PLANET
Networking & Communication

Product Specifications

Industrial Single-Port Multi-Gigabit 802.3bt PoE++ Injector

IPOE-171-60W

Version 3.0

Change History:

Revision	Date	Author	Change List
Version 1.0	2018/05/15	Keithy Lin	Initial release
Version 2.0	2019/03/27	Keithy Lin	1. Remove Ultral PoE and modify the description of Legacy mode. 2. Power Requirements change to DC 52-56V.
Version 3.0	2019/12/13	Keithy Lin	1. Support 2.5G/5G Ethernet ports. 2. Support PoE Force mode.

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Reviewed by:	Jonas Yang	Approved by:	Kent Kang

1. PRODUCT DESCRIPTION

Advanced Industrial Multi-Gigabit and 802.3bt PoE++ Network Solution

PLANET IPOE-171-60W is a **Single-Port, Industrial 802.3bt Power over Ethernet Injector** with a maximum of up to **60 watts** of power output over Ethernet cables. It is also equipped with two **100M/1G/2.5G/5GBASE-T** RJ45 copper interfaces to handle extremely large amounts of data transmission.

It is designed specifically to meet the demand for growing higher power required network equipment such as:

► Lighting
► All-in-one touch PC
► Remote digital signage display
► Other network devices that need higher power to work normally

The IPOE-171-60W delivers the Ethernet digital data with DC power over the twisted-pair cables as a 60-watt Power over Ethernet Injector, and the connected ultra Power over Ethernet splitter, the IPOE-173S, will separate the digital data and the power into three optional outputs (12V/24V DC) with distance up to 100 meters.

60 watts of Power over 4-pair UTP

Instead of delivering power over 2-pair twisted UTP – be it end-span (Pins 1, 2, 3 and 6) or mid-span (Pins 4, 5, 7 and 8), the IPOE-171-60W provides the capability to source up to 60 watts of power by using all the four pairs of standard Cat. 5e/6 Ethernet cabling.
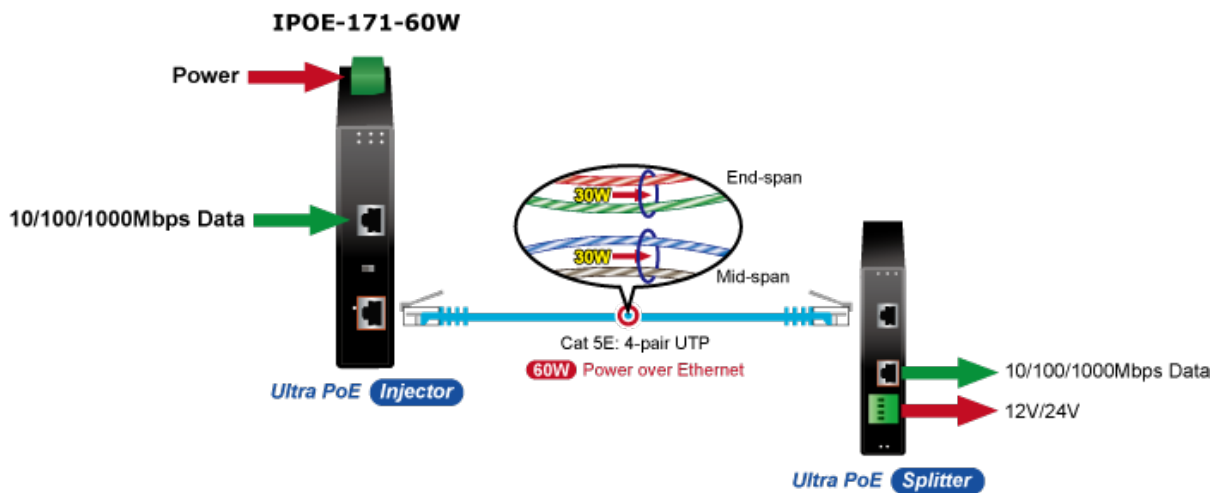
PoE Standard	IEEE 802.3af (802.3at Type 1)	IEEE 802.3at (802.3at Type 2)	IEEE 802.3bt (802.3bt Type 3)
Maximum Power delivered by PSE	15.4 watts	30 watts	**60 watts**
Power Available at PD	12.95 watts	25.5 watts	**51 watts**
Voltage Range	48V	50~57V	**50~57V**
Twisted-pair Used	2-pair		**4-pair**

Supported Modes	End-span or Mid-span	**End-span + Mid-span**
Supported Cabling	Cat. 3/5/5e/6/6A	**Cat. 5e/6/6A**

Intelligent LED Indicator for Power Input and Real-time PoE Usage

The IPOE-171-60W helps users to monitor the current status of power input and PoE power usage easily and efficiently via its advanced LED indication. "Power Input" allows user to know the status of power input. "PoE Power Usage" displayed on the panel of the IPOE-171-60W has three LED indicators of different power usages. Via the power usage LED, the IPOE-171-60W enables the administrator to monitor the status of the power usage of the connected PDs in real time.


Power Input and PoE Power Usage Display

High Compatibility and Compact Size Design

It is easy to install the PoE injector by way of **Plug and Play** and comes with simple troubleshooting, making it easy for industrial users to own it. Besides, the IPOE-171-60W comes in compact housing, and provides two DC redundant power inputs, two power LEDs, fault LED and PoE-in-Use LED. Two RJ45 ports -- Ethernet port and Ethernet + DC port – are on the front panel.

Moreover, the IPOE-171-60W, when switched to the Legacy mode and Force mode, provides power to those PD devices which do not fully follow the IEEE 802.3at/bt standard. It is helpful to enhance the compatibility of IPOE-171-60W with other PDs.

Simply plug in the Ethernet cables and DC power wire, and the IPOE-171-60W is ready to provide high-speed network communication and the 802.3bt PoE injector functions simultaneously with no need of software configuration.

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Redundant Power of 48~56V DC Input to 45~53V DC PoE Output

10/100/1000Mbps Ethernet Data Rate
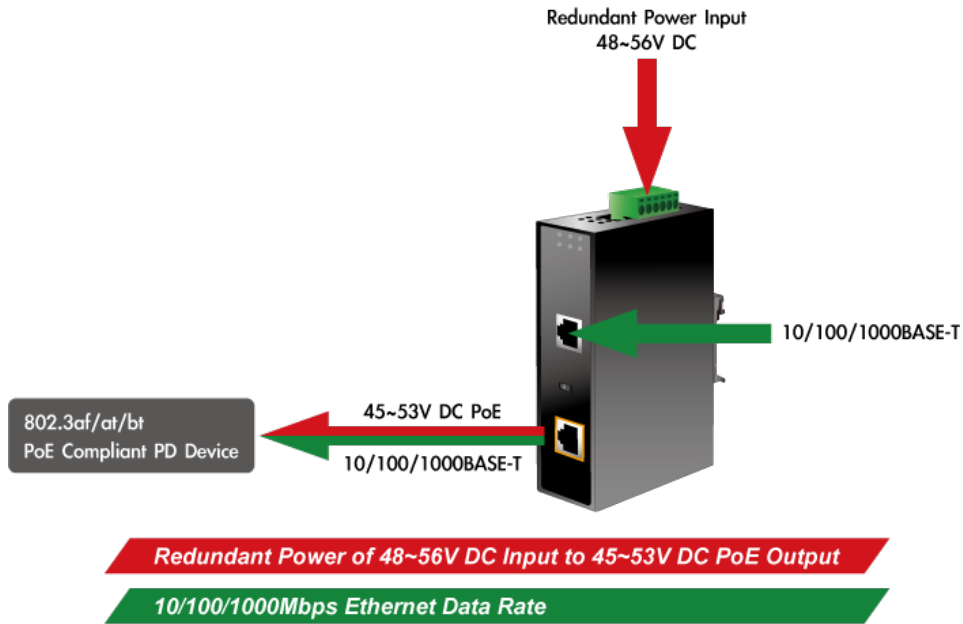
## Quick and Easy Cabling Installation for PoE Network Deployment

Backward compatible with both 802.3af/at PoE standards, the IPOE-171-60W allows users to flexibly deploy standard and high powered devices to transfer data and power simultaneously through one Ethernet cable for up to 100 meters. The IPOE-171-60W frees the security IP camera and wireless AP deployment from restrictions of power outlet locations and the additional AC wiring. It thus reduces cables and eliminates the need for electrical outlets on the wall, ceiling or any unreachable place, and most of all, it reduces installation time.
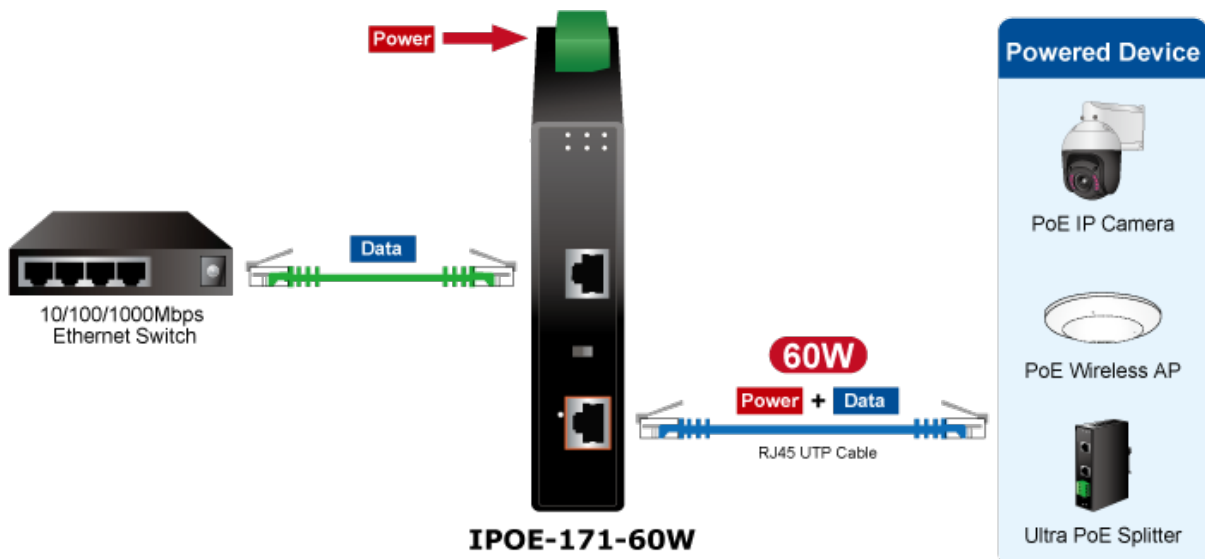
Stable Operating Performance under Difficult Environments

Today, the PoE demand expands from commercial applications to many critical networks in the harsh environment. The IPOE-171 series will be one of the ideal solutions that provide a high level of immunity against electromagnetic interference and heavy electrical surges typical of environments found on plant floors or in curb-side traffic control cabinets. The IPOE-171 series can operate stably under temperature range from

-40 to 75 degrees C which enables the users to conveniently apply the device in almost any location of the network. The IPOE-171 series is also equipped with a compact IP30 standard metal case that allows either DIN-rail or wall mounting for efficient use of cabinet space.
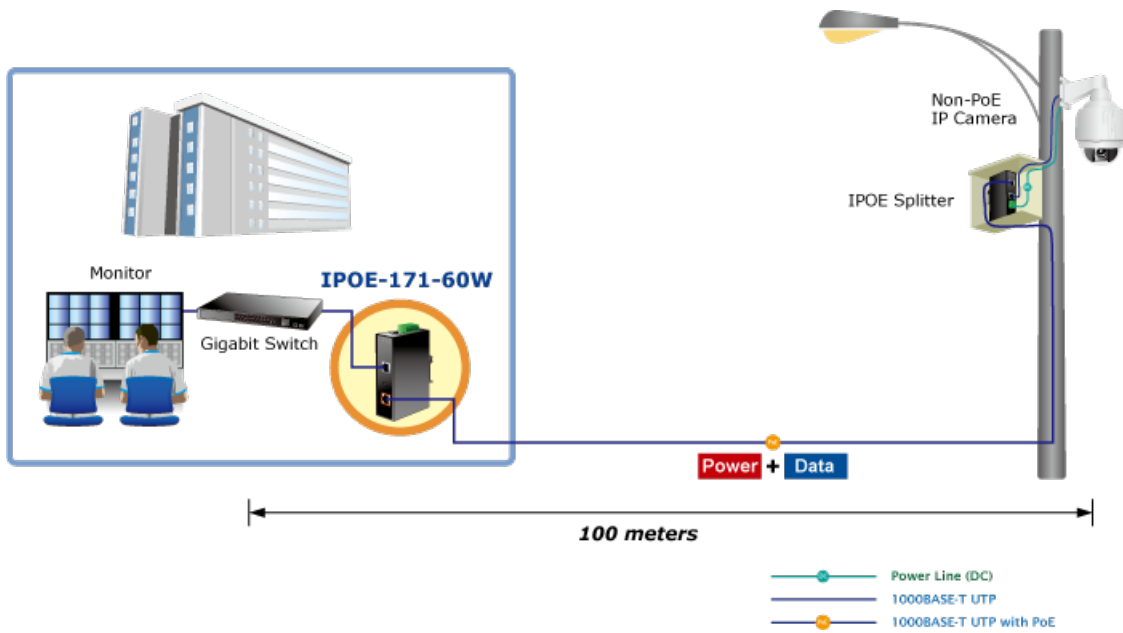
2. PRODUCT FEATURES

➢Interface

- 2 Multi-Gigabit RJ45 interfaces
    - 1-port **Data + Power output**
    - 1-port **Data input**
- 1 terminal block for master and slave power input. (Power Range: 48 ~ 56V DC redundant power)
- 1 PoE mode (standard/legacy and force) DIP switch

➢Power over Ethernet

- Complies with IEEE 802.3at/bt PoE end-span/mid-span PSE
- Supports PoE power up to 60 watts for PoE port
- Auto-detection of PoE IEEE 802.3at/bt equipment and devices from being damaged by incorrect installation
- Monitors the status of the total PoE usage in real time
- Remote power feeding up to 100m
- Auto-detection of DC input voltage

➢Hardware

- IP30 slim-type metal case
- LED indicators for Power LED , PoE-in-Use LED and PoE Usage LED

➢Industrial Case and Installation

- Solid wall mount or DIN-rail mount installation
- Supports 6KV DC Ethernet ESD protection
- -40 to 75 degrees C operating temperature

3. PRODUCT SPECIFICATIONS

3.1 MAIN COMPONENTS

PoE Controller	Microsemi PD69200C	x 1
PoE PSE	Microsemi PD69204T4ILQ-TR-LE	x 1
MCU	NUVOTON W78LE54	x 1

3.2 FUNCTION SPECIFICATIONS

Product	IPOE-171-60W
Hardware Specifications	
Interface — **Input Port**	1 x RJ45 STP Data In
Interface — **Output Port**	1 x RJ45 STP PoE (Data + Power) Out
Interface — **Input Power Terminal Block**	1
Network Cable*	Twisted-pair cable up to 100 meters (328ft) 10BASE-T: 4-pair UTP Cat. 3, 4, 5, 5e, 6, 6A 100BASE-TX: 4-pair UTP Cat. 5, 5e, 6, 6A 1G/2.5G: 4-pair UTP Cat. 5e, 6, 6A 5G: 4-pair UTP Cat. 6, 6A
LED Indicators	System: Power 1 (**Green**), Power 2 (**Green**), Fault (**Red**) PoE Port: PoE-in-Use x 1 (**Amber**) PoE Usage: PoE Usage x 3 (**Amber**)
Data Rate	10M/100M/1G/2.5G/5Gbps
ESD Protection	6KV DC
Enclosure	Metal case
Dimensions (W x D x H)	135 x 87.8 x 32 mm
Weight	430g
Power Requirements	DC 48~56V, 2A max.
Unit Output Voltage	DC 45~53V
Power Consumption	75 watts max.
No. of devices that can be powered	1
Installation	DIN-rail kit or wall-mount ear
Alarm	Provides one relay output for power failure Alarm Relay current carry ability: 1A @ DC 24V
Enclosure	IP30 slim type metal case
Power over Ethernet	
PoE Standard	IEEE 802.3at/bt PSE
PoE Power Output Budget	DC 50~53V / 60-watt PoE via 4-pair DC 45~53V / 30-watt PoE via 2-pair
PoE Power Output	Max. 60W @1 m cable Max. 51W @100m cable
PoE Power Supply Type	End-span + Mid-span

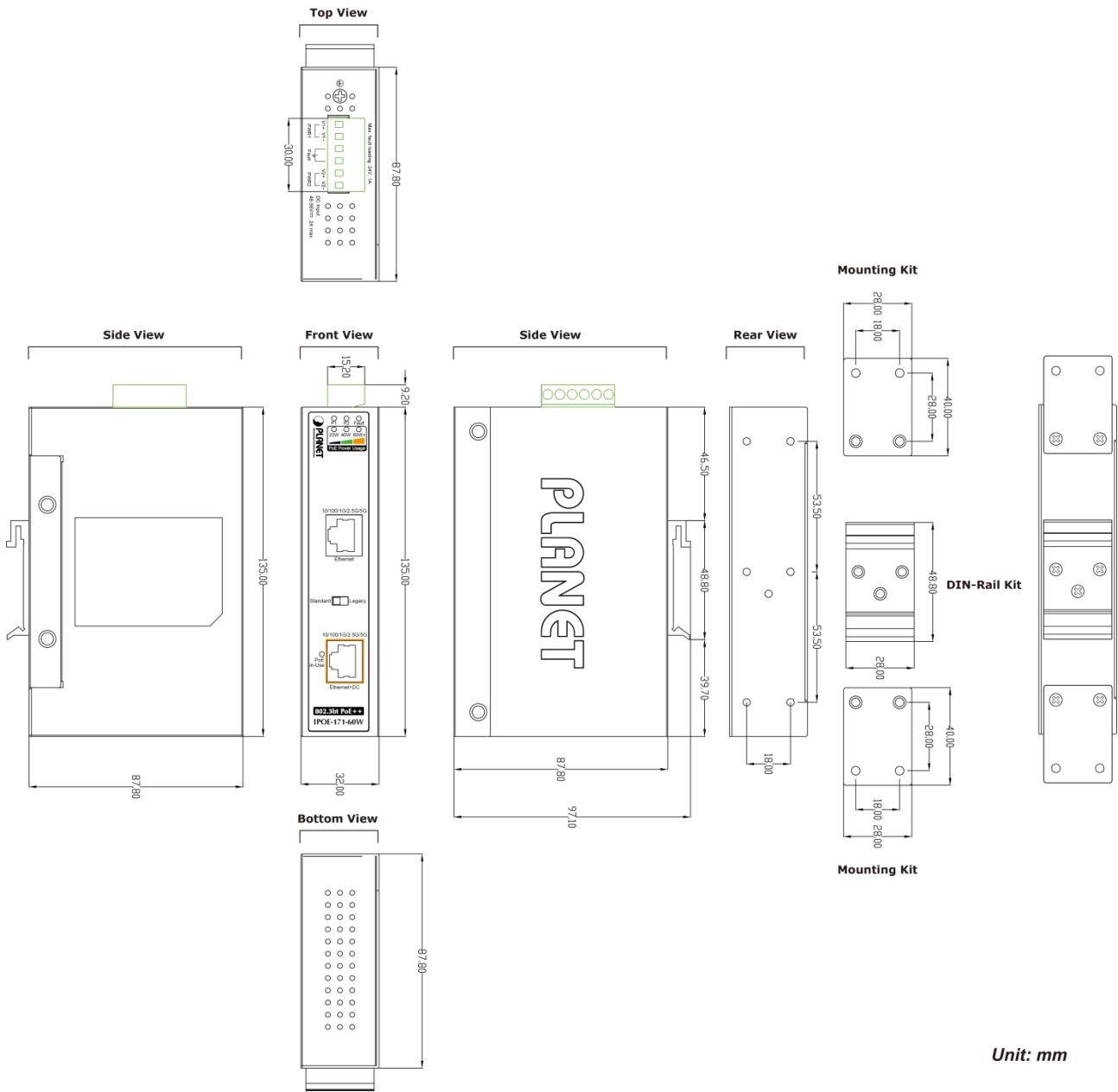| Power Pin Assignment	Pair 1 End-span: 1/2 (-), 3/6 (+) Pair 2 Mid-span: 4/5 (+), 7/8 (-)
PoE Mode	Standard mode Legacy and Force mode
Standards Conformance	
Standards Compliance	IEEE 802.3 10BASE-T Ethernet IEEE 802.3u 100BASE-TX Fast Ethernet IEEE 802.3ab 1000BASE-T Gigabit Ethernet IEEE 802.3bz 2.5G/5GBASE-T IEEE 802.3bt 4-pair Power over Ethernet IEEE 802.3at Power over Ethernet Plus
Regulatory Compliance	FCC Part 15 Class A, CE
Environment	
Operating Temperature	-40 ~ 75 degrees C
Storage Temperature	-40 ~ 85 degrees C
Operating Humidity	5 ~ 90%, relative humidity, non-condensing
Storage Humidity	5 ~ 90%, relative humidity, non-condensing
Standard Accessories	
Package Contents	● IPOE-171-60W ● User's manual ● Wall-mount kit ● Dust cap

3.3 PHYSICAL SPECIFICATIONS:
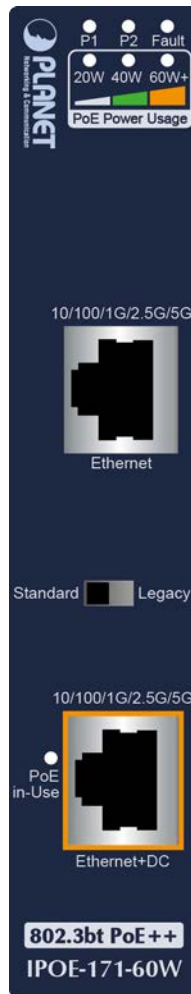
■ **Dimensions (W x D x H)**
   135 x 87.8 x 32 mm

■ **Weight**
   430g

■ **Diagram**

Unit: mm

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■ **Front Panel**

■ **LED Indicators**

LED	Color	Function
P1	**Green**	Lights to indicate power 1 has power.
P2	**Green**	Lights to indicate power 2 has power.
FAULT	**Red**	Lights to indicate either power 1 or power 2 has no power.
PoE-in-Use	**Amber**	Lights to indicate the device is providing PoE power.
PoE Usage	**Amber**	● **Monitor DC input voltage:** When user powers on IPOE-171-60W, the injector will detect the DC input voltage and then PoE Usage LED will flash three times. 20W: Flashing three times means the DC input voltage is 48~50.9V. 40W: Flashing three times means the DC input voltage is 51~52.9V. 60W+: Flashing three times means the DC input voltage is 53~56V. ● **Monitor power usage:**

		20W:
		1. Off to indicate the PoE usage is less than 9W.
		2. Blinks to indicate that the PoE usage is around 10W to 19W.
		3. Lights to indicate the PoE usage is more than 20W.
		40W:
		1. Blinks to indicate that the PoE usage is around 30W to 39W.
		2. Lights to indicate the PoE usage is more than 40W.
		60W+:
		1. Blinks to indicate that the PoE usage is around 50W to 59W.
		2. Lights to indicate the PoE usage is at the maximum.

■ **PoE Mode**

PoE Mode	Description
Standard (Default)	The standard mode is chosen to provide power to the PD devices that follow the IEEE 802.3at/bt standard.
Legacy	The legacy mode supports PoH and Ultra PoE. It is chosen to provide power to the PD devices that do not fully follow the IEEE 802.3at/bt standard.
Force	If the output power of injector is less than 1 watt when in the Legacy mode, after 20 seconds, the Force mode will be enabled. When the Force mode is enabled, it will provide PD with a maximum of 60 watts. If the output power of injector is less than 1 watt when in the Force mode, after 2 seconds, the Legacy mode will be enabled.

3.4 ENVIRONMENTAL SPECIFICATIONS

■ **Operating:**

 Temperature: -40 ~75 degrees C

 Relative Humidity: 5% ~ 90% (non-condensing)

■ **Storage:**

 Temperature: -40 ~85 degrees C
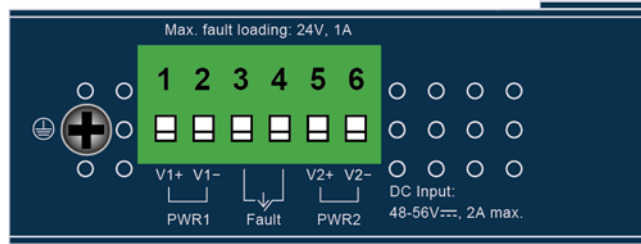
 Relative Humidity: 5% ~ 90% (non-condensing)

3.5 ELECTRICAL SPECIFICATIONS

Power over Ethernet Capability

■ **Power Requirement:** 48~56V DC, 2A max.

■ **Power Consumption:**

	56V DC Input
System On (without PoE output)	1.68 Watts / 5.73 BTU
60W PoE Output (with 100 meters UTP cable)	72 Watts / 245.67 BTU

Power Input PIN Definition

1	2	3	4	5	6
Power 1		Fault		Power 2	
+	-			+	-

3.6   REGULATORY COMPLIANCE

FCC Part 15 Class A, CE

3.7   RELIABILITY

MTBF > 50,000Hrs @ 25 degrees C

3.8   BASIC PACKAGING

- ■   IPOE-171-60W x 1
- ■   User's manual x 1
- ■   Wall-mount kit x 1
- ■   Dust cap x 2

3.9   PACKING INFORMATION

Box Dimensions (W x D x H):　　205 x 144 x 46 mm

Weight:　　550g

Carton Dimensions (W x D x H):　　435 x 325 x 280 mm

Carton Weight:　　11.5kg

Quantity:　　20pcs in one carton