

802.3bt PoE++ Injector

POE-171A-60/POE-171A-95/POE-176-95

User's Manual

Table of Contents

1. Package Contents.....	3
2. Product Features	4
3. Product Specifications	5
4. Product Outlook	8
5. Hardware Installation.....	12
5.1 Before Installation.....	12
5.2 POE-171A series/POE-176-95 Installation.....	12
6. Customer Support	14

1. Package Contents

Thank you for purchasing PLANET POE-171A and POE-176-95 single-port multi-Gigabit 802.3bt PoE++ Injector series and their brief product descriptions are shown in the table below:

Model	LAN Port Speed	PoE Standard	PoE Budget
POE-171A-60	10M/100M/1G/2.5G/5Gbps	IEEE 802.3af/at/bt	60 watts
POE-171A-95	10M/100M/1G/2.5G/5Gbps	IEEE 802.3af/at/bt	95 watts
POE-176-95	10M/100M/1G/2.5G/ 5G/10Gbps	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
- QR code sheet x 1
- Power adaptor x 1
- AC power cord 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 DC 52~56V input power socket (POE-171A-60/POE-171A-95)
- ◆ 1 PoE mode (Standard/Legacy) DIP switch (POE-171A-60/POE-171A-95)
- ◆ 1 DC 52~54V input power socket (POE-176-95)
- ◆ 1 PoE mode (802.3bt/Legacy) DIP switch (POE-176-95)

■ 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
- ◆ Auto-detection of DC input voltage

3. Product Specifications

Product		POE-171A-60	POE-171A-95	POE-176-95
Hardware Specifications				
Interface	Input Port	1 x RJ45 STP Data In		
	Output Port	1 x RJ45 STP PoE (Data + Power) Out		
	DC Socket	1 x 52~56V DC input socket	1 x 52~54V DC input socket	
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/Cat 6/Cat 6A/Cat 7 5G: 4-pair UTP Cat 6/Cat 6A/Cat 7 10G: 4-pair UTP Cat 6A/Cat 7 (POE-176-95 only)		
LED Indicators		System: Power x 1 (Green) PoE Port: PoE-in-Use x 1 (Amber) Legacy Mode: Legacy x 1 (Amber) PoE Usage: PoE Usage x 3 (Amber)		
Data Rate		10M/100M/1G/2.5G/5Gbps		10M/100M/1G/ 2.5G/5G/10Gbps
Dimensions (W x D x H)		94 x 70.3 x 26.2 mm		
Weight		192g	188g	192g
Unit Output Voltage		DC 52~56V		
Power Requirements		DC 52-56V, 1.4A max.	DC 52-56V, 2.5A max.	DC 52-54V, 2.5A max
Power Consumption		72 watts max.	130 watts max.	98 watts max.
No. of Devices that can be powered		1		

Power over Ethernet			
PoE Standard	IEEE 802.3af/at/bt PSE		
PoE Power Output Budget	DC 54V/30-watt PoE via 2-pair DC 54V/60-watt PoE via 4-pair	DC 54V/30-watt PoE via 2-pair DC 54V/95-watt PoE via 4-pair	DC 54V/30-watt PoE via 2-pair DC 54V/95-watt PoE via 4-pair
PoE Power Output	Max. 60W for 1 m cable; max. 52W for 100 m cable	Max. 89.5W for 1 m cable; max. 72W for 100 m cable	Max. 80W for 1 m cable; max. 68W for 100 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	<p>POE-171A-60/POE-171A-95/POE-176-95: Standard: To provide power to the PD devices that follow the IEEE 802.3af/at/bt standard.</p> <p>Legacy: To provide power to the PD devices that do not fully follow the IEEE 802.3af/at/bt standard. Besides, the Legacy mode supports PoH and Ultra PoE.</p> <p>Force: If the output power of injector is less than 1 watt when it works in Legacy mode; after 20 seconds, the Force mode will be enabled. When the Force mode is enabled, it will provide PD with max. 60~95 watts.</p> <p>If the output power of injector is less than 1 watt when it works in Force mode; after 2 seconds, the Legacy mode will be enabled.</p>		
Standards Conformance			
Standards Compliance	IEEE 802.3 10BASE-T Ethernet IEEE 802.3u 100BASE-TX Fast Ethernet	IEEE 802.3 10BASE-T Ethernet IEEE 802.3u 100BASE-TX Fast Ethernet	IEEE 802.3 10BASE-T Ethernet IEEE 802.3u 100BASE-TX Fast Ethernet

Standards Compliance	IEEE 802.3ab 1000BASE-T Gigabit Ethernet IEEE 802.3bz 2.5G/5GBASE-T IEEE 802.3af Power over Ethernet IEEE 802.3at Power over Ethernet Plus IEEE 802.3bt 4-pair Power over Ethernet (Type 3)	IEEE 802.3ab 1000BASE-T Gigabit Ethernet IEEE 802.3bz 2.5G/5GBASE-T IEEE 802.3af Power over Ethernet IEEE 802.3at Power over Ethernet Plus IEEE 802.3bt 4-pair Power over Ethernet (Type 4)	IEEE 802.3ab 1000BASE-T Gigabit Ethernet IEEE 802.3bz 2.5G/5GBASE-T IEEE 802.3af Power over Ethernet IEEE 802.3at Power over Ethernet Plus IEEE 802.3bt 4-pair Power over Ethernet (Type 4)
Regulatory Compliance	FCC Part 15 Class A, CE		
Environment			
Operating Temperature	0 ~ 50 degrees C		
Storage Temperature	-10 ~ 70 degrees C		
Operating Humidity	5 ~ 90%, relative humidity, non-condensing		
Storage Humidity	5 ~ 90%, relative humidity, non-condensing		



Caution

1. As the IEEE 802.3bt device provides high power, please use high-quality network cable and RJ45 connector.
2. The maximum PoE output power depends on the cable length, the quality of cable, and DC input voltage.
3. Please power on the device after changing the DIP switch mode.

4. Product Outlook

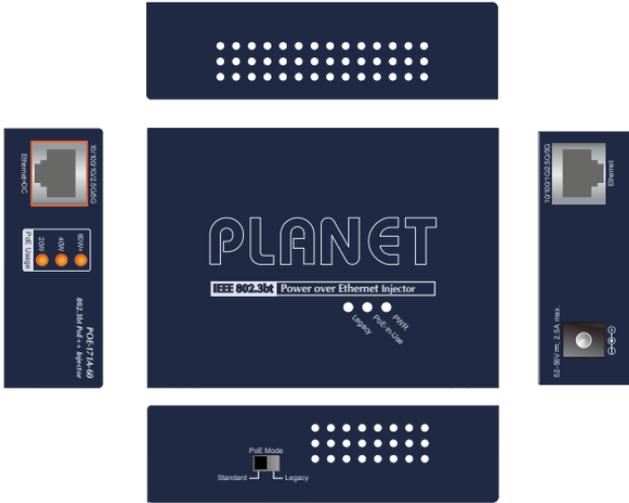


Figure 1: POE-171A-60 Outlook

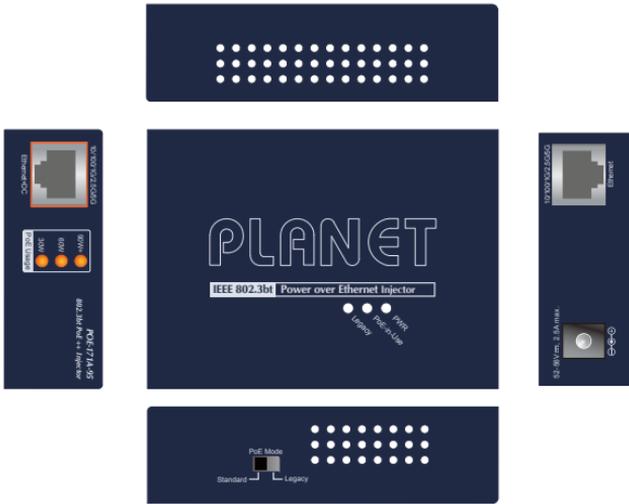


Figure 2: POE-171A-95 Outlook

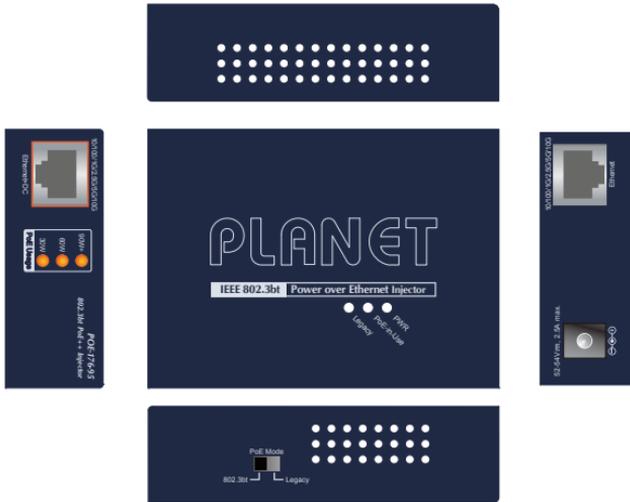


Figure 3: POE-176-95 Outlook

LED Indicators:

LED	Color	Function
PWR	Green	Lights to indicate the 802.3bt PoE++ injector has power.
PoE-in-Use	Amber	Lights to indicate the device is providing PoE power.
Legacy	Amber	Lights to indicate the device is working in Legacy mode.
PoE Usage	Amber	PoE Usage LED can monitor the DC input voltage or the status of the power usage.

Detection of DC input voltage of POE-171A series and POE-176-95:

When user powers on the POE-171A injector via the DC adapter, the injector will detect the DC input voltage and then PoE Usage LED will flash three times.

LED	Description
20W/30W	Flashing three times means the DC input voltage is 48~51V.
40W/60W	Flashing three times means the DC input voltage is 52~54V.
60W+/90W+	Flashing three times means the DC input voltage is 55~56V.

Monitoring of power usage of POE-171A-60:

LED	Description
20W	<ol style="list-style-type: none">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	<ol style="list-style-type: none">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+	<ol style="list-style-type: none">1. Blinks to indicate that the PoE usage is around 50W to 59W.2. Lights to indicate the PoE usage is at its maximum.

Monitoring of power usage of POE-171A-95 and POE-176-95:

LED	Description
30W	<ol style="list-style-type: none">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 more than 30W.
60W	<ol style="list-style-type: none">1. Blinks to indicate that the PoE usage is around 45W to 59W.2. Lights to indicate the PoE usage is more than 60W.
90W+	<ol style="list-style-type: none">1. Blinks to indicate that the PoE usage is around 75W to 89W.2. Lights to indicate the PoE usage is at its maximum.

PoE Mode:

PoE Mode	Description
Standard/ 802.3bt	Fully conforms to the IEEE 802.3af/at/bt standard.
Legacy	The legacy detection is to identify the valid current signature of the PDs that do not fully follow the IEEE 802.3af/at/bt standard. This protects against damage to the PDs as the right PoE mode is applied.



Caution

The PoE++ Injector also supports **Force Power Mode** in the Legacy mode. If the output power of the PoE++ Injector in the Legacy Mode is less than 1 watt for 20 seconds, the **Force Mode** will be enabled for 2 seconds. If the loading is still less than 1 watt, the Legacy Mode will be enabled again.



Warning

The POE-171A series and POE-176-95 in the **Force Mode** will also provide a maximum power to the PD. **TO PREVENT THE DEVICES FROM DAMAGE**, please make sure the remote devices supports either the Legacy or Force Mode before turning the DIP switch to the Legacy Mode.



Note

1. For safety, power off the device first before adjusting the DIP switch setting. After the adjustment, turn back on the device.
2. Before connecting the Ethernet+DC port to network device, please make sure that it accepts PoE input to prevent damage.

5. Hardware Installation

The following section describes the hardware installation of the POE-171A series and POE-176-95. Before connecting any network device to it, please read this chapter carefully.

5.1 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 POE-171A series/POE-176-95 provides you with a way out to supply power to this Ethernet device conveniently and easily. The POE-171A series/POE-176-95 is equipped with a power adaptor which is 100-240V AC input, and can inject DC 52~56V (POE-171A-Series) and DC 52~54V (POE-176-95) power into the pin of the twisted-pair cable (pair 1/2 [-], 3/6 [+] and pair 4/5 [+], 7/8 [-]).

5.2 POE-171A series/POE-176-95 Installation

1. Connect the AC power adaptor to the **"52-5xV DC IN"** of the POE-171A series/POE-176-95; the **"PWR"** LED will be steadily on.
2. Connect a standard Ethernet cable from an Ethernet switch or PC workstation to the **"Ethernet"** port of the POE-171A series/POE-176-95
3. Connect the long cable to the **"Ethernet+DC"** port of the POE-171A series/POE-176-95 and the IEEE 802.3af/at/bt PD.

4. The POE-171A series/POE-176-95, adopting the IEEE 802.3af/at/bt technology, can directly connect with any IEEE 802.3af/at/bt end-nodes, such as PTZ (pan, tilt & zoom) network cameras, PTZ speed dome cameras, color touch screen, Voice over IP (VoIP) telephones and multi-channel wireless LAN access points as the screen in Figure 3 is shown below.

10G/5G/2.5G/1G/100Mbps Data Rate

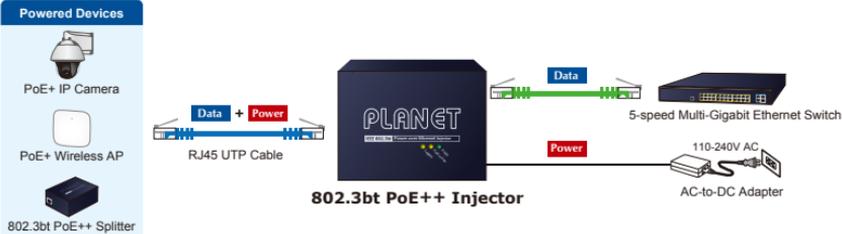


Figure 3: Architecture of Connected IEEE 802.3af/at/bt Devices

Once the POE-171A series/POE-176-95 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. The 10Gbps speed is available for the POE 176-95 only.
2. Since the PoE ports of the POE-171A series (52-56V DC) and POE-176-95 (52-54V DC) support different DC PoE power output, check whether the PD accepts the DC power range. Otherwise, it will damage the PD.

6. 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 support team.

PLANET online FAQs:

<http://www.planet.com.tw/en/support/faq.php>

Support team mail address:

support@planet.com.tw

Copyright © PLANET Technology Corp. 2023.

Contents are subject to revision without prior notice.

PLANET is a registered trademark of PLANET Technology Corp.

All other trademarks belong to their respective owners.

FCC Warning

This device 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 device is compliant with Class A of CISPR 32. In a residential environment this equipment may cause radio interference.

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.