voltage shown on the type plate. The device is designed for operation with a Safety Extra-Low Voltage (SELV) or an isolated power supply, which means that they may only be connected to the supply voltage connections and to the signal contact with a SELV or an isolated power supply in compliance with IEC 60950-1/EN 60950-1 or UL 61010.

Power Terminal Blocks

The connection for power input and PoE external power supply is on the power modules.



PWR-HV-P48

STEP 1: Insert the neutral/line (L/N/Ground) AC wires into the terminals.

STEP 2: Insert the terminal block connector into the terminal block receptor.

PWR-LV-P48

STEP 1: Insert the negative/positive (-/+) DC wires into the terminals.

STEP 2: Insert the terminal block connector prongs into the terminal block receptor.

PoE Power Terminal Blocks

STEP 1: Insert the negative/positive DC wires into the -/+ terminals, respectively.

STEP 2: Insert the terminal block connector prongs into the terminal block receptor.

NOTE In order to have higher levels of protection against surge, it is suggested to install a surge protector in front of the power input of the PoE powered device so that it is suitable for use in IEC 61850 conditions.

NOTE When wiring the power input, we suggest using the cable type - AWG (American Wire Gauge) 18 (1.03mm2) and the corresponding pin type cable terminals. The connector must be able to withstand torque at maximum 5 pound-inches. The rated temperature of wiring should be at least 105°C.

NOTE When installing 2 power units on the PT-G7728/G7828 switch, only power 1 (installed in the upper slot) will activate and provide power. The other power unit, power 2 (installed in the lower slot) will be on standby.

NOTE The reverse power input connection will not activate the device or PoE input. In addition, the PoE will only activate when the system power input is installed on the same power unit.

Wiring the Relay Contact

Each power module has one relay output that can provide two types of relay output. Refer to the table below for detailed information.

The relay contact is used to detect user-configured events. Two wires are attached to the relay pins with normally close and normally open options.

FAULT:
The relay contact of the 3-pin terminal block connector is used to detect user-configured events. The module provides normally open and normally closed circuits depending on what the user chooses. For pin definitions refer to the table below.

Relay connection	Power on state	Event trigger
NO and COM	Closed circuit	Open circuit
NC and COM	Open circuit	Closed circuit

NOTE When wiring the relay contact, we suggest using the cable type - AWG (American Wire Gauge) 16-24 (1.31-0.205mm2) and the corresponding pin type cable terminals. The connector must be able to withstand torque at maximum 5 pound-inches. The rated temperature of wiring should be at least 105°C.

Install/Remove the Ethernet module

The Ethernet modules are hot-swappable. You have the option to mount or remove the Ethernet module while the device is operating.

The installation procedure is as follows:

1. Insert the Ethernet module straight into the slot
2. Fasten the module to the device by tightening the 2 screws. The tightening torque is 3.5 kgf-cm (0.35 Nm)

The removal procedure is as follows:

1. Loosen the 2 screws of the module
2. Pull the module out of the slot
3. Insert the dummy module in to the slot in order to have better protection against dust and EMI
4. Fasten the dummy module using 2 screws. The tightening torque is 4 kgf-cm (0.40 Nm)

Install/Remove the Power module

The power supply units are hot-swappable. You have the option to mount or remove the power supply units while the device is operating.

The installation procedure is as follows:

1. Insert the power unit straight into the slot
2. Fasten the unit to the device by tightening the 2 screws. The tightening torque is 3.5 kgf-cm (0.35 Nm)

The removal procedure is as follows:

1. Loosen the 2 screws of the module
2. Pull the module out of the slot
3. Insert the dummy module in to the slot in order to have better protection against dust and EMI.
4. Fasten the dummy module using 2 screws. The tightening torque is 4 kgf-cm (0.40 Nm)

NOTE If one of the modules is removed from the device, it is advisable to insert a dummy module in order to provide better protection against dust and EMI.

Grounding the Moxa Industrial Rackmount Switch

Grounding and wire routing help limit the effects of noise due to electromagnetic interference (EMI). Run the ground connection from the ground screw to the grounding surface prior to connecting devices.

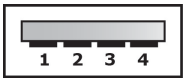
NOTE Using a shielded cable achieves better electromagnetic resistance.

USB Console Connection

The switch has two types of USB port, micro USB-B console port and type A USB host port. Use a USB cable (type A male to Micro USB-B male) to connect the USB-serial console port to your PC's COM port, and install the USB driver (available on Moxa Website) onto the PC. You can then use a console terminal program, such as Moxa's PComm Terminal Emulator, to access the console configuration utility of the switch.

USB Storage Connection

The USB storage port is on the rear panel of the PT-G7728/G7828 switch. (Type A connector; see the diagram below for pinout assignments). Use Moxa's ABC-02-USB automatic backup configurator to connect to the PT-G7728/G7828 USB storage port in order to perform configuration backup, firmware upgrade, or system log file backup.



Pin	Description
1	VCC (+5V)
2	D- (Data-)
3	D+ (Data+)
4	GND (Ground)

The Reset Button

The reset button can perform two functions. One is to reset the PT-G7728/G7828 switch back to factory default settings and the other is to perform a quick back up of configuration and log files to the ABC-02-USB automatic backup configurator.

Reset to Factory Default Settings

Depress the Reset button for five seconds to load the factory default settings. Use a pointed object, such as a straightened paper clip or toothpick, to depress the Reset button. When you do so, the STATE LED will start to blink about once per second. Continue to depress the STATE LED until it begins blinking more rapidly; this indicates that the button has been depressed for five seconds and you can release the Reset button to load factory default settings.

NOTE DO NOT power off the switch when loading default settings.

Configuration and Log Files Back Up

When the ABC-02-USB is connected to the PT-G7728/G7828 switch, the reset button allows for a quick back up of configuration and event logs to the ABC-02-USB. Press the reset button to start backing up the current system configuration files and event logs to the ABC-02-USB.

NOTE When the ABC-02 is plugged in, you cannot reset to factory default by pressing the reset button.

LED Indicators

The front panel of the PT-G7728/G7828 switch contains several LED indicators. The function of each LED is described in the table below.

LED	Color	State	Description
			System LEDs
STATE	Green	On	System has passed self-diagnosis test on boot-up and is ready to run
		Blinking	1. When pressing the reset button for 5 seconds, the LED will blink continuously (1 time/s) until resetting to factory default

LED	Color	State	Description
			2. When an ABC-02 automatic backup device is detected, the LED will blink slowly (1 time/2s)
	Red	On	System failed self-diagnosis on boot up. • Switch Initiate fail • Fail Firmware Checksum Fail/ Uncompressed Fail
FAULT	Red	On	One of the following has happened: 1. ABC Loading/Saving Failure 2. The port has been disabled because the ingress multicast and broadcast packets exceed the ingress rate limit 3. Incorrect loop connection in a single switch 4. The Ring port connection is not valid
		Off	System is in normal operation
SYNC	Amber	On	PTP function is enabled
		Blinking	The device is starting to receive the sync packet
	Green	On	The PTP function has successfully converged
MSTR/ HEAD	Green	On	1. This switch is set as the Master of the Turbo Ring, or as the Head of the Turbo Chain. 2. POST H.W. Fail (+State on and Fault blinking)
		Blinking	1. The switch has become the Ring Master of the Turbo Ring. 2. Head of the Turbo Chain, after the Turbo Ring or the Turbo Chain went down. 3. The switch is set as Turbo Chain's Member and the corresponding chain port is down.
		Off	1. The switch is not the Master of this Turbo Ring. 2. The switch is set as a Member of the Turbo Chain.
CPLR/ TAIL	Green	On	1. The switch coupling function is enabled to form a backup path. 2. It is set as the Tail of the Turbo Chain. 3. POST S.W. Fail (+State on and Fault blinking)
		Blinking	1. Turbo Chain is down. 2. The switch is set as Turbo Chain's Member and the corresponding chain port is down.
		Off	1. This switch disabled the coupling function. 2. Set as a Member of the Turbo Chain.
When the system is importing/exporting data from or to an ABC-02-USB automatic backup device, the FAULT, MSTR/HEAD, and CPLR/TAIL LEDs will blink in sequence.			

LED	Color	State	Description
Port Status LEDs			
Ports 1 to 4	Green	On	Port's 1000 Mbps link is active PoE port is connected to PoE device.
		Blinking	Data is transmitting at 1000 Mbps PoE port is connected to PoE device.
	Amber	On	Port's 10/100 Mbps link is active PoE port is connected to PoE device.
		Blinking	Data is transmitting at 10/100 Mbps PoE port is connected to PoE device.
	Red	On	PoE power failure: • Once per second: PoE detection failure • Twice per second: short-circuit, overloading, or outside operating temperature range
		Off	Port's link is inactive

PT-G7728/G7828 (Rear Panel view)

LED	Color	State	Description
System LEDs			
STATE	Green	On	System has passed self-diagnosis test on boot up and is ready to run
		Blinking	1. When pressing the reset button for 5 seconds, the LED will blink continuously (1 time/s) until resetting to factory default 2. When an ABC-02 automatic backup device is detected, the LED will blink slowly (1 time/2s)
	Red	On	System failed self-diagnosis on boot-up. • Switch Initiate fail • Fail Firmware Checksum Fail/ Uncompressed Fail
FAULT	Red	On	One of the following has happened: 1. ABC-02 Loading/Saving Failure 2. The port has been disabled because the ingress multicast and broadcast packets exceed the ingress rate limit 3. Incorrect loop connection in a single switch 4. The ring port connection is not valid
		Off	System is in normal operation
SYNC	Amber	On	PTP function is enabled
		Blinking	The machine is starting to receive the sync packet
	Green	On	The PTP function is successfully converged.
MSTR/ HEAD	Green	On	1. This switch is set as the Master of the Turbo Ring, or as the Head of the Turbo Chain. 2. POST H.W. Fail (+State on and Fault blinking)
		Blinking	1. The switch has become the Ring Master of

LED	Color	State	Description
			the Turbo Ring. 2. Head of the Turbo Chain, after the Turbo Ring or the Turbo Chain went down. 3. The switch is set as Turbo Chain's Member and the corresponding chain port is down.
		Off	1. The switch is not the Master of this Turbo Ring. 2. The switch is set as a Member of the Turbo Chain.
CPLR/ TAIL	Green	On	1. The switch coupling function is enabled to form a back-up path. 2. It is set as the Tail of the Turbo Chain. 3. POST S.W. Fail (+State on and Fault blinking)
		Blinking	1. Turbo Chain is down. 2. The switch is set as Turbo Chain's Member and the corresponding chain port is down.
		Off	1. This switch disabled the coupling function 2. Set as a Member of the Turbo Chain.
PWR1	Amber	On	Power is being supplied to the main module's power input PWR1
		Off	Power is not being supplied to the main module's power input PWR1
PWR2	Amber	On	Power is being supplied to the main module's power input PWR2
		Pulsate Slowly	The unit in the power 2 is acting as a slave mode and not providing power to main system.
		Off	Power is not being supplied to the main module's power input PWR2
EPS1	Amber	On	Power is being supplied to the PoE+ power input EPS1
		Off	Power is not being supplied to the PoE+ power input EPS1
EPS2	Amber	On	Power is being supplied to the PoE+ power input EPS2
		Off	Power is not being supplied to the PoE+ power input EPS2
Port Status LEDs			
Ports 1 to 28	Green	On	Port's 1000 Mbps link is active PoE port is connected to PoE device.
		Blinking	Data is transmitting at up to 1000 Mbps PoE port is connected to PoE device.
	Amber	Off	Port's link is inactive
		On	Port's 10/100 Mbps link is active PoE port is connected to PoE device.
		Blinking	Data is transmitting at up to 10/100 Mbps PoE port is connected to PoE device.
	Red	Off	Port's link is inactive
		On	PoE power failure: • Once/second: PoE detection failure

LED	Color	State	Description
			• Twice/second: short-circuit, overloading, or over temperature

LM-7000H-4GTX

LED	Color	State	Description
MS (Module State)	Green	On	Module has passed self-diagnosis test on boot-up and is ready to run.
	Red	On	This module malfunctions.
	Off		The module is unpowered and out of service
Ports 1 to 4	Green	On	Port's 1000 Mbps link is active
		Blinking	Data is transmitting at 1000 Mbps
	Amber	On	Port's 10/100 Mbps link is active
		Blinking	Data is transmitting at 10/100 Mbps
	Off		Port's link is inactive

LM-7000H-4GSFP

LED	Color	State	Description
MS (Module State)	Green	On	Module has passed self-diagnosis test on boot-up and is ready to run.
	Red	On	This module malfunctions.
	OFF		The module is unpowered and out of service
Ports 1 to 4	Green	On	Port's 1000 Mbps link is active
		Blinking	Data is transmitting at up to 1000 Mbps
	Amber	On	Port's 100 Mbps link is active
		Blinking	Data is transmitting at up to 10/100 Mbps
	Off		Port's link is inactive

LM-7000H-4GPoE

LED	Color	State	Description
MS (Module State)	Green	On	Module has passed self-diagnosis test on boot-up and is ready to run.
	Red	On	This module malfunctions.
	Off		The module is unpowered and out of service
EPS	Amber	On	External power supply is working for PoE+ power output
		Off	External power supply is not working for PoE+ power output
Ports 1 to 4	Green	On	Port's 1000 Mbps link is active
		Blinking	Data is transmitting at 1000 Mbps
	Amber	On	Port's 10/100 Mbps link is active
		Blinking	Data is transmitting at 10/100 Mbps
	Off		Port's link is inactive
PoE/ PoE+ Ports 1 to 4	Green	On	PoE port is connected to PoE device, using the 802.3at standard.
	Amber	On	PoE port is connected to PoE device, using the 802.3af standard.
	Red	On	PoE power failure: • Once/second: PoE detection failure • Twice/second: short-circuit, overloading, or over temperature

PWR-HV-P48

LED	Color	State	Description
EPS	Amber	On	Power is being supplied to the PoE+ power input EPS
		Off	Power is not being supplied to the PoE+ power input EPS
PWR	Amber	On	Power is being supplied to the unit
		Off	Power is not being supplied to the unit

PWR-LV-P48

LED	Color	State	Description
EPS	Amber	On	Power is being supplied to the PoE+ power input EPS1
		Off	Power is not being supplied to the PoE+ power input EPS1
PWR	Amber	On	Power is being supplied to the unit
		Off	Power is not being supplied to the unit

Specifications

Technology	
Standards	IEEE 802.3af/at for Power-over-Ethernet 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 802.3x for Flow Control IEEE 802.1D-2004 for Spanning Tree Protocol IEEE 802.1w for Rapid STP IEEE 802.1s for Multiple Spanning Tree Protocol 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	IPv4, IPv6(PT-G7728 only), SNMPv1/v2c/v3, DHCP Server/Client, DHCP Option 66/67/82, BootP, TFTP, SNTP, SMTP, RARP, RMON, HTTP, HTTPS, Telnet, SNMP Inform, LLDP, Flow Control, Back Pressure Flow Control, Port Mirror, Fiber Check, Syslog, Dying Gasp, IGMPv1/v2/v3, GMRP, GVRP, 802.1Q, Q-in-Q VLAN, STP/RSTP, MSTP, Turbo Ring v1/v2, Turbo Chain, Link Aggregation, RADIUS, TACACS+, SSL, SSH, Port Lock, Broadcast Storm Protection, MAC Authentication Bypass, MAC Sticky, Access Control Lists, Time Management: SNTP, NTP Server/Client, IEEE 1588v2 PTP (hardware-based), EtherNet/IP, Modbus/TCP **PT-G7828 only:** VRRP, RIP V1/V2, OSPF, DVMRP, PIM-DM
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

Interface	
Gigabit Ethernet	2-ports 10/100/1000BaseT(X) and 2-ports 100/1000Base SFP
Console Port	USB console (Micro USB-B connector)
LED Indicators	PWR1, PWR2, EPS1, EPS2, STATE, SYNC, FAULT, MSTR/HEAD, CPLR/TAIL
Alarm Contact	2A@30VDC or 0.5A @ 125VAC
Power Requirements	
Input Voltage	**PWR-HV-P48:** (110/220 VDC), (110VAC, 60Hz), (220VAC, 50Hz), PoE: 48 VDC (53 to 57 VDC is recommended of PoE+ device) **PWR-LV-P48:** 24/48 VDC, PoE: 48 VDC (53 to 57 VDC is recommended of PoE+ device)
Operating Voltage	**PWR-HV-P48:** (88 to 300 VDC), (90 to 264 VAC, 47 to 63 Hz), PoE: 46 to 57 VDC **PWR-LV-P48:** 18 to 72 VDC, PoE: 46 to 57 VDC
Power Consumption (without modules consumption)	**When using PWR-HV-P48:** 110 VDC: 12.5 W 220 VDC: 13.3 W 110 VAC: 13.5 W 220 VAC: 15.8 W **When using PWR-LV-P48:** 24 VDC: 11.7 W 48 VDC: 11.7 W
Power Consumption of module	LM-7000H-4GTX: 1.98 W LM-7000H-4GSFP: 1.56 W LM-7000H-4GPoE: 1.98 W (w/o PoE output)
Input Current (without modules consumption)	**When using PWR-HV-P48:** 110 VDC: 0.12 A 220 VDC: 0.07 A 110 VAC: 0.29 A 220 VAC: 0.18 A **When using PWR-LV-P48:** 24 VDC: 0.49 A 48 VDC: 0.25 A
Peak Inrush Current	PWR-HV-P48: 110Vac: < 10A (t > 0.1ms) 220Vac: < 20A (t > 0.1ms) PWR-LV-P48: 24Vdc: < 5A (t > 0.1ms), 48V: < 10A (t > 0.1ms)
Overload Current Protection	Present
Reverse Polarity Protection	Present
Physical Characteristics	
Housing	IP30 protection
Dimensions	443 x 44 x 280 mm (17.32 x 1.37 x 11.02 in)
Weight	PT-G7728/G7828: 3.08kg (6.78lb) LM-7000H-4GSFP: 0.3kg (0.66lb) LM-7000H-4GTX: 0.24kg (0.53lb) LM-7000H-4GPoE: 0.24kg (0.53lb) PWR-HV-P48/PWR-LV-P48: 0.3kg (0.66lb)
Installation	19” rack mounting

Environmental Limits	
Operating Temp.	-40 to 85°C (-40 to 185°F)
Storage Temp.	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5 to 95% (non-condensing)
Standards and Certifications	
Safety	UL 61010-2-201, EN 61010(LVD) (Pending)
EMC	EN 55024, 55032
EMI	CISPR 22, FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV IEC 61000-4-3 RS: 80MHz to 1GHz: 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: 10V IEC 61000-4-8
Note: For better conductive radiation immunity, it is recommended to use a STP cable and install a surge protector at the PoE power input: EPS.	
Rail Traffic	EN 50121-4
Substation	IEC-61850-3 ed2 class2, IEEE 1613
Warranty	
Warranty Period	5 years
Details	See www.moxa.com/warranty

Restricted Access Locations

- This equipment is intended to be used in Restricted Access Locations, such as a computer room, with access limited to service personnel or users who have been instructed on how to handle the metal chassis of equipment that is very hot. The location should only be accessible with a key or through a security system.
- External metal parts of this equipment are extremely hot. Before touching the equipment, you must take special precautions to protect your hands and body from serious injury.