



Link Power™ LPS2802-T1 Series

Outdoor Industrial 8-Port PoE Network Switch with 2 SFP Uplink Ports

USER MANUAL



Inscape Data Corporation
1620 Oakland Road, STE D101
San Jose, CA 95131
U.S.A.

© Copyright 2015, Inscape Data Corporation, All Rights Reserved. LinkPower, AirEther, AirGoogle, and Inscape Data are trademarks of Inscape Data Corporation

Disclaimer: While every effort is made to ensure the information given is accurate, Inscape Data Corporation does not accept liability for any errors or mistakes which may arise. All information and specifications are subject to change without notice.

Certification

Inscape Data Corporation certifies that this product met its published specifications at time of shipment from the factory.

FCC Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

The user is cautioned that changes and modifications made to the equipment without approval of the manufacturer could void the user's authority to operate this equipment.

The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.

Industry Canada Statement

This Class A digital apparatus complies with Canadian ICES-003.

CE Statement

This product complies with the European Low Voltage Directive 73/23/EEC and EMC Directive 89/336/EEC as amended by European Directive 93/68/EEC.

Warning: This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

UL Recognized Statement

The power supply of this product has been investigated using applicable construction and performance requirements by UL, and when installed in accordance with the manufacturer's installation instructions, should provide a safe, code-compliant installation.

Safety Summary

The following general safety precautions must be observed during all phases of operation of this instrument. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture, and intended use of the instrument. Inscope Data Corporation assumes no liability for the customer's failure to comply with these requirements.

Before Applying Power

Verify that the product is set to match the available line voltage and all safety precautions are taken.

Over Temperature Warning

To prevent the switch from overheating, do not operate it in an area that exceeds the maximum recommended ambient temperature of (75°C). To prevent product cooling restriction, allow at least 3 inches (7.6 cm) of clearance around the product after installation.

Ground the Instrument

To minimize shock hazard, the instrument chassis and cabinet must be connected to an electrical ground. The instrument must be connected to the ac power supply mains through a three-conductor power cable, with the third wire firmly connected to an electrical ground (safety ground) at the power outlet. For instruments designed to be hard-wired to the ac power lines (supply mains), connect the protective earth terminal to a protective conductor before any other connection is made. Any interruption of the protective (grounding) conductor or disconnection of the protective earth terminal will cause a potential shock hazard that could result in personal injury.

When installing the unit, always make the ground connection first and disconnect it last.

Jewelry Removal Warning

Before working on equipment that is connected to power lines, remove jewelry (including rings, necklaces, and watches). Metal objects will heat up when connected to power and ground and can cause serious burns or weld the metal object to the terminals.

Do not Operate in Explosive Atmosphere

Do not operate the product in the presence of flammable gases or fumes.

Chassis Power Connection

Before connecting or disconnecting ground or power wires to the chassis, ensure that power is removed from the device. To ensure that all power is OFF, locate the circuit breaker on the panel board that services the device, switch the circuit breaker to the OFF position, and tape the switch handle of the circuit breaker in the OFF position.

Work During Lightning Activity

Do not work on the system or connect or disconnect cables during periods of lightning activity.

Comply with Local and National Electrical Codes

Installation of the equipment must comply with local and national electrical codes

Do Not Exceed Input and Output Ratings

Do not operate the product to exceed the power input and output ratings.

This product Conforms to the following safety standards

Specification	Description
Regulatory Compliance	Products with the CE Marking are compliant with the 89/336/EEC and 73/23/EEC directives, which include the safety and EMC standards listed.
Radiation	CE mark, commercial FCC Part 15 Class B VCCI Class B EN 55022 (CISPR 22), Class B
Safety	CE Mark Commercial CE/LVD EN60950 UL 60950-1, TUV EN60950-1, IEC60950-1 Approved

Packing List

Each package includes the following items:

- LPS2802AFM-T1 or LPS2802ATM-T1 (1)
- WM0001 Wall Mount Kit (1)
- MMK0001 Pole Mount Kit (1) (OPTIONAL)
- WPCK0001-3 AC Power Cable Kit (1)
- WPCK0001-2 DC Power Cable Kit (1) (OPTIONAL)
- User Manual (1)
- Warranty Sheet (1)

Table of Contents

Contents

Packing List	4
Product Description	6
Product Features	6
Installation	6
Top Cover	7
PoE Switch Internal View :	7
Control Panel Diagram	8
LED Indicator Description Table:	8
Grounding Protection:	9
Grounding the Switch by Using the AC Power Cord	9
Power Redundancy & UPS Input	10
Connector Layout Diagram:	10
Waterproof Ethernet, Fiber Optics, & Power Connector Assembly Diagram	11
Installation & Mounting:	11
Optional Accessories	12
Product Dimensions:.....	12
Wall Mount & Pole Mount :	12
Product Specifications	13
Contacting Inscape Data Sales and Support Offices.....	14

Product Description

LPS2802-T1 Series Outdoor Industrial PoE Switch features with eight PoE Ethernet ports and comply to 10/100/1000BaseT(X), IEEE802.3af/at PoE and two Gigabit SFP fiber optics uplink interfaces. Each of the PoE ports supplies DC power up to 15.4W for 802.3af, 25.5W for 802.3at, and 30W for 802.3at Plus. The system is integrated with a 200W DC power supply. The transfer data is up to 120Km from SFP fiber port to a control center. Additionally, the product also features with an anti-electromagnetic interference designed for harsh outdoor applications, and the 3KV network port surge protection adapts to harsh outdoor environment and ensures the reliability of the uninterrupted PoE operations. The system is rated at IP68, and the system is able to operate under -30° ~ +70° C temperature range.

Product Features

1. The system supports **DUAL POWER INPUT REDUNDANCY**
2. Comply to IEEE 802.3, IEEE 802.3u, IEEE 802.3z, IEEE 802.3ab, IEEE 802.3x, IEEE 802.1D, IEEE 802.3at, IEEE 802.3af, IEEE 802.1Q IEEE 802.1p, IEEE 802.1x, IEEE 802.1W, SNMP, IGMP standards
3. Eight 10/ 100/ 1000M self-sensing RJ45 port, support PoE power supply function; All ports support auto-flip (Auto MDI/MDIX);
4. Each PoE port can provide power up to 15.4W per IEEE802.3af standard;
5. Support IEEE802.3x full duplex flow control and duplex backpressure flow control;
6. 8.8G backplane bandwidth;
7. 1K MAC address table;
8. Its 3KV network port surge protection can adapt to harsh outdoor environment; Under the temperature of -30° ~ +70° C, working at a full load 144W for IEEE802.3af with the internal power supply;
9. The four gigabit SFP fiber ports are capable of high bandwidth and for up to 120KM long distance transmission.
10. Dual redundancy power input, AC and DC, (More than 50V DC recommended when used PoE+ output)

Installation

- a. Before installation, please ensure the following:
 - 1) All PD devices, i.e., PoE Clients, meet the power requirement of the connecting devices.
 - 2) All PD devices, i.e., PoE Clients, match with the power receiving device power pinout specification (1/2+ & 3/6-)
- b. Connect the power cable to a power source, 110 ~ 240V AC, the 48V DC is optional and can be used as the backup power or primary power when the AC power is not available. Then the switch will automatically initialize, and LED lights status will display as following:
 - i. Except the POE port lights, all the other lights will go through the process of “on-off-on-off”, which means the installation is successful.
 - ii. Power LED remains ON
- c. Connect the network devices with network cables to the POE switch port through the waterproof connectors, then secure the Top Cover with the four screws to the Bottom Case
- d. After the Ethernet and/or fiber optics network devices are connected, please refer the LED Indicator Description Table Below on Page 6
- e. With the dual redundancy power input, you can connect a DC power source with the 4-Pin DC Connector to the DC Input Connector simultaneously with the AC Input. When connected, the DC Input operates as a backup power.
- f. **Lastly, to avoid hardware damage due to transient voltage from lightning and thunderstorm, PLEASE MAKE SURE YOU CONNECT THE GROUNDING WIRE TO EARTH GROUND, E.G., GROUND ROD (see Page 9 for details).**

Top Cover

To connect the wires, you are simply to open the top cover by the latch. To install and connect the wire, please follow the connector assembly diagram on the next page. Please note the following IP weatherproof rating, when close the top cover:

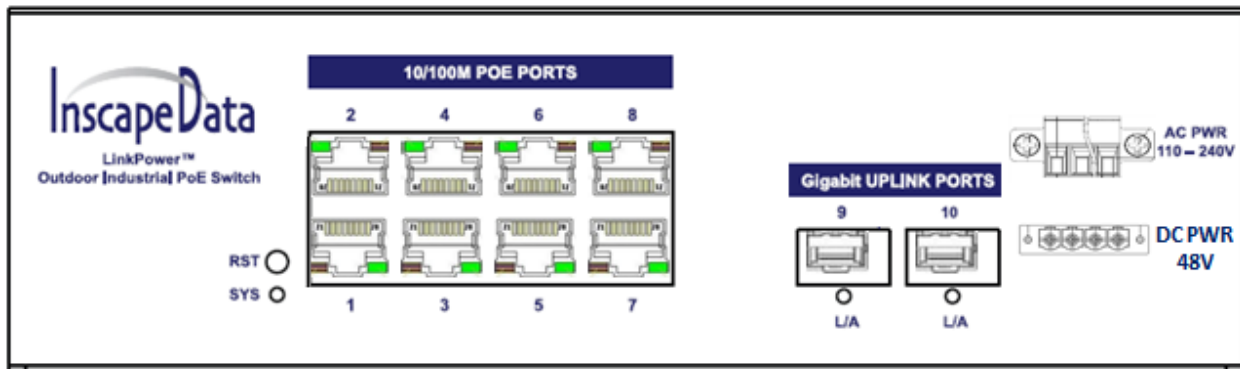
1. Closing the top cover by latch, the weatherproof IP rating is IP66
2. Closing the top cover by 4 screws, included in the package, the weatherproof IP rating is IP68

Please close the top cover based on the required weatherproof condition per your installation.

PoE Switch Internal View :




Control Panel Diagram



LED Indicator Description Table:

Indicator	Status	Description
SYS Indicator: POWER	Green LED ON	Power On, Normal
	LED OFF	Power OFF
1000M Indicator: Link	OFF	No Connected PD or Power OFF
	Yellow LED Blink	Data transmission properly
	Yellow LED ON	Connected with 1000Mbps network device
	OFF	No connected PD
PoE Indicator: PoE	Green LED ON	Connected PD Device, working properly
	Green LED Blink	Short circuit or current overload
	OFF	No Connected PD or Power OFF
L/A Indicator: Link/Act	Green LED Blink	Data transmission properly
	Green LED ON	Connection is OK and data is being sent and received.
	OFF	No data connected

 **NOTE:** All PoE ports of PD devices are complying with IEEE802.3af standard

Grounding Protection:

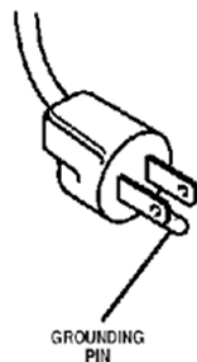
The system provides the following way to ground the equipment for safety and protection of the system. It is highly recommended that you're to perform both grounding procedures for maximum safety and protection of your equipment. However, at least of the grounding **MUST** be performed, otherwise any product damage caused by improper or no grounding will not be covered under warranty.

Grounding the Switch by Using the AC Power Cord

If the installation site has no grounding strips or earth ground connection, then you must ground the switch through the AC wire of the power cord. Please make sure that:

1. The power cord extension has a PE (Protective Earth) terminal, Figure 6, Aka, Equipment Grounding Conductor.
2. The ground contact in the power outlet is securely connected to the ground in the power distribution room or on the AC transformer side.
3. The power cord is securely connected to the power outlet.
4. If the ground contact in the power outlet is not connected to the ground, report and resolve the problem and reconstruct the grounding system.

NOTE: PRODUCT DAMAGE CAUSED BY IMPROPER OR NO GROUNDING WILL NOT BE COVERED UNDER WARRANTY!



6 FT AC Power Cable:

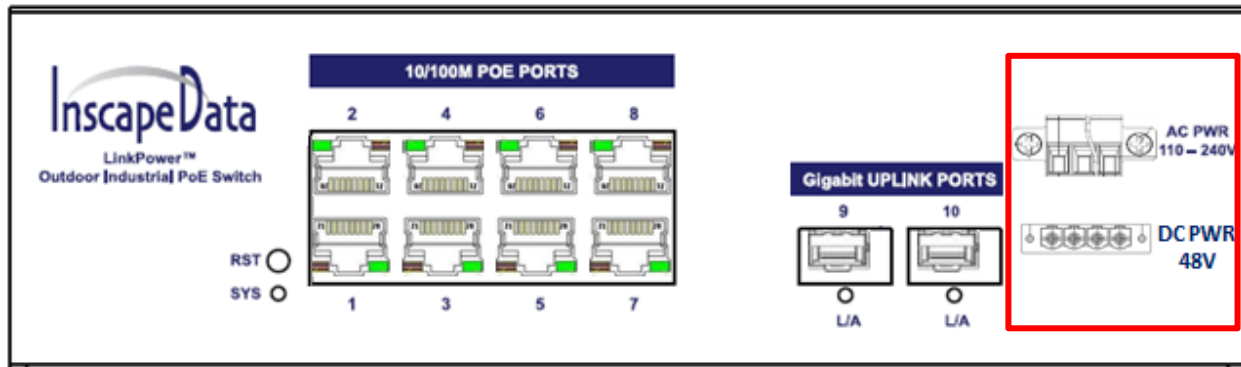
- **White (W)** – AC/L
- **Green (G)** – Ground
- **Black (B)** – AC/N

NOTE: For a non-U.S. plug, please carefully identify the "Grounding Pin" based on your region's or country's electric code

Figure 5 Grounding through the AC power cord

Power Redundancy & UPS Input

The switch offers dual power redundancy, i.e., AC & DC input. There are two power inputs, as shown below diagram:

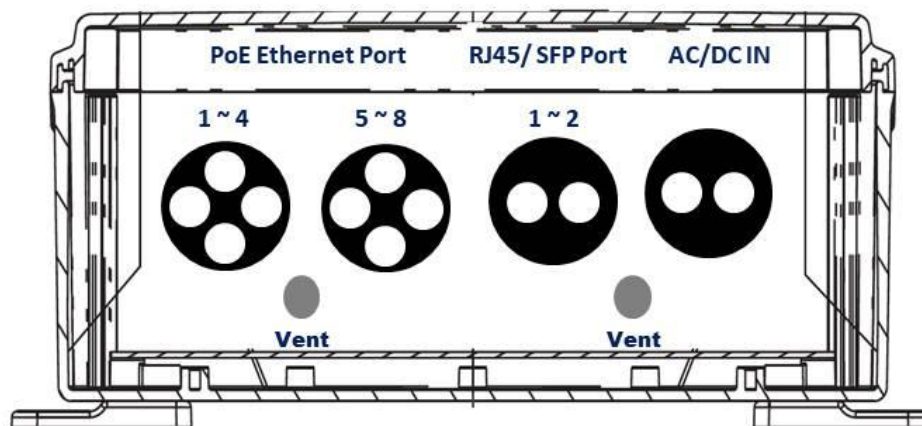


When the AC input is connected, the AC is the main power input to the switch. To enable the power redundancy, you connect the DC power to the 4-Pin Terminal with a 48V DC and up to 57V DC power source. After the DC is connected, the power redundancy is automatically enabled. In general, to use a 48v DC UPS (Uninterrupted Power Supply) is highly recommended. A 48V DC UPS can be either an AC to DC UPS or solar-powered DC backup UPS.

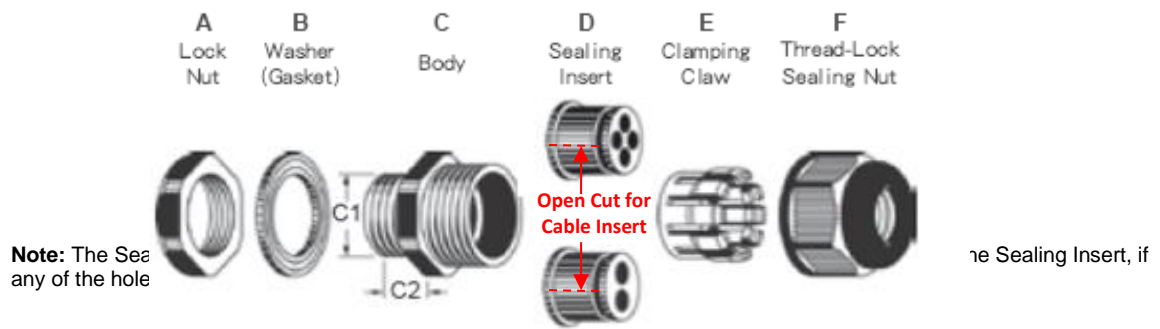
Once the DC power is connected, the DC power functions as backup power. If the AC is not used and the DC power is connected, then the DC power functions as the main power. When the DC power is used as the main power, the actual power required will be based on the total power consumption for the connected devices. For example, if there are two high power devices with 60W each and two low power devices with 10W each. Then, the total power consumption is 150W, including the system power consumption, i.e., the switch, and this means it requires the DC battery to provide at least 3.13A DC power.

Please note, the DC Power Cord Kit, Part # WPCCK-004, is an optional accessory.

Connector Layout Diagram:



Waterproof Ethernet, Fiber Optics, & Power Connector Assembly Diagram



Connector Assembly Diagram

Installation & Mounting:

You can mount the system with one of the two ways:

1. Wall Mount

Wall Mount Kit, Standard Accessory



2. Pole Mount

(Optional Accessory, MMK001 Pole Mount Kit)



Optional Accessories

The following optional accessories can be order if required:

1. Mast/Pole Mounting Kit (Part No: MMK0001)
2. SFP Duplex 1.25Gbps 3.3V Single-Mode Transceiver (Part No. SFP-SM-LC20-DDM)
3. SFP Duplex 1.25Gbps 3.3V Multimode Transceiver (Part No. SFP-MM-SJ8512-X5PSOS-DDM)

Optional Accessories

MMK0001

Mast Mounting Kit



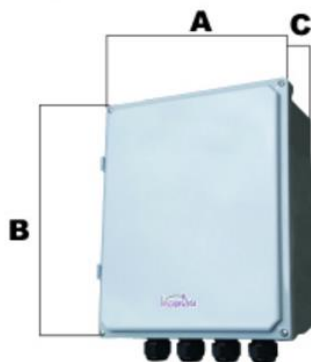
SFP Duplex 1.25Gbps 3.3V Single-Mode Transceiver



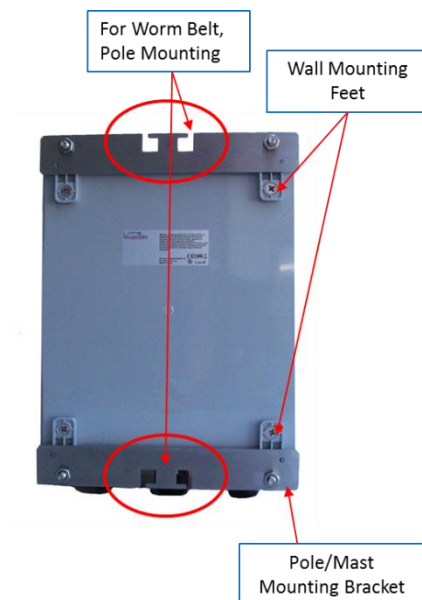
SFP Duplex 1.25Gbps 3.3V Multi-Mode Transceiver

Product Dimensions:

- A: 12 inch
B: 10 inch
C: 4 inch



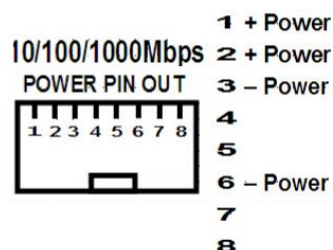
Wall Mount & Pole Mount :



Product Specifications

Product Model	LPS2802AF	LPS2802AT
Product Name	Outdoor Gigabit Unmanaged 8-Port 802.3af/at PoE Switch with 2 SFP Fiber Uplink Ports	
Connector	RJ45 Port: 8x10/100/1000BaseT(X) self-detect ports	
	Fiber Port: 2x100/1000Base SFP ports	
Switching Performance	Priority Queue: 4	
	MAC Address Table Size: 8 K	
	Packet Buffer Memory: 1Mbit	
Network Medium	10BASE-T: Cat3/ 4/ 5 UTP (≤100m)	
	100BASE-TX: Cat5 or more UTP (≤100m)	
	1000BASE-TX: Cat5 or more UTP (≤150m)	
	Single mode (9/125um) fiber transmission, the transmission distance can be up to 25km (Default dual fiber, can be customized single fiber)	
Performance Specifications	MTBF: 190,000 hours (about 21 years)	
	Database: Telcordia (Bellcore), GB	
Protocols and Standards	IEEE 802.3: CSMA/CD	
	IEEE 802.3i: 10Base-T	
	IEEE 802.3u: 100Base-T	
	IEEE 802.3ab: 1000Base-T	
	IEEE 802.3x: Flow Control	
	IEEE 802.1af: DTE Power via MDI	
	IEEE 802.3af: Power-over-Ethernet standard	
	IEEE 802.3at: Power-over-Ethernet standard	
LEDs Status	PWR, 10/100/1000, PoE, SFP Network	
Power Supply	AC Input voltage: 120V ~ 240V AC	
	DC Input voltage: 48V	
	Output voltage: 48V DC	
	IEEE802.3af standard, each port power is 15.4W, total power is 65W for 4 ports	
	IEEE802.3at standard, each port power is 25.5W, total power is 220W for 8 ports (LPS2802AT-T1 Model Only)	
	IEEE802.3at Plus standard, each port power is 30W, total power is 240W for 8 ports (LPS2802AT-T1 Model Only)	
	Support OCP (Over-Current Protection) and electronic protection	
	Connection: 3-pin pluggable connecting terminal	
Dimensions/Weight	Enclosure: IP68 protection grade, shell Dimension (LxWxH): (12 x 10 x 4 inch, 304.8 x 250.4 x 101.6 mm)	
	Weight: 3.6KG	
	Installation Method: Wall mount / Mast mount	
Working Environment	Operating Temperature: -30℃ ~ +70℃	
Industrial Standard	EMI: FCC Part 15 Subpart B Class A, EN 55022 Class A	
	EMS: EN 61000-4-2 (ESD) Level 3, EN 61000-4-3 (RS) Level 3, EN 61000-4-4 (EFT) Level 3, EN 61000-4-5 (Surge) Level 3, EN 61000-4-6 (CS) Level 3, EN 61000-4-8	
	Traffic Control: NEMATS-2	
	Rail Traffic: EN50155, EN50121-4	
	Mechanical Project: IEC60068-2-6, IEC60068-2-27, IEC60068-2-32 Industrial: IEC 61000-6-2	
Safety	CE Mark ,commercial CE/LVD EN60950, RoHS, UL60591-1	
Warranty	3 years warranty	

ELECTRICAL PIN OUT DIAGRAM



Contacting Inscape Data Sales and Support Offices

For more information about Inscape Data Corporation products, applications, support, and for a current sales office listing, visit our web site: <http://www.inscapedata.com>

U.S. Headquarters

Here's how to reach us if you'd like to place an order or if you have questions, concerns, or need support

Telephone	Postal Mail
North and South America Customer Service and Orders: Send e-mail for Fast Response, sales@inscapedata.com Main: +1-408-392-9800 Fax: +1-408-392-9812 Monday - Friday 9:00 AM - 5:00 PM Pacific Time UTC -7:00	Inscape Data Corporation 1620 Oakland Road, Suite D101 San Jose, CA 95131 U.S.A.