1-Port Ultra PoE to 4-Port 802.3af/at Gigabit

PoE Extender

IPOE-E174

User's Manual

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# *1. Introduction*

1.1 Packet Contents

Thank you for purchasing **PLANET IPOE-E174- 1-Port Ultra PoE to 4-Port 802.3af/at Gigabit PoE Extender.** Open the box of the IPOE-E174 and carefully unpack it. The box should contain the following items:

- Industrial Power over Ethernet Extender x 1
- User's Manual x 1
- RJ45 Dust Cap x 5
- Wall Mounting Kit x 1

If any of these are missing or damaged, please contact your dealer immediately; if possible, retain the carton including the original packing material, and use them again to repack the product in case there is a need to return it to us for repair.

1.2 Application Diagram

The IPOE-E174 is designed as the repeater to forward both Gigabit Ethernet data and IEEE 802.3at PoE power, thus extending the range of PoE installation. With just plug and play and without additional power supply and setup, one single IPOE-E174 can increase the PoE range to 200m and drive up four remote PoE IP cameras or wireless access point.
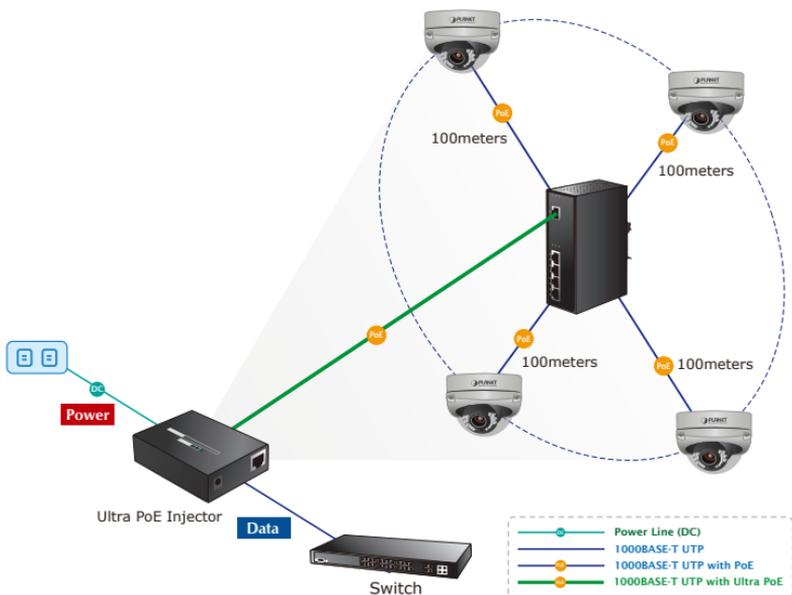
1.3 Key Features

➢ **Physical Port**

- **5-port 10/100/1000BASE-T** Gigabit RJ45 interface
  - ♦ 1-port **data + power input**
  - ♦ 4-port **data + power output**

➢ **Power over Ethernet**

- 1-port data + power input
  - ♦ Complies with ultra Power over Ethernet end-span and mid-span PD
  - ♦ Complies with IEEE 802.3at High Power over Ethernet end-span / mid-span PD
  - ♦ Supports PoE input power up to 60 watts
- 4-port data + power output
  - ♦ Complies with IEEE 802.3af / IEEE 802.3at Power over Ethernet / end-span PSE
  - ♦ Up to 4 IEEE 802.3af / 802.3at devices powered
  - ♦ Supports PoE power up to 30.8 watts for each PoE port
  - ♦ Auto detects powered device (PD)
- Extends the range of PoE to an additional 100 meters (328ft.)
- Forwards both Ethernet data and PoE power to remote device

➢ **Layer 2 Features**

- Hardware based 10/100Mbps, half / full duplex and 1000Mbps full duplex mode, flow control, auto-negotiation and auto MDI/MDI-X
- Features Store-and-Forward mode with wire-speed filtering and forwarding rates
- IEEE 802.3x flow control for full duplex operation and back pressure for half duplex operation
- Integrates address look-up engine, supporting 8K absolute MAC addresses
- 9K jumbo frame support in 1000Mbps duplex mode

- Automatic address learning and address aging
- Supports CSMA/CD protocol

➤ **Industrial Case / Installation**

- IP30 aluminum case protection
- DIN rail and wall-mount design
- Supports EFT protection for 6000V DC power, and 6000V DC Ethernet ESD protection
- -40 to 75 degrees C operating temperature
- No external power cable required for installation
- Plug and Play installation

➤ **Standard Compliance**

- IEEE 802.3 10BASE-T
- IEEE 802.3u 100BASE-TX
- IEEE 802.3ab 1000BASE-T
- IEEE 802.3x Flow Control
- IEEE 802.3at High Power over Ethernet
- 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, and in IEEE 802.3at is 30W. **PD (Powered Device)** is a PoE-enabled terminal by PSE and thus consumes energy, such as PoE IP Phones, PoE IP cameras, PoE wireless access points, etc.

1.4 Technical Specifications

Model	IPOE-E174
Hardware Specifications	
Network Connector	**PoE In Port** 1 x 10/100/1000BASE-T Ethernet with ultra PoE **"Data + DC"** in, auto MDI/MDI-X, auto-negotiation RJ45 connector **PoE Out Port** 4 x 10/100/1000BASE-T Ethernet with IEEE 802.3af/at PoE **"Data + DC"** out, auto MDI/MDI-X, auto-negotiation RJ45 connector
Switch Architecture	Store-and-Forward switch architecture
MAC Address Table	8K MAC address table with auto learning function
Data Buffer	1Mbit
Switch Fabric	10Gbps
Switch Throughput	7.44Mpps @ 64Bytes
Flow Control	IEEE 802.3x pause frame for full duplex Back pressure for half duplex
Jumbo Frame	9Kbytes
ESD Protection	6KV DC
EFT Protection	6KV DC
Enclosure	IP30 aluminum metal case
Installation	DIN rail kit and wall-mount ear

LED Display	System: PWR (Green) Power Input: Midspan in (Green) Power Input: Endspan in (Green) PoE Power Usage (%): 25 (Green) PoE Power Usage (%): 50 (Green) PoE Power Usage (%): 75 (Green) PoE Input Port: LNK/ACT (Green) PoE Input Port: PoE in (Orange) Per PoE Output Port: LNK/ACT (Green) Per PoE Output Port: PoE-in-Use (Orange)

Cable	Twisted-pair cable:
	  10BASE-T: 2-pair UTP Cat. 3,4,5, up to 100 meters
	  100BASE-TX: 2-pair UTP Cat. 5, 5e up to 100 meters
	  1000BASE-T: 4-pair UTP Cat. 5e,6 up to 100 meters

Dimensions (W x D x H)	135 x 87.8 x 56 mm
Weignt	715g
Power Consumption	60 watts / 204.6BTU (Full loading with PoE function)
Power over Ethernet	

PoE Standard	**PoE in Port**
	  IEEE 802.3at High Power over Ethernet end-span / mid-span PD class 4 PD
	Per PoE out Port
	  IEEE 802.3at High Power over Ethernet end-span PSE
	  IEEE 802.3af Power over Ethernet end-span PSE

PoE Power	**PoE in Port** 50~57V DC, max. 60 watts **Per PoE out Port** 44~55V DC, max. 30.8 watts
Power Pin Assignment	**PoE in Port** 1/2(+), 3/6(-); 4/5(+), 7/8(-) **Per PoE out Port** 1/2(+), 3/6(-)
PoE Power Budget	50 watts (max.) @ Ultra PoE input 20 watts (max.) @ IEEE 802.3at PoE+ input No support @ IEEE 802.3af PoE input
Standards Conformance	
Regulation Compliance	FCC Part 15 Class A, CE
Stability Testing	IEC60068-2-32 (Free fall) IEC60068-2-27 (Shock) IEC60068-2-6 (Vibration)
Standards Compliance	IEEE 802.3 Ethernet IEEE 802.3u Fast Ethernet IEEE 802.3ab Gigabit Ethernet IEEE 802.3x Flow Control IEEE 802.3af Power over Ethernet IEEE 802.3at High Power over Ethernet
Environment	
Operating	Temperature: -40 ~ 75 degrees C Relative Humidity: 5 ~ 95% (non-condensing)
Storage	Temperature: -40 ~ 85 degrees C Relative Humidity: 5 ~ 95% (non-condensing)

1.5 Power over Ethernet Budget

The following table lists how many PoE devices can be powered by IPOE-E174:

| Power Source	PoE Output Budget*	Max. Number of PDs supported	
PLANET Ultra PoE PSE	50 watts max.	Class 4 PD@25-watt	2 units
		Class 3 PD@15-watt	3 units
		Class 2 PD@7-watt	4 units
IEEE 802.3at PoE+ PSE	20 watts max.	Class 4 PD@25-watt	0
		Class 3 PD@15-watt	1 unit
		Class 2 PD@7-watt	2 units
IEEE 802.3af PoE PSE	10 watts max.	Class 2 PD@7-watt	1 unit

Remarks	1. The PoE Output Budget means the 4-port PD aggregated power output. The aggregated power consumption will be below 50 watts if with ultra PoE PSE. 2. Please check the power input LED (60W PoE) for optimal power output. Both mid-span and end-span LEDs should be turned on for maximum capability.

2. InSTALLATION

2.1 Physical Dimensions

IPOE-E174 1-port Ultra PoE to 4-port 802.3af/at Gigabit PoE Extender dimensions (W x D x H): 135 x 87.8 x 56 mm
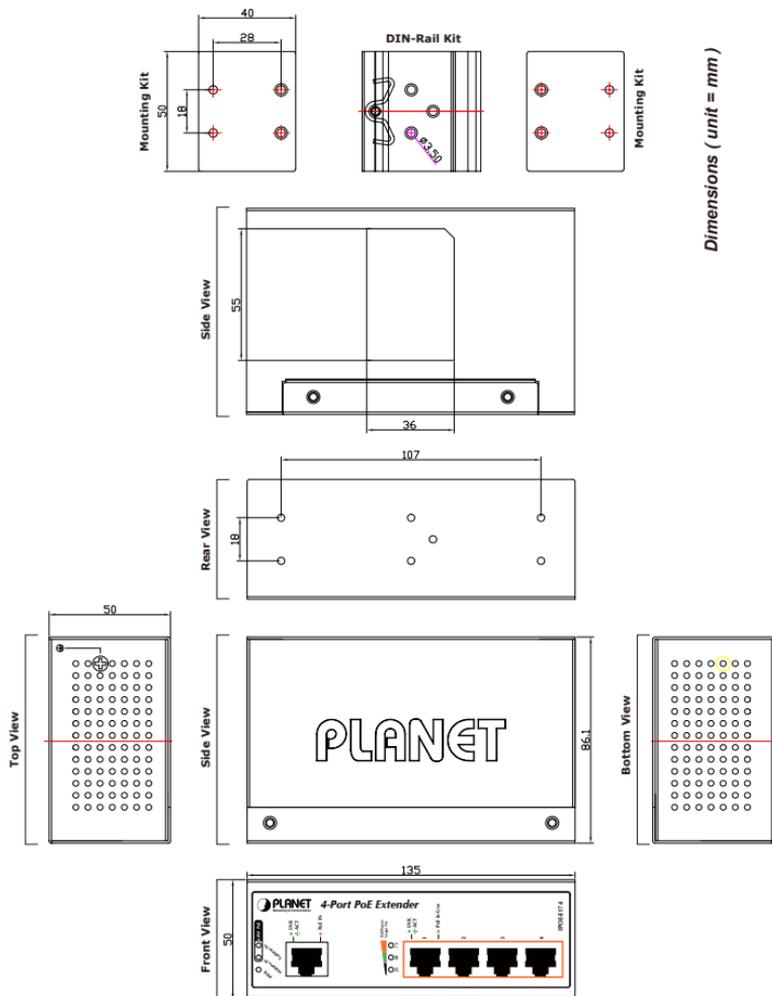
2.2 Front Panel

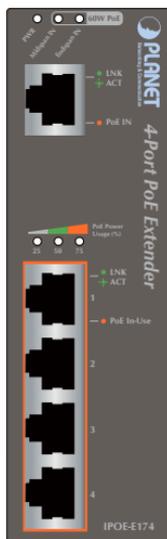Figure 2-1 shows the front panel of Industrial Power over Ethernet Extender

Figure 2-1: IPOE-E174 Front Panel

➢ **System**

LED	Color	Function
PWR	Green	**Light** to indicate IPOE-E174 has power.
Midspan IN	Green	**Light** to indicate IPOE-E174 is working in midspan mode and offers up to 30-watt power.
Endspan IN	Green	**Light** to indicate IPOE-E174 is working in endspan mode and offers up to 30-watt power.

➢ **PoE Input Por**

LED	Color	Function
LNK/ACT	Green	**Light** to indicate the port is linked up.
		Blink to indicate that the IPOE-E174 is actively sending or receiving data over that port.
PoE In	Orange	**Light** to indicate IPOE-E174 has power.

➢ **Per PoE Output Port (Port 1 ~ 4)**

LED	Color	Function
LNK/ACT	Green	**Light** to indicate the port is linked up.
		Blink to indicate that the IPOE-E174 is actively sending or receiving data over that port.
PoE In-Use	Orange	**Light** to indicate the port is providing PoE power.
		OFF to indicate that the Switch is inactively sending or receiving data over that port.

➢ **PoE Power Usage (%)**

LED	Color	Function
25	Green	**Light** to indicate the system is providing >25% PoE power usage.
50	Green	**Light** to indicate the system is providing >50% PoE power usage.
75	Green	**Light** to indicate the system is providing >75% PoE power usage.

2.3 Mounting Installation

This section describes how to install the Industrial Power over Ethernet Extender and make connections to it. Please read the following topics and perform the procedures in the order being presented.

> **Note**
>
> In the installation steps below, this Manual uses IGS-801 (PLANET 8 Port Industrial Gigabit Switch) as an example. However, the steps for PLANET Industrial Power over Ethernet Extender are similar.

2.3.1 DIN-rail Mounting

Place the Industrial Power over Ethernet Extender on the DIN rail, which is mounted on the wall, and screw it. Just follow the steps below to install the Extender.

Step 1: Lightly insert the bottom of the switch into the track.

Step 2: Check if the DIN rail is tightly on the track.

Please refer to the following procedures to remove the Industrial Power over Ethernet Extender from the track.

Step 3: Lightly remove the DIN rail from the track.

2.3.2 Wall-mount Plate Mounting

To mount the Industrial Power over Ethernet Extender on the wall, please follow the instructions described below.

Step 1: To remove the DIN rail from the Industrial Power over Ethernet Extender, loosen the screws.

Step 2: Place the wall-mount plate on the rear panel of the Industrial Power over Ethernet Extender.

Step 3: Use the screws to screw the wall-mount plate on the Industrial Power over Ethernet Extender.

Step 4: Use the hook holes in the corners of the wall-mount plate to hang the Industrial Gigabit Ethernet Switch on the wall.

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

2.4 Connecting IPOE-E174 to Power Source Equipment (PSE)

This section describes how to install the Industrial Power over Ethernet Extender and make connections to it. Please read the following topics and perform the procedures in the order being presented.

There are five RJ45 ports in the Industrial Power over Ethernet Extender, of which the **"PoE IN"** port functions as **"PoE (Data and Power) input"** and the **"PoE In-Use"** port on the other side functions as **"PoE (Data and Power) output"**.

Step 1: Connect a standard CAT-5e/6 UTP cable from **Power Source Equipment (PSE)**, such as PoE Switch, PoE injector hub and single port PoE injector, to the **"PoE IN"** port of the IPOE-E174.
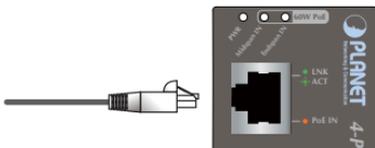
Step 2: The PSE delivers both Ethernet Data and PoE power over UTP cable to the IPOE-E174 and the **"PoE IN"** LED will be lit steadily.

| Note	1. When the LED turns steady green, it means the IPOE-E174 is being powered successfully with PoE. 2. If the LED is not lit, please check the remote PSE or the cable connecting to a PC or a network device to see if the cable is correct. Or with an 802.3at device such as the target PD, check whether the power injection is correct. 3. Never connect any non-standard POE PSE to the IPOE-E174, it will damage the device permanently.

2.5 Connecting IPOE-E174 to Powered Device (PD)

Step 1: Connect the additional CAT-5e/6 cable that will be used to connect to the remote Powered Device (PD) to the **"PoE In-Use"** port of the IPOE-E174.
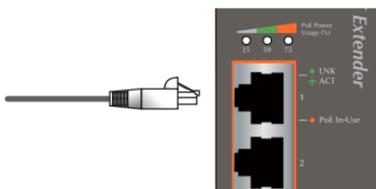
Step 2: The **"PoE In-Use"** port is also the power injector which transmits DC voltage to the CAT-5e/6 cable and transfer data and power simultaneously between the PSE and PD.

Step 3: Once the IPOE-E174 detects the existence of an IEEE 802.3at/af device, the **"PoE In-Use"** LED indicator will be lit steadily, showing it is providing power.

PoE PTZ IP Cemera

PoE Dome IP Camera
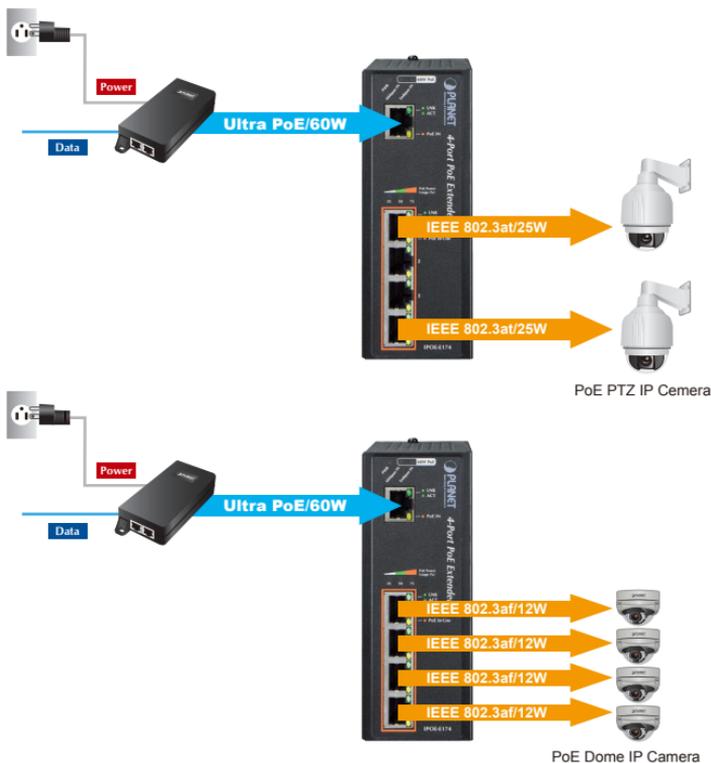
<table>
<tr>
<td rowspan="3">Note</td>
<td>1. If the connected device is not fully complying with IEEE 802.3af/at standard or in-line power device, the PoE In-Use LED indicator of the IPOE-E174 will not be lit steadily.</td>
</tr>
<tr>
<td>2. According to IEEE 802.3af/at standard, the IPOE-E174 will not inject power to the cable if not connecting to a standard IEEE 802.3af/at device.</td>
</tr>
<tr>
<td>3. DONOT connect any PSE to port 1 ~ port 4 of the IPOE-E174, it may damage the device permanently.</td>
</tr>
</table>

3. Customer Support

Thank you for purchasing PLANET products. You can browse our online FAQ resource and User's Manual on PLANET Web site first to check if it could solve your issue. If you need more support information, please contact PLANET switch support team.

PLANET online FAQ:
http://www.planet.com.tw/en/support/faq.php?type=1

Switch support team mail address:
support_switch@planet.com.tw