Industrial Single-Port 10/100/1000Mbps 802.3bt PoE Injector

IPOE-171 Series

User's Manual

Copyright

Trademarks

Disclaimer

PLANET Technology does not warrant that the hardware will work properly in all environments and applications, and makes no warranty and representation, either implied or expressed, with respect to the quality, performance, merchantability, or fitness for a particular purpose.

PLANET has made every effort to ensure that this User's Manual is accurate; PLANET disclaims liability for any inaccuracies or omissions that may have occurred. Information in this User's Manual is subject to change without notice and does not represent a commitment on the part of PLANET. PLANET assumes no responsibility for any inaccuracies that may be contained in this User's Manual. PLANET makes no commitment to update or keep current the information in this User's

Manual, and reserves the right to make improvements to this User's Manual and/or to the products described in this User's Manual, at any time without notice. If you find information in this manual that is incorrect, misleading, or incomplete, we would appreciate your comments and suggestions.

FCC Warning

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.

CE Mark 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.

WEEE Warning

To avoid the potential effects on the environment and human health as a result of the presence of hazardous substances in electrical and electronic equipment, end users of electrical and electronic equipment should understand the meaning of the crossed-out wheeled bin symbol. Do not dispose of WEEE as unsorted municipal waste and have to collect such WEEE separately.

Revision

PLANET IPOE-171 Series User's Manual

MODEL: IPOE-171-60W, IPOE-171-95W

REVISION: 1.0 (April, 2018)

Part No.: 2350-AF0510-000

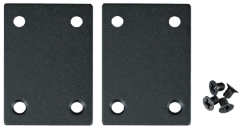
Table of Contents

1. Introduction

Thank you for purchasing PLANET IPOE-171 Single-port 10/100/1000Mbps series injector.

Model	LAN Port Speed	PoE Standard	PoE Budget
IPOE-171-60W	10/100/1000Mbps	IEEE 802.3af/at/bt	60 watts
IPOE-171-95W	10/100/1000Mbps	IEEE 802.3af/at/bt	95 watts

Please unpack the box of the device carefully, and the box should contain the following items:

802.3bt PoE injector x 1	User's manual x 1
	
Dust cap x 2	Wall-mount Kit x 1
	

If any item is found missing or damaged, please contact your local reseller for replacement.

2. Product Features

■ Interface

- ◆ 2 RJ45 interfaces
  - ➢ 1-port **Data + Power output**
  - ➢ 1-port **Data input**
- ◆ 1 terminal block for master and slave power input
  - ➢ IPOE-171-60W Power Range: 48 ~ 56V DC redundant power
  - ➢ IPOE-171-95W Power Range: 24 ~ 48V DC redundant power

■ Power over Ethernet

- ◆ Complies with IEEE 802.3af/at/bt PoE end-span/mid-span PSE
- ◆ Supports PoE power up to 60/95 watts for PoE port
- ◆ Auto-detection of PoE IEEE 802.3af/at/bt equipment and devices from being damaged by incorrect installation
- ◆ Monitor the status of the total PoE usage in real time
- ◆ Remote power feeding up to 100m
- ◆ IPOE-171-60W with power on voltage indication

■ 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

■ Standard Compliance

- ◆ IEEE 802.3 10BASE-T
- ◆ IEEE 802.3u 100BASE-TX

- IEEE 802.3ab 1000BASE-T
- IEEE 802.3bt 4-pair Power over Ethernet
- IEEE 802.3at Power over Ethernet Plus
- IEEE 802.3af Power over Ethernet
- FCC Part 15 Class A, CE

Note

PSE (Power Sourcing Equipment) is a device (switch, or hub for instance) that provides power in a PoE setup. Maximum allowed continuous output power per such device in IEEE 802.3af is 15.4W, in IEEE 802.3at is 30W, and in IEEE 802.3bt is 60~95W.

PD (Powered Device) is a PoE-enabled terminal, such as PoE IP phone, PoE IP camera, PoE wireless access point or other, that consumes power from **PSE**.

3. Product Specifications

Product		IPOE-171-60W	IPOE-171-95W
Hardware Specifications			
Interface	Input Port	1 x RJ45 STP Data In	
	Output Port	1 x RJ45 STP PoE (Data + Power) Out	
	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 100BASE-TX: 4-pair UTP Cat. 5, 5e, 6 1000BASE-T: 4-pair UTP Cat. 5e, 6	
LED Indicator		System: Power 1 (Green), Power 2 (Green), Fault (Red) PoE Port: PoE-in-Use x 1 (Orange) PoE Usage: PoE Usage x 3 (Orange)	
Data Rate		10/100/1000Mbps	
Dimensions (W x D x H)		135 x 87.8 x 32 mm	
Weight		430g	470g
Power Requirements		DC 48~56V, 2A max.	DC 24~48V, 5A max.
Unit Output Voltage		DC 45~53V	DC 54V
Power Consumption		75 watts max.	120 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 802.3af/at/bt Ultra PoE PSE	

PoE Power Output Budget	DC 50~54V / 60-watt PoE via 4-pair DC 48~49V / 30-watt PoE via 2-pair	DC 54V / 95-watt PoE via 4-pair DC 54V / 30-watt PoE via 2-pair
PoE Power Output	Max. 60W@1 m cable	Max. 89.5W@1 m 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:** To provide power to the PD devices that follow the IEEE 802.3af/at/bt standard. **Legacy:** To provide power to the PD devices that do not fully follow the IEEE 802.3af/at/bt standard.	
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 802.3bt 4-pair Power over Ethernet IEEE 802.3at Power over Ethernet Plus IEEE 802.3af Power over Ethernet	
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	

Caution

1. As IEEE 802.3bt device provides high power, please use high-quality network cable and RJ45 connector.
2. The max. PoE output power depends on the cable length, the quality of cable, and DC input voltage.

4. Product Outlook

4.1 Physical Dimensions (example on IPOE-171A-95W)

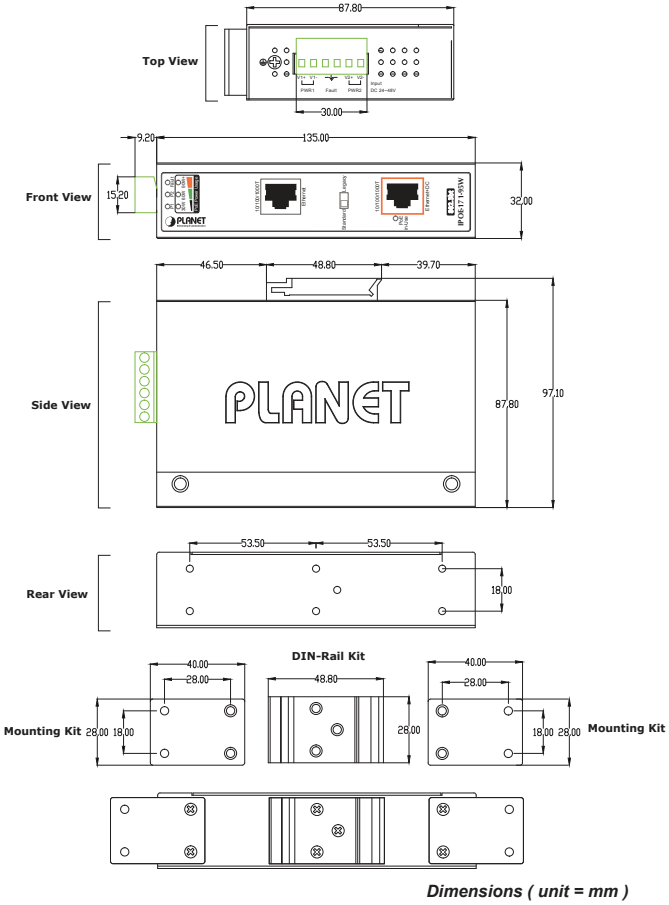


Figure 1: IPOE-171-95W dimensions

4.2 Product Outlook

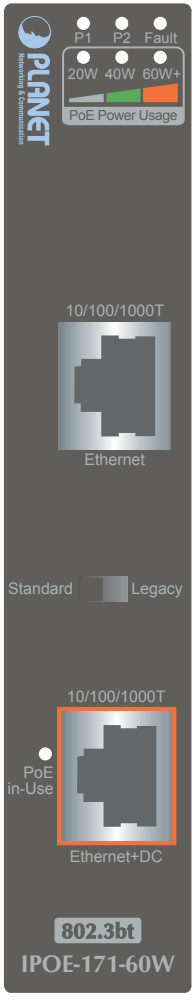


Figure 2: IPOE-171-60W outlook

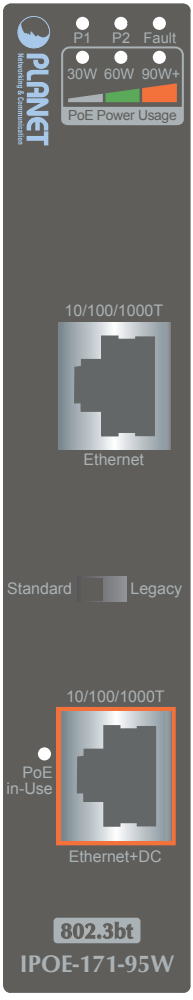


Figure 3: IPOE-171-95W outlook

■ IPOE-171-60W 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	Orange	Lights to indicate the device is providing PoE power.
PoE Usage	Orange	● **Monitor DC input voltage:** When user powers on POE-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 around 20W to 29W. **40W:** 1. Blinks to indicate that the PoE usage is around 30W to 39W. 2. Lights to indicate the PoE usage is around 40W to 49W. **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.

■ IPOE-171-95W 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	Orange	Lights to indicate the device is providing PoE power.
PoE Usage	Orange	**30W:** 1. Off to indicate the PoE usage is less than 14W. 2. Blinks to indicate that the PoE usage is around 15W to 29W. 3. Lights to indicate the PoE usage is around 30W to 44W. **60W:** 1. Blinks to indicate that the PoE usage is around 45W to 59W. 2. Lights to indicate the PoE usage is around 60W to 74W. **90W+:** 1. Blinks to indicate that the PoE usage is around 75W to 89W. 2. Lights to indicate the PoE usage is at the maximum.

■ **PoE Mode of IPOE-171 series:**

PoE Mode	Description
Standard (Default)	The standard mode is chosen to provide power to the PD devices that follow the IEEE 802.3af/at/bt standard.
Legacy	The legacy mode is chosen to provide power to the PD devices that do not fully follow the IEEE 802.3af/at/bt standard.

Note	After changing the PoE mode, please power off and then on the PoE injector to make the change effective.

4.3 Industrial PoE+ Injector Upper Panel

The upper panel of the IPOE-171 series has one terminal block connector where there are two DC power inputs.

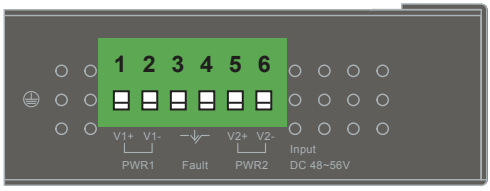


Figure 4: IPOE-171-60W upper panel.

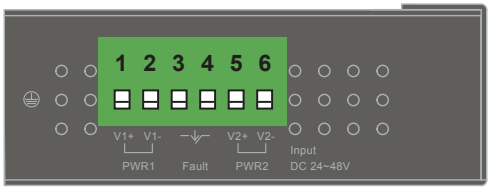


Figure 5: IPOE-171-95W upper panel.

4.4 Wiring the Power Inputs

The 6-contact terminal block connector on the top panel of the IPOE-171 series is used for two DC redundant power inputs. Please follow the steps below to insert the power wire.

Step 1: Insert Positive / Negative DC power wires into Contacts 1 and 2 for POWER 1, or 5 and 6 for POWER 2.

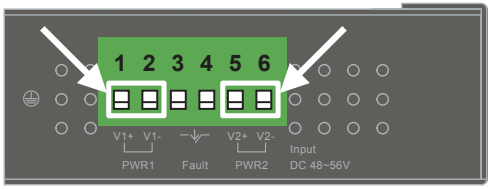


Figure 6: Power input pins.

Step 2: Tighten the wire-clamp screws for preventing the wires from loosening.

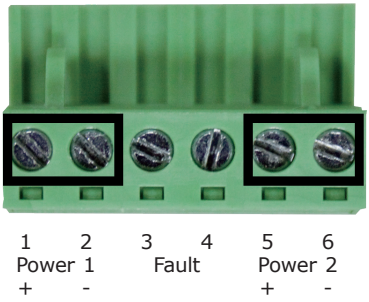


Figure 7: PWR1 & PWR2 Pins of Terminal Block.

Note

1. The wire gauge for the terminal block should be in the range between 12 ~ 24 AWG.
2. As the DC input connector of the IPOE-171 series is polarity protected, connecting Positive / Negative DC power wires to the wrong pins will not damage the unit.

4.5 Wiring the Fault Alarm Contact

The fault alarm contacts are in the middle of the terminal block connector as the picture shows below. After inserting the wires, the IPOE-171 series will detect the fault status of the power failure and then form an open circuit. The following illustration shows an application example for wiring the fault alarm contacts.

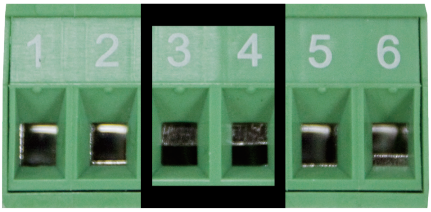


Figure 8: Fault Pin of Terminal Block.

Note

1. The wire gauge for the terminal block should be in the range between 12 ~ 24 AWG.
2. Alarm relay circuit accepts up to 24V, max. 1A currents.

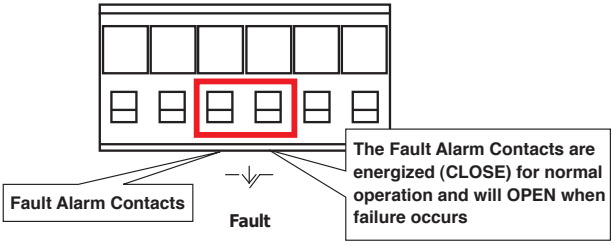


Figure 9: Fault Alarm Contact

5. Mounting Installation

This section describes how to install the industrial device and make connections to it. Please read the following sections and perform the procedures in the order being presented.

Note	In the installation steps below, this manual uses PLANET IGS-801 8-port Industrial Gigabit Switch as an example. The steps for PLANET Industrial Slim-type Switch, Industrial Media/Serial Converter and Industrial PoE devices are similar.

5.1 DIN-rail Mounting

The DIN-rail bracket is already screwed on the industrial device. Refer to the following steps on how to install the industrial device:

Step 1: Lightly place the upper bracket found on the back of the IPOE-171 into DIN rail and push the unit down till the lower bracket is locked into the track.

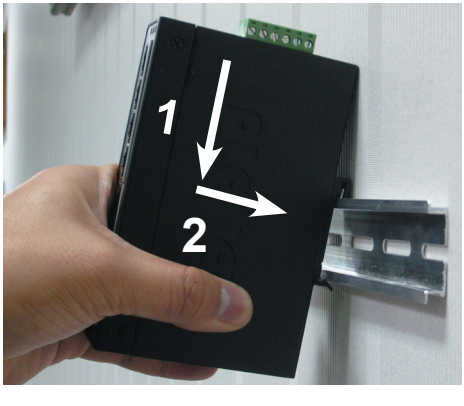


Figure 10: Mounting industrial device on DIN rail.

Step 2: The DIN-rail bracket should be tightly on the track.

Figure 11: DIN-rail mount industrial device

5.2 Removing Device from DIN Rail

Step 1: Please refer to following procedure to remove the industrial device from the track.

Figure 12: Removing industrial device from DIN rail

Step 2: Slightly push the unit down and lightly pull its bottom out to completely remove it from the track.

5.3 Wall-mount Plate Mounting

To install the industrial device on the wall, please follow the instructions described below.

Step 1: Unscrew the DIN-rail bracket to be removed from the industrial device.

Step 2: Place the wall-mount plate on the rear panel of the industrial device.

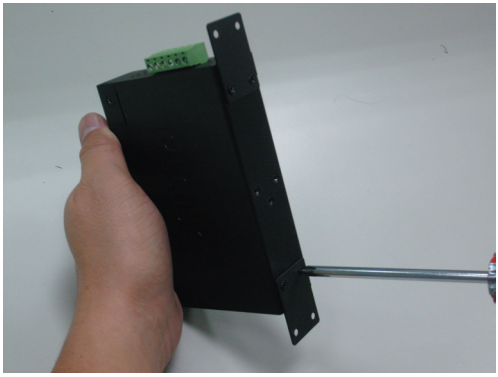


Figure 13: Attach brackets to the industrial device.

Step 3: Screw the wall-mount plate on the industrial device.

Step 4: Use the hook holes at the corners of the wall-mount plate to hang the industrial device on the wall.

Step 5: To remove the wall-mount plate, reverse the above steps.

6. Hardware Installation

The following section describes the hardware features of the IPOE-171 series. Before connecting any network device to it, please read this chapter carefully.

6.1 Before Installation

Before your installation, it is recommended to check your network environment. If there is any IEEE 802.3bt device that needs to be powered on and works normally, the IPOE-171 series is the solution that supplies power to this Ethernet device conveniently and easily. If there is difficulty in finding a power socket for the AC-DC connection to your non-IEEE 802.3af/at/bt networked device, the IPOE-171 series with POE-172S / IPOE-171S can supply DC power to this Ethernet device conveniently and easily.


Note

1. In the installation steps below, this manual uses the IPOE-171-60W as an example. Except the input voltage, the steps for the IPOE-171-95W are similar.
2. Note that the input power range of the IPOE-171-60W is **48 ~ 56V DC** and the input power range of IPOE-171-95W is **24 ~ 48V DC**.

6.2 IPOE-171-60W Installation

1. Connect the power ranging from 48V DC to 56V DC to the 6-pin terminal block of the IPOE-171-60W. The power LED will be steadily on.
2. Connect a standard Ethernet cable from an Ethernet switch or PC workstation to **"Ethernet"** port of the IPOE-171-60W.
3. Connect the long cable to the **"Ethernet+DC"** port.

4. Connect with IEEE 802.3af/at/bt devices. Due to the capability of IEEE 802.3af/at/bt Power over Ethernet, the IPOE-171-60W can directly connect with any IEEE 802.3af/at/bt end-nodes, such as PTZ (Pan, Tilt & Zoom) IP cameras, PTZ speed dome cameras, color touch screens, Voice over IP (VoIP) telephones and multi-channel wireless LAN access points which support IEEE 802.3af/at/bt In-line Power over Ethernet port.

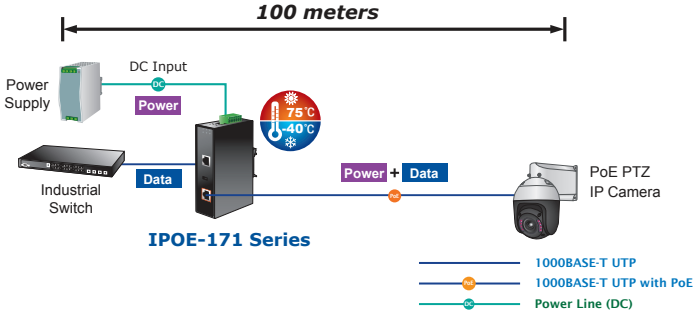


Figure 14: Connecting architecture with IEEE 802.3af/at/bt device

Once the IPOE-171-60W detects the existence of an IEEE 802.3af/at/bt device, the **PoE-in-Use** LED indicator will be steadily on to show it is providing power.

Note

1. According to IEEE 802.3af/at/bt Power over Ethernet, the IPOE-171-60W will not inject power to the cable if not connected to IEEE 802.3af/at/bt device.
2. Depending on the length of cable, the PoE power which PD receives is different.

6.3 IPOE-171-60W and IPOE-171S Installation

1. Adjust proper DC power output and connect wire from **"Power Output"** of IPOE-171S to remote device.
2. Connect the power ranging from 48V DC to 56V DC to the 6-pin terminal block of the IPOE-171-60W. The power LED will be steadily on.
3. Connect a standard Ethernet cable from an Ethernet switch or PC workstation to the **"Ethernet"** port of the IPOE-171-60W.
4. Connect a standard Ethernet cable from **"Ethernet+DC"** port of the IPOE-171-60W to "PoE In" port of the IPOE-171S. The **"PWR"** and **"60W"** LEDs of the IPOE-171S and the **"PoE-in-Use"** of the IPOE-171-60W will light up continuously.
5. Connect a standard Ethernet cable from the **"Ethernet"** port of the IPOE-171S to the remote Ethernet device.
6. The remote device will be turned on and connected.

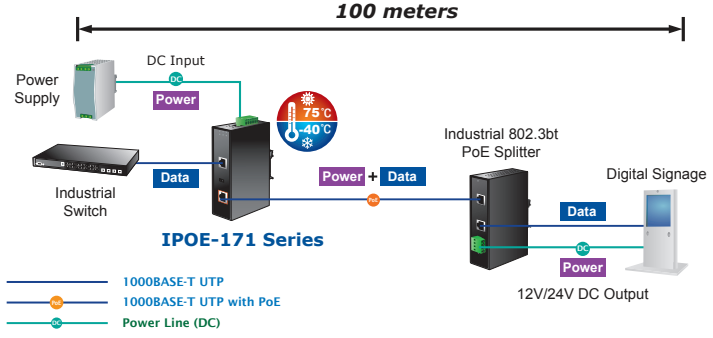


Figure 15: Connected Architecture of IPOE-171-60W and IPOE-171S

Note	Please ensure the IPOE-171S output voltage is correct before applying power to remote device.

6.4 IPOE-171-60W and IPOE-E172 Installation

1. Connect the power ranging from 48V DC to 56V DC to the 6-pin terminal block of the IPOE-171-60W. The power LED will be steadily on.

2. Connect a standard Ethernet cable from an Ethernet switch or PC workstation to the **"Ethernet"** port of the IPOE-171-60W.

3. Connect a standard Ethernet cable from the **"Ethernet+DC"** port of the IPOE-171-60W to the **"PoE IN"** port of the IPOE-E172.

4. The IPOE-171-60W delivers both Ethernet data and PoE power over UTP cable to the IPOE-E172 and the **"POE-in-Use"** LED of IPOE-171-60W and **"PWR"** LED of IPOE-E172 will light up continuously.

5. Connect the additional standard Ethernet cable that will be used for connecting to the remote powered device (PD) to the **"PoE Out"** port of the IPOE-E172.

6. The **"PoE Out"** port is also the power injectors which transmit DC voltage to the standard network cable and transfer data and power simultaneously between the IPOE-172 and PD.

7. Once the IPOE-E172 detects the existence of an IEEE 802.3af/at/bt device, the **"PoE-in-Use"** LED indicator will be steadily ON to show it is providing power.

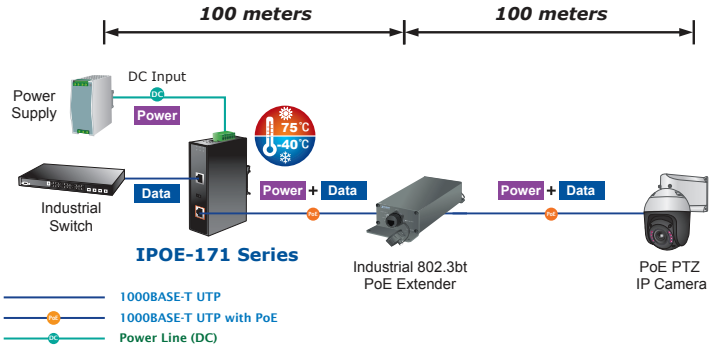


Figure 16: Connected Architecture of IPOE-171-60W and IPOE-E172

Note

Depending on the length of cable, the PoE power which PD receives is different.

7. Customer Support

Thank you for purchasing PLANET products. You can browse our online FAQ resource at the PLANET Web site first to check if it could solve your issue. If you need more support information, please contact PLANET PoE support team.

PLANET online FAQs:
http://www.planet.com.tw/en/support/faq?method=category&c1=2

PoE support team mail address:
support_poe@planet.com.tw

EC Declaration of Conformity

For the following equipment:

*Type of Product: Industrial Single-Port 10/100/1000Mbps 802.3bt PoE Injector
*Model Number: IPOE-171-60W/IPOE-171-95W

* Produced by:
Manufacturer's Name : **Planet Technology Corp.**
Manufacturer's Address: 10F., No.96, Minquan Rd., Xindian Dist., New Taipei City 231, Taiwan

is herewith confirmed to comply with the requirements set out in the Council Directive on the Approximation of the Laws of the Member States relating to Electromagnetic Compatibility Directive on 2014/30/EU.
For the evaluation regarding the EMC, the following standards were applied:

EN55032	(2015)
EN 61000-3-2	(2014)
EN 61000-3-3	(2013)
EN55024	(2010+A1:2015)
IEC 61000-4-2	(2008)
IEC 61000-4-3	(2006+A1:2007+A2:2010)
IEC 61000-4-4	(2012)
IEC 61000-4-5	(2014)
IEC 61000-4-6	(2013)
IEC 61000-4-8	(2009)
IEC 61000-4-11	(2004)

Responsible for marking this declaration if the:

☒ **Manufacturer** ☐ **Authorized representative established within the EU**

Authorized representative established within the EU (if applicable):

Company Name: **Planet Technology Corp.**

Company Address: **10F., No.96, Minquan Rd., Xindian Dist., New Taipei City 231, Taiwan**

Person responsible for making this declaration

Name, Surname **Jonas Yang**

Position / Title : **Product Manager**

Taiwan	**20 Apr., 2018**	Jonas
Place	*Date*	*Legal Signature*