

# Link Power™ LPS2400

# Outdoor Industrial 4-Port PoE & 2-Port SFP Network Switch

## **USER MANUAL**



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## 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.

#### 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. Inscape 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

## **Table of Contents**

Packing List
Product Description
Product Features7
Installation7
Power Redundancy & UPS Input8
Switch Control Panel8
Top Cover
PoE Switch Internal View :9
LED Indicator Description Table:9
Connector Layout Diagram:10
Waterproof Ethernet, Fiber Optics, & Power Connector Assembly Diagram
Grounding Protection:10
Grounding the Switch10
Contacting Inscape Data Sales and Support Offices13

## **Packing List**

Each package includes the following items:

- LPS2400 (1)
- WM0001 Wall Mounting Kit (1)
- AC Power Cable with one 3-PIN AC Power Connector & one Coupler (1)
- DC Power Cable with one 4-PIN AC Power Connector & one Coupler (1) (Optional)
- (Please contact Inscape Data via <u>sales@inscapedata.com</u>, if you would like to purchase this part)
- User Manual (1)
- Warranty Sheet (1)

#### **Product Description**

LPS2400 Outdoor Industrial PoE Switch features with four PoE Ethernet ports and comply to 10/100/1000BaseT(X), IEEE802.3af PoE and two Gigabit SFP fiber optics interfaces. The power supply of single PoE port can be up to 15.4W. The transfer data can be up to 120Km from SFP fiber port to a control center. Additionally, the product also features with an anti-electromagnetic interference that is designed for harsh outdoor applications and the 3KV network port surge protection can adapt to harsh outdoor environment and ensure the reliability of the uninterrupted PoE operations. The outdoor enclosure is rated at IP68, and the system is able to operate under -40 ~ +75 °C temperature range.

#### **Product Features**

- 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
- 10/ 100/ 1000M self-sensing RJ45 port, support PoE power supply function; All ports support auto-flip (Auto MDI/MDIX);
- 3. Each PoE port can provide power up to 15.4W per IEEE802.3af standard; Supply power for powered devices compatible with IEEE802.3af;
- 4. Support IEEE802.3x full duplex flow control and duplex backpressure flow control;
- 5. 8.8G backplane bandwidth;
- 6. 1K MAC address table;
- Its 3KV network port surge protection can adapt to harsh outdoor environment; Under the temperature of -40 ~ +75 °C, working at a full load 240W;
- 8. The 2 gigabit SFP fiber ports are capable of high bandwidth and for up to 120KM long distance transmission.

#### Installation

- a. Before installation, please ensure the following:
- b. All PD devices, i.e., PoE Clients, meet the power requirement of the connecting devices.
- c. All PD devices, i.e., PoE Clients, match with the power receiving device power pinout specification (1/2+ & 3/6-)
- d. Connect the power cable to a power source, 110 ~ 240V AC, 48V DC is optional and can be used a backup power. 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
- e. As desired, you can connect to a 48V DC power source with the included 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. Connect the network devices with network cables to the POE switch port though the waterproof connectors, then secure the Top Cover with the four screws to the Bottom Case
- g. After the Ethernet and/or fiber optics network devices are connected, please refer the LED Indicator Description Table Below on Page 7

#### **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 fo 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 # WPCK-004, is an optional accessory.

#### Switch Control Panel

## **Control Panel Diagram**



#### **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 :**



## LED Indicator Description Table:

Indicator	Status	Description
PWR Indicator: POWER	Green LED ON	Power On, Normal
	LED OFF	Power OFF
	Green LED ON	Connected PD Device, working properly
PoE Indicator: PoE	Green LED Blink	Short circuit or current overload
	OFF	No Connected PD or Power OFF
1000M Indicator: Network 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
	Green LED Blink	Data transmission properly
L/A Indicator: Link/Act	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

## **Connector Layout Diagram:**

Please note, the switch supports cable Gland and conduit waterproof connectors. The hole diameter for PoE cables is 25 mm, and the hole diameter for power cable is 20 mm.



Support Cable Gland and Conduit Connectors

- The hole Size of SFP & PoE Connectors is 25 mm
- The Hole Size of AC Power Connector is 20 mm

#### Waterproof Ethernet, Fiber Optics, & Power Connector Assembly Diagram



**Note:** The Sealing Insert comes with one and three holes. The Plastic Filler (Plug) **MUST** be used to cover the Sealing Insert if any of the holes is not used in order to maintain waterproof of the connector.

#### **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**

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 5, 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!



**U.S. POWER CORD** 



POWER CORD FOR OUTSIDE OF U.S. GREEN COLOR WIRE MUST BE GROUNDED

6 FT AC Power Cord:

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

#### AC Power Cable:

- 1. White (W) AC/N
- 2. Green (G) Ground
- 3. Black (B) AC/L



**3-Terminal AC Connector Set** 

#### DC Power Cable (Optional):

- 1. White (W) Positive
- 2. Green (G) Ground
- 3. Black (B) Negative



**4-Terminal DC Connector Set** 

Figure 5 GREEN COLOR WIRE of the AC/DC Power Cords Is Used for Grounding



#### **TECHNICAL SPECIFICATIONS**

Product Model	LPS2000 Unmanaged 4-Port Gigabit PoE and 2-Port Gigabit Fiber Port Switch		
Connector Type	4x10/100/1000M copper cable RJ45 PoE ports(All ports support MDI/MDIX automatic adjustment); 2x Gigabit SFP Port:1000Base-X,10/100/1000Base-T(X) SFP fiber uplink ports		
Forwarding Mode	1000M line speed forwarding; Packet Length: 10K; Packet Buffer: 4.1M		
Network Medium	10BASE-T: Cat3, 4, 5 UTP(≤100 meter) 100BASE-TX: Cat5 or more UTP(≤100 meter) 1000BASE-TX: Cat5 or more UTP(≤100 meter)		
Performance Specifications	Bandwidth: 8.8Gbps (non-blocking) Network Latency (100 to 100M bps): Maximum delay less than 20µs Packet Buffer Memory: 96KB Address Database Size: 1,000 MTBF: 190,000 hours (about 21 years)		
PoE Description	IEEE 802.3af, each port power is 15.4W; Port1 to Port4 support PoE power, the POE standard requirement and power supply matches with the power receiving device (1/2+, 3/6-(End -span)/ 4/5+, 7/8-(Mid-span))		
Network Protocols and Standards	IEEE 802.3; IEEE 802.3u; IEEE 802.3ab; IEEE 802.3x Flow Control; IEEE 802.1af DTE Power via MDI IEEE 802.3af		
LED Indicator Status	System: Power Every Port: connection status, PoE working status		
Power	IEEE 802.3af international standard, each PoE port power out is 15.4W		
Voltage	Input: AC100 ~ 240V 50/60Hz		
Working Environment	Operating Temperature: -40 * ~ 85 * C Storage Temperature: -40 * ~ 85 * C Relative Humidity: 5 ~ 95%, non-condensing		
Radiation	CE mark, commercial FCC Part 15 Class B VCCI Class B EN 55022 (CISPR 22), Class B		
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		
Warranty	1 year 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: <u>http://www.inscapedata.com</u>

#### **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

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