



# **Link Power™ LPS1800-T1 Series**

## **Outdoor Industrial 8-Port PoE, 2-Port Combo RJ45/SFP Network Switch**

### **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:

- LPS1800 (1)
- WM0001 Wall Mounting Kit (1)
- AC Power Cable with one 3-PIN AC Power Connector (1)
- User Manual (1)
- Warranty Sheet (1)

# Table of Contents

## Contents

Packing List .....	4
Product Description.....	6
Product Features .....	6
Installation .....	6
Control Panel Diagram .....	7
LED Indicator Description Table: .....	7
Connector Layout Diagram: .....	7
Waterproof Ethernet, Fiber Optics, & Power Connector Assembly Diagram .....	8
IP Management Login (Managed Models Only): .....	8
Grounding Protection: .....	8
Grounding the Switch by Using the AC Power Cord .....	8
Power Redundancy & UPS Input .....	9
RESET Switch (System Reset) (Managed Models Only): .....	10
Installation & Mounting: .....	11
Product Dimensions:.....	12
Wall Mount & Pole Mount : .....	12
Appendix I Technical Specifications.....	13
Contacting Inscope Data Sales and Support Offices.....	14

## Product Description

The LPS1800 Outdoor Industrial PoE Switch series features four PoE Ethernet ports and comply with 10/100Mbps, IEEE802.3at/af PoE and two Gigabit SFP fiber optics interfaces. There are four sub-models, i.e., LPS1800AF-T1, LPS1800AT-T1, LPS1800AFM-T1, and LPS1800ATM-T1. The LPS1800AF-T1 and LPS1800AT-T1 are unmanaged switch models, and the LPS1800AFM-T1 and LPS1800ATM-T1 are managed switch models. Each PoE port can power up to 15.4W for 802.3af and 25.5W for 802.3at. The transfer data can be up to 120Km from SFP fiber port to a control center. Additionally, the product also features an anti-electromagnetic interference, i.e., surge protection, designed for harsh outdoor applications. The 3KV network port surge protection can adapt to the harsh outdoor environment and ensure uninterrupted PoE operation reliability. The outdoor enclosure is IP68 compliant, and the system can operate between -30 ° C to 75 ° C temperature range.

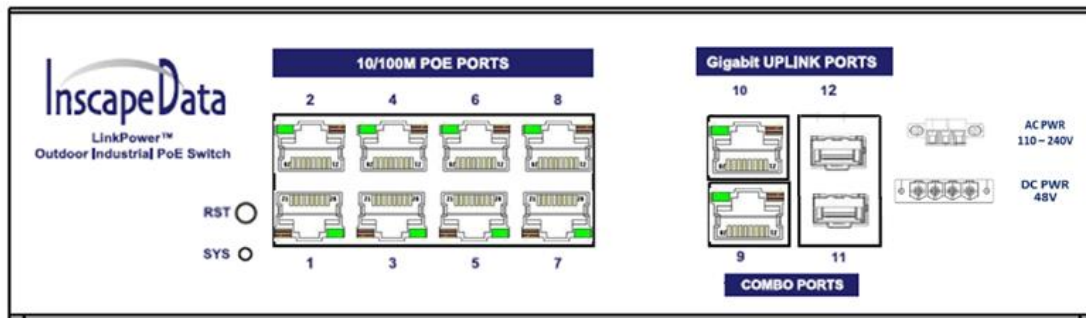
## Product Features

1. 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
2. 10/ 100M 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. Each PoE port can provide power up to 25.5W per IEEE802.3at standard; Supply power for powered devices compatible with IEEE802.3at;
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 the harsh outdoor environment; Under the temperature of -40 ~ +75 ° C, working at a full load 150W for 802.3af and 225W for 802.3at;
9. 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, then the switch will automatically initialize, and LED lights status will display as follows:
  - i. Except for 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. Sys (Power) LED remains ON
- e. 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
- f. After the Ethernet and/or fiber optics network devices are connected, please refer the LED Indicator Description Table Below on Page 6

## Control Panel Diagram

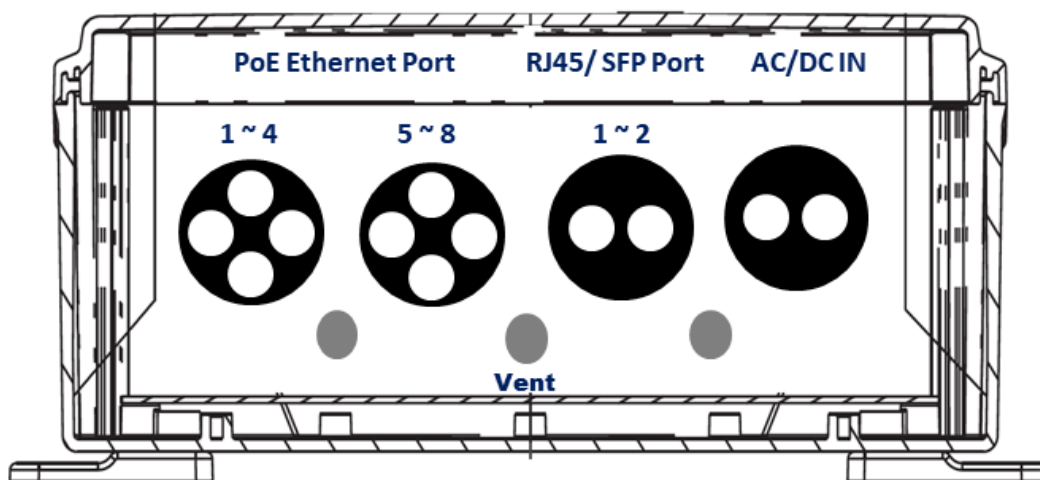


## LED Indicator Description Table:

Indicator	Status	Description
<b>PWR Indicator: SYS</b>	Green LED ON	Power On, Normal
	LED OFF	Power OFF
<b>PoE Indicator: PoE</b>	Green LED ON	Connected PD Device, working properly
	Green LED Blink	Short circuit or current overload
	OFF	No Connected PD or Power OFF
<b>10/100M Indicator: Link</b>	OFF	No Connected PD or Power OFF
	Yellow LED Blink	Data transmission properly
	Yellow LED ON	Connected with 10Mbps or 100Mbps network device
	OFF	No connected PD
<b>L/A Indicator: Link/Act</b>	Green LED Blink	Data transmission properly
	Green LED ON	Connection is OK and data is being sent and received.
	OFF	No data connected

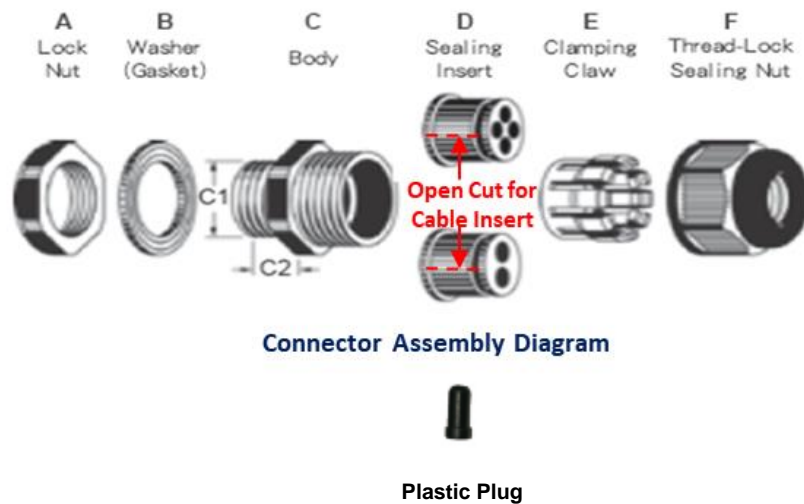
 **NOTE:** All PoE ports of PD devices are complying with IEEE802.3af standard

## Connector Layout Diagram:



Support Cable Gland and Conduit Connectors  
The Hole Size: 1 Inch Diameter

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



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

### IP Management Login (Managed Models Only):

All network ports of this device support WEB management equipment, IP management by default 192.168.2.1, subnet mask: 255.255.255.0, the default gateway: 192.168.2.254. The administrator of the PC as long as you can communicate with the equipment management.

**Default IP Address: 192.168.2.1**

**Default login user: "admin" and login password: "system."**

To Download Web Management Manual Online:

[https://www.inscapedata.com/pdf/LPS1800\\_Web\\_Management\\_ManualV2.0.pdf](https://www.inscapedata.com/pdf/LPS1800_Web_Management_ManualV2.0.pdf)

### Grounding Protection:

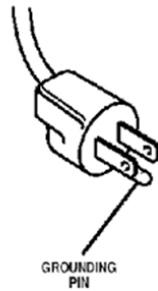
The system provides the following way to ground the equipment for the safety and protection of the system. It is highly recommended that you're to perform both grounding procedures for maximum safety and protection of your equipment. However, at least of the grounding **MUST** be performed. Otherwise,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

### Grounding the Switch by Using the AC Power Cord

You **MUST** ground the switch through the AC wire of the power cord. Please make sure that:

1. The GREEN COLOR WIRE of the power cord extension is used as a PE (Protective Earth) terminal, Figure 5, Aka, Equipment Grounding Conductor **MUST BE CONNECTED TO A GROUND CONTACT IN A POWER OUTLET.**
2. The power cord is securely connected to the power outlet at the premise.
3. The ground contact in the power outlet is securely connected to the ground in the power distribution room or on the AC transformer side.
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 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

#### DC Power Cable (Optional):

##### If Available

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

#### 3-Terminal Block AC Connector



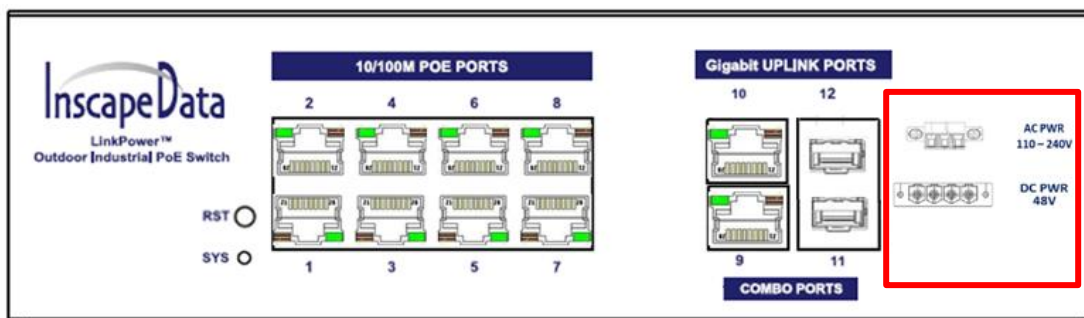
#### 4-Terminal Block DC Connector



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

## 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.

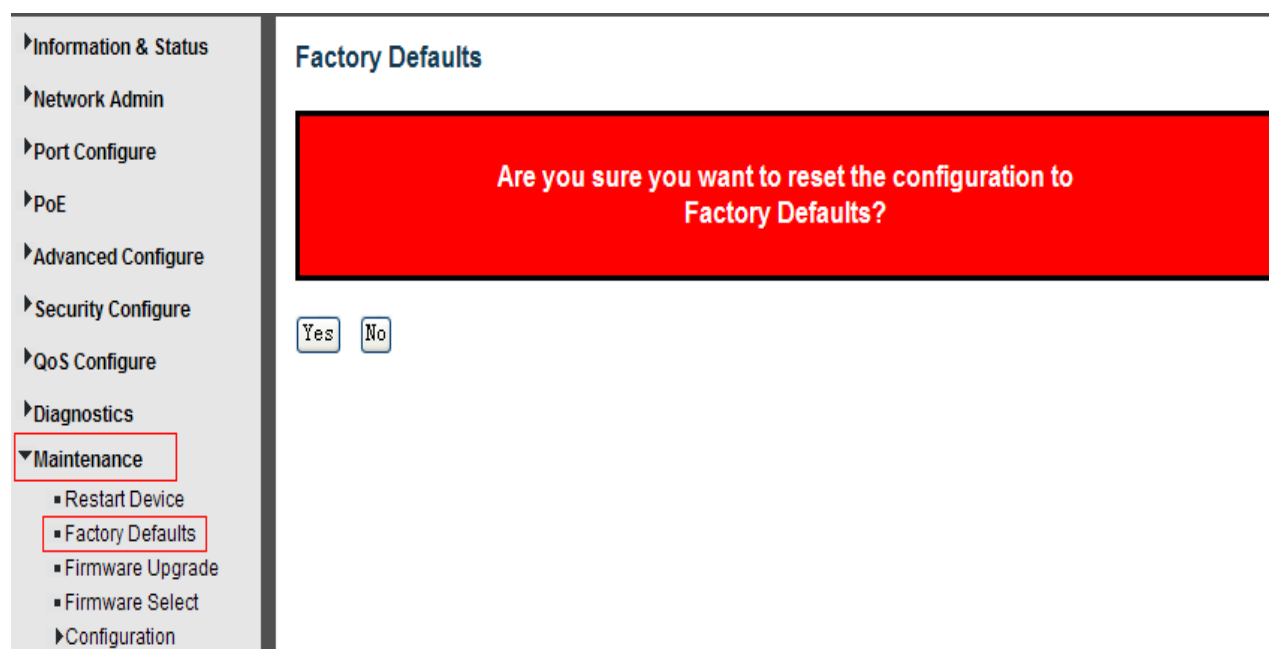
Once the DC power is connected, the DC power functions as backup power. If the AC is not used and the DC power is connected, then the DC power functions as the main power. When the DC power is used as the main power, the actual power required will be based on the total power consumption of the connected 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.

## RESET Switch (System Reset) (Managed Models Only):

There are two ways to reset the system, i.e., software reset and hardware reset, described as follow:

1. **Software Reset:** Login to the Switch via WEB management equipment, IP management by default IP Address: 192.168.2.1, Default login **User Name:** "admin" and **Password:** "system", then click "Maintenance ">"Factory Defaults", the following screen will appear:



Please click "Yes" to restart the switch.

### 2. Hardware Reset:

To perform a hard reset of the system, the Reset Switch is located on the left side of **PoE 1** Ethernet Connector, and please hold and press the RESET Switch for 9 seconds. The system will reset automatically. Please be very cautious about the internal wires and cables and **DO NOT CHANGE or INTERFERE ANY OF THE INTERNAL WIRES AND CABLES TO PREVENT DAMAGES TO THE SYSTEM.**

## 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

MMK0001

Mast Mounting Kit



SFP Duplex 1.25Gbps 3.3V Single-Mode Transceiver



SFP Duplex 1.25Gbps 3.3V Multi-Mode Transceiver

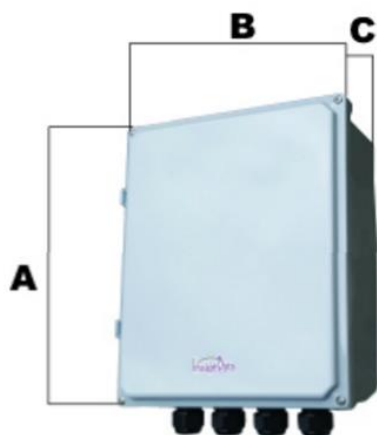
## Product Dimensions:

### Dimensions

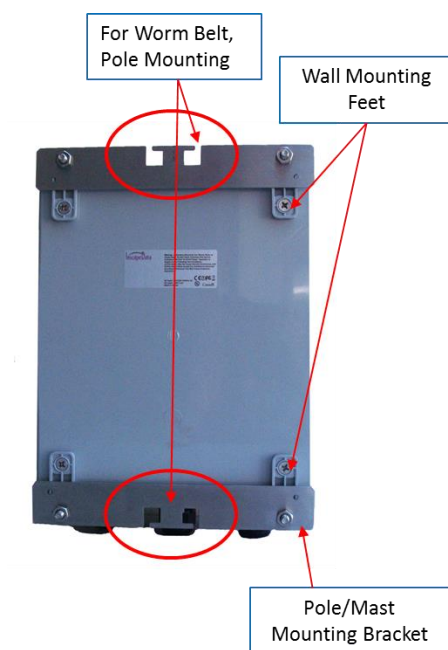
A: 12 inch

B: 10 inch

C: 4 inch



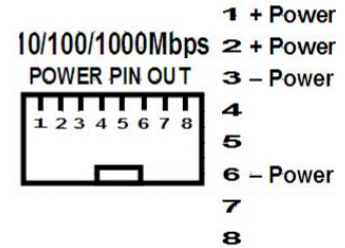
## Wall Mount & Pole Mount :



# Appendix I Technical Specifications

<b>Product Model</b>	LPS1800AF-T1 / 1800AFM-T1 & LPS1800AT-T1 / 1800ATM-T1
<b>Product Name</b>	Outdoor Fast Ethernet Unmanaged/Managed 8-Port 802.3af PoE Switch with 2 Combo Gigabit SFP/RJ45 Uplink Ports
<b>Connector</b>	RJ45 Port: 8x10/100BaseT(X) self-detect, 2 Uplink10/100/1000BaseT(X) & SFP combo port Fiber Port: 2x100/1000Base SFP ports
<b>Switching Performance</b>	Bandwidth: 8.8G (Non-blocking), Priority Queue: 4 Packet Buffer Memory: 1Mbit MAC Address Table Size: 4K Switch Processing Scheme: Store-and-Forward
<b>Network Medium</b>	10BASE-T: Cat3/ 4/ 5 UTP (≤100m) 100BASE-TX: Cat5 or more UTP (≤100m) Single mode (9/125um) fiber transmission, the transmission distance can be up to 25km ( Default dual fiber, can be customized single fiber)
<b>Performance Specifications</b>	MTBF: 300,000 hours Database: Telcordia (Bellcore), GB
<b>Protocols and Standards</b>	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 IEEE 802.1Q: VLAN and GVRP protocols
<b>LEDs Status</b>	PWR, FAULT, 10/100, MSTR/HEAD, CPLR/TAIL, PoE
<b>PoE &amp; Power Supply</b>	Input voltage: 120V ~ 240V AC Output voltage: 48V DC LPS1800AF-T1 & LPS1800AFM-T1 deliver up to 30W and an average of 15.4W per PoE port and is limited to 150W for a total of 8 PoE ports LPS1800AT-T1 & LPS1800ATM-T1 deliver 30W maximum per PoE port and is limited to 240W for a total of 8 PoE ports Support OCP ( Over-Current Protection ) and electronic protection Connection: 3-pin pluggable connecting terminal Power Pin Assignment: 1/2+; 3/6-
<b>Dimensions/ Weight</b>	<b>Enclosure:</b> IP68 protection grade, shell Dimension (LxWxH): 12x10x4 inch, 304.8 x 250.4 x 101.6mm <b>Weight:</b> 9LB, 4KG (Approximated) <b>Installation Method:</b> Wall mount (Standard Accessory) / Mast mount (Optional Accessory)
<b>Working Environment</b>	Operating Temperature: -30℃ ~ +70℃
<b>Industrial Standard</b>	<b>EMI:</b> FCC Part 15 Subpart B Class A, EN 55022 Class A <b>EMS:</b> 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 <b>Traffic Control:</b> NEMATS-2 <b>Mechanical Project:</b> IEC60068-2-6, IEC60068-2-27, IEC60068-2-32 Industrial: IEC 61000-6-2
<b>Safety</b>	CE Mark, Commercial CE/LVD EN60950, RoHS, UL60591-1, UL 94 V-2, UL F1
<b>Warranty</b>	3 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: <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: Main: +1-408-392-9800 Fax: +1-408-392-9812 Monday – Friday (Except Holidays and Weekends) 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.