

Product Specifications

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

IPOE-171-95W

Version 4.0

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Change History:

Revision	Date	Author	Change List
Version 1.0	2018/05/15	Keithy Lin	Initial release
Version 2.0	2018/07/24	Keithy Lin	Ver. 1's 24V DC is changed to 12V DC in Ver. 2
Version 2.0	2018/12/19	Keithy Lin	Add description for 56V DC input
Version 3.0	2019/03/27	Keithy Lin	Remove Ultra PoE and modify the description of Legacy mode.
Version 4.0	2019/12/13	Keithy Lin	1. Support 2.5G/5G Ethernet ports. 2. Support PoE Force mode.

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1. PRODUCT DESCRIPTION



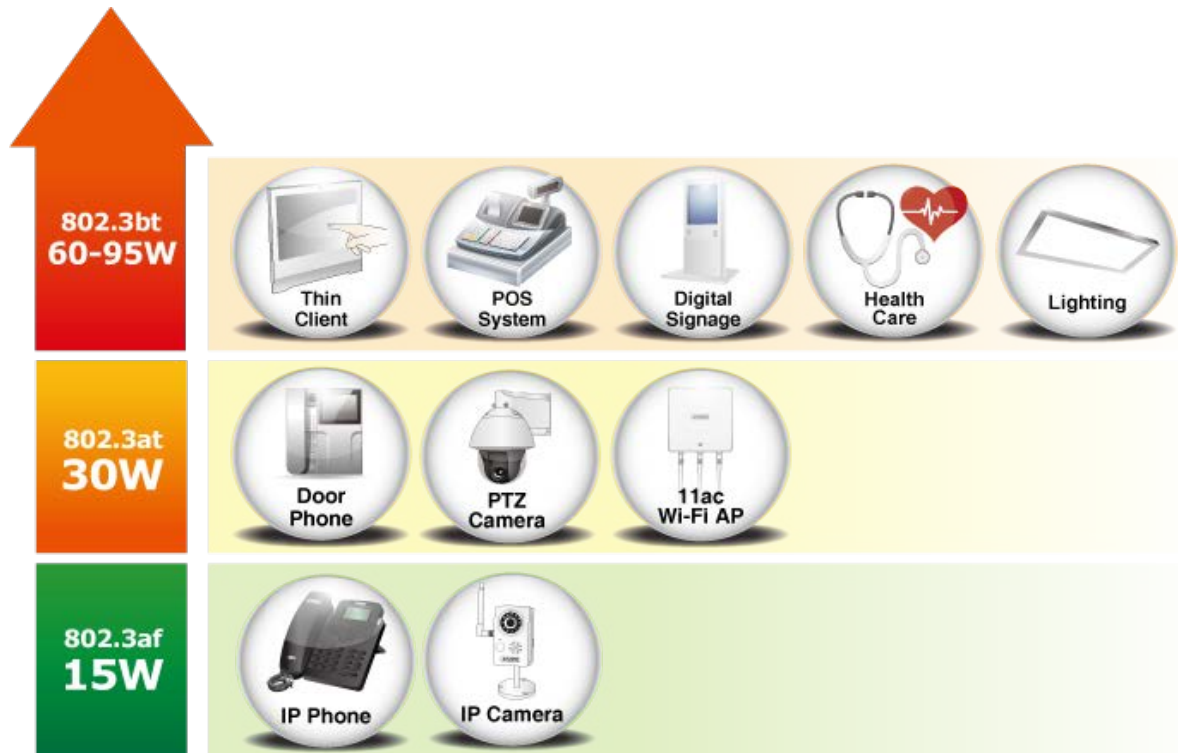
Advanced Industrial Multi-Gigabit and 802.3bt PoE++ Network Solution

PLANET IPOE-171-95W is a **Single-Port, Industrial 802.3bt Power over Ethernet Injector** with a maximum of up to **95 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:

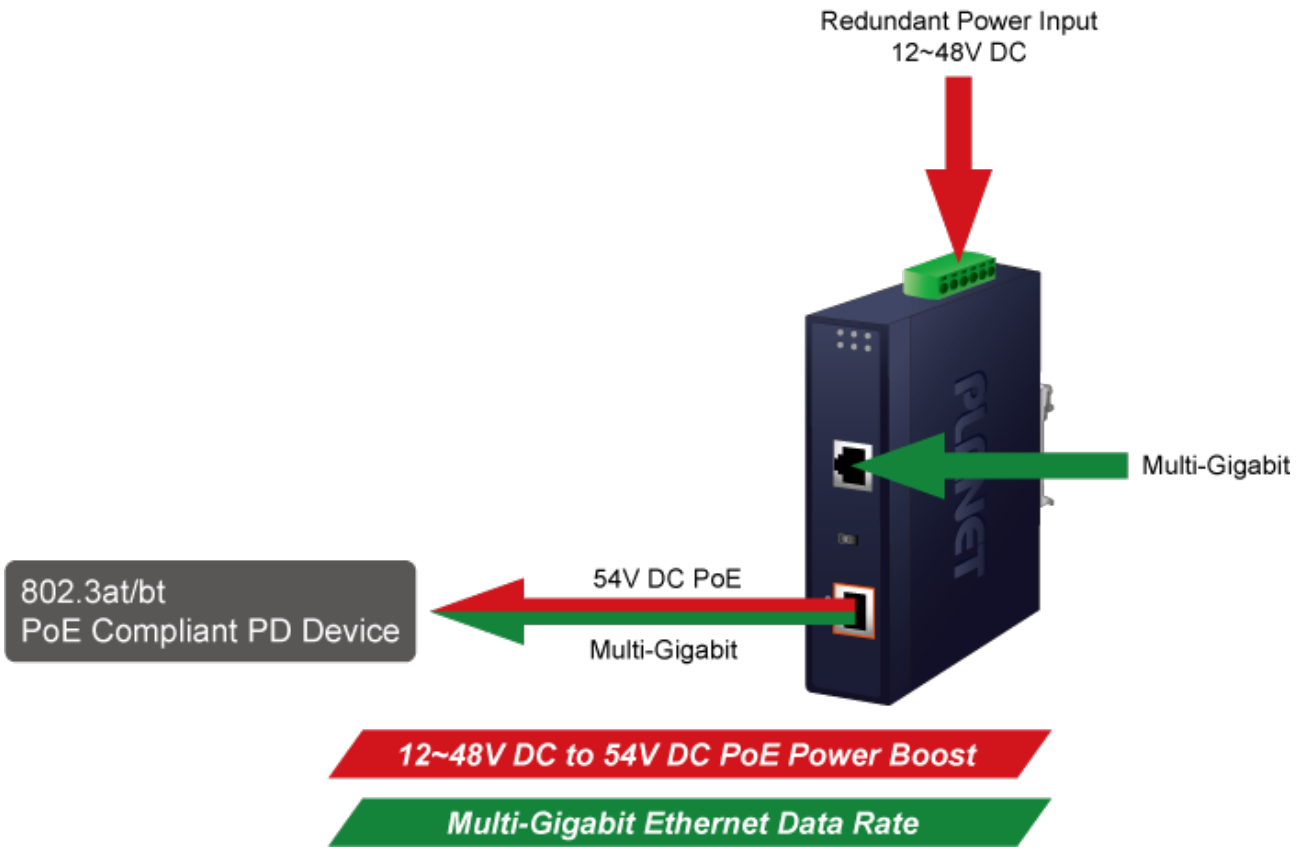
- ▶ **Lighting**
- ▶ All-in-one touch PC
- ▶ Remote digital signage display
- ▶ Other network devices that need higher power to work normally



The IPOE-171-95W delivers the Ethernet digital data with 54V DC power over the twisted-pair cables as a 95-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.

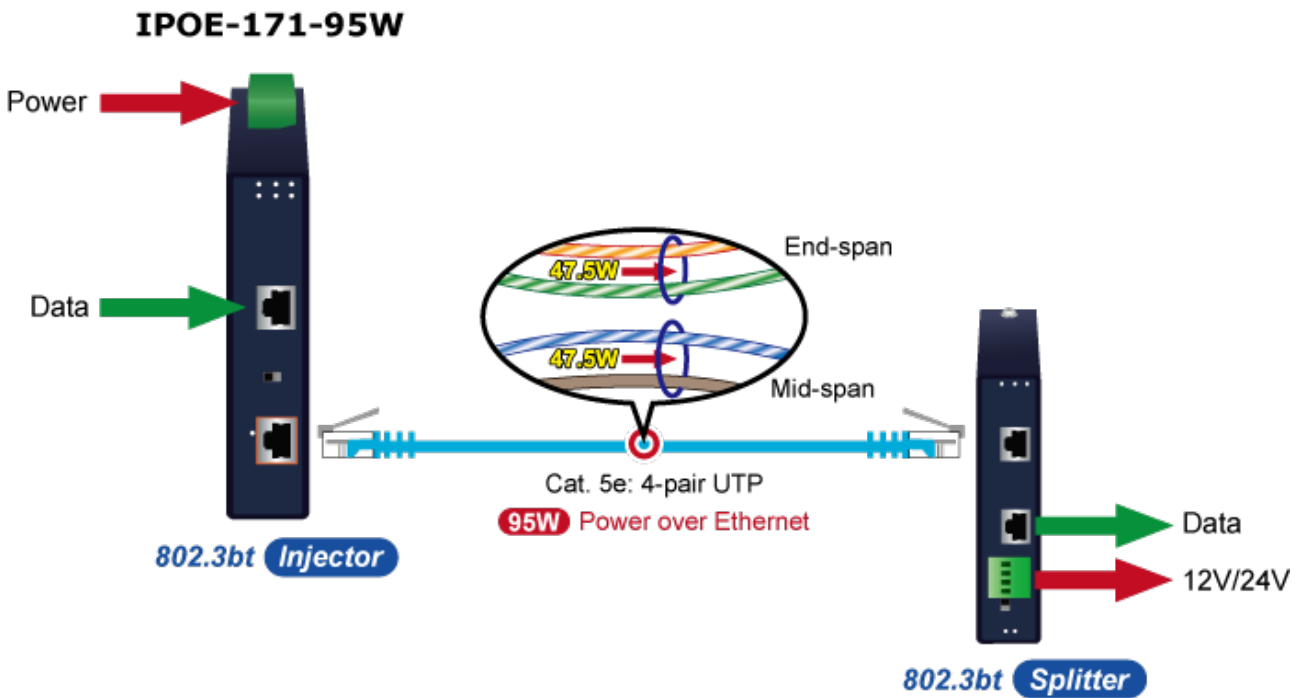
Convenient and Reliable Power System

To facilitate the 802.3bt PoE++ usage with commonly used 12~48V DC power input for transportation and industrial-level applications, the IPOE-171-95W adopts 12~48V DC to 54V power boost technology to solve power source issue but does not require special power supplies. The IPOE-171-95W provides an integrated power solution with a wide range of voltages (12~48V DC) for worldwide operability. It also provides dual-redundant, reversible polarity 12~48V DC power supply inputs for high availability applications.



95 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-171-95W provides the capability to source up to 95 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)	IEEE 802.3bt (802.3bt Type 4)	PoH (Power over HD-BASE-T)
Maximum Power delivered by PSE	15.4 watts	30 watts	60 watts	95 watts	95 watts
Power Available at PD	12.95 watts	25.5 watts	51 watts	71 watts	72 watts
Voltage Range	48V	50~57V	52~57V	52~57V	52~57V
Twisted-pair Used	2-pair		4-pair	4-pair	4-pair
Supported Modes	End-span or Mid-span		End-span + Mid-span	End-span + Mid-span	End-span + Mid-span
Supported Cabling	Cat. 3/5/5e/6/6A		Cat. 5e/6/6A	Cat. 5e/6/6A	Cat. 5e/6/6A

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

The IPOE-171-95W 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-171-95W has three LED indicators of different power usages. Via the power usage LED, the IPOE-171-95W 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

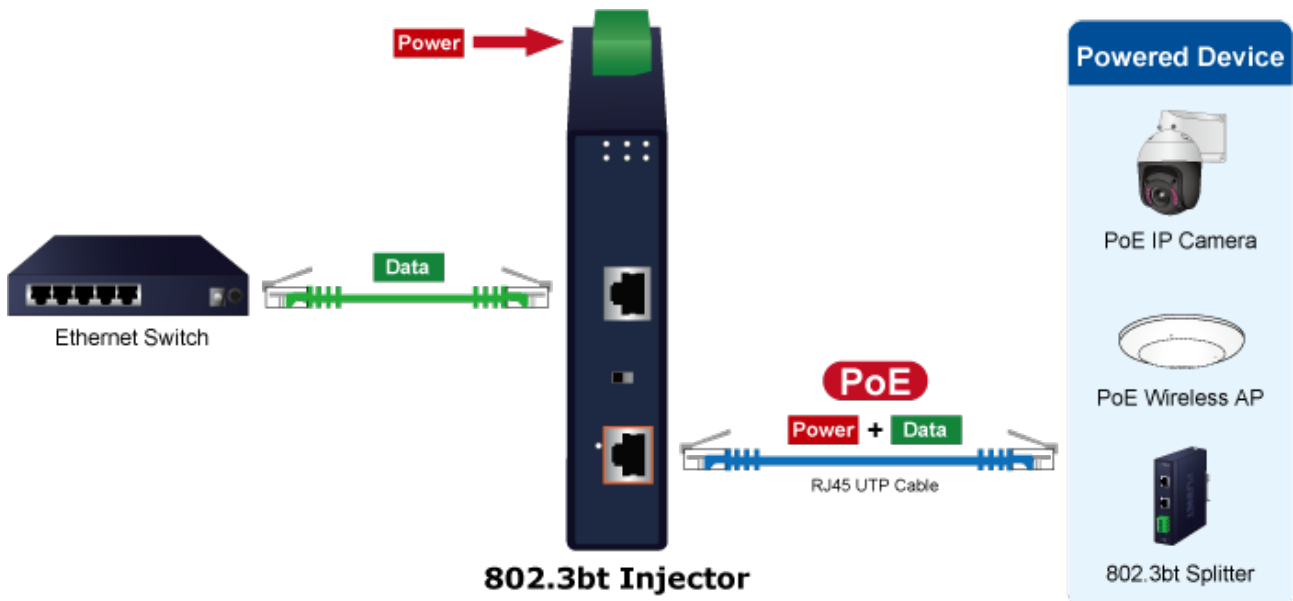
It is easy to install the PoE injector by way of **Plug and Play** and comes with simple troubleshooting, making it easy for business and home users to own it. Besides, the IPOE-171-95W comes in compact housing, and provides two DC redundant power inputs, two power LEDs, fault LED and PoE-in-Use LED. Two RJ45 ports -- Ethernet port and Ethernet + DC port – are on the front panel.

Moreover, the IPOE-171-95W, 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-171-95W with other PDs.

Simply plug in the Ethernet cables and DC power wire, and the IPOE-171-95W is ready to provide high-speed network communication and the 802.3bt PoE injector functions simultaneously with no need of software configuration.

Quick and Easy Cabling Installation for PoE Network Deployment

Backward compatible with both 802.3at PoE standards, the IPOE-171-95W 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-171-95W 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: 12 ~ 48V 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 95 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

➤ 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-171-95W
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, 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	470g	
Power Requirements	DC 12~48V, 5A max.	
Unit Output Voltage	DC 54V	
Power Consumption	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 802.3at/bt PSE	
PoE Power Output Budget	DC 54V / 95-watt PoE via 4-pair DC 54V / 36-watt PoE via 2-pair	
PoE Power Output	DC 24V~48V input: Max. 89.5W @ 1m cable Max. 75W @ 100m cable DC 12V input: Max. 60W @ 1m cable	

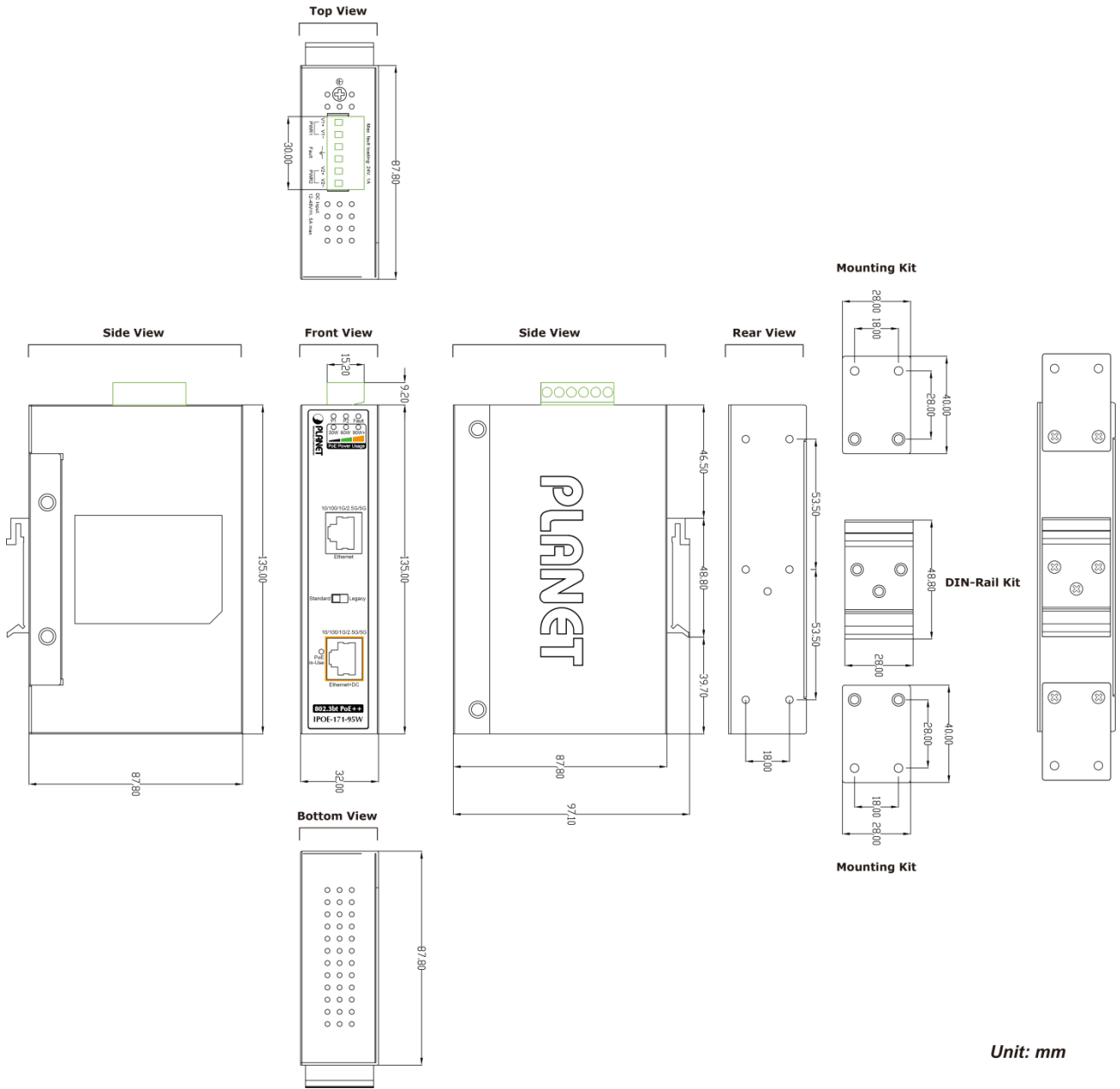
	Max. 52W @ 100m cable
PoE Power Supply Type	End-span + Mid-span
Power Pin Assignment	Pair 1 End-span: 1/2 (-), 3/6 (+) Pair 2 Mid-span: 4/5 (+), 7/8 (-)
PoE Mode	Standard mode Legacy and Force mode
Standards Conformance	
Standards Compliance	IEEE 802.3 10BASE-T Ethernet IEEE 802.3u 100BASE-TX Fast Ethernet 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	<ul style="list-style-type: none"> ● IPOE-171-95W ● 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

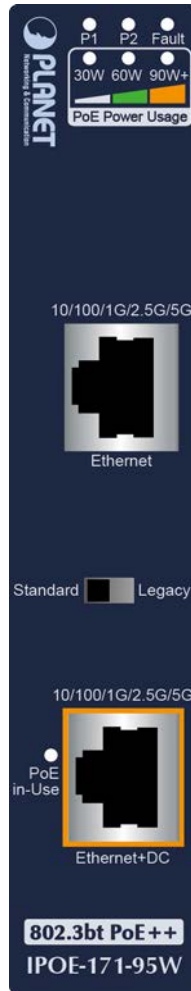
- **Weight**
470g

■ **Diagram**



Unit: mm

■ **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	<p>30W:</p> <ol style="list-style-type: none"> Off to indicate the PoE usage is less than 14W. Blinks to indicate that the PoE usage is around 15W to 29W. Lights to indicate the PoE usage is more than 30W. <p>60W:</p> <ol style="list-style-type: none"> Blinks to indicate that the PoE usage is around 45W to 59W. Lights to indicate the PoE usage is more than 60W. <p>90W+:</p> <ol style="list-style-type: none"> Blinks to indicate that the PoE usage is around 75W to 89W. 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)

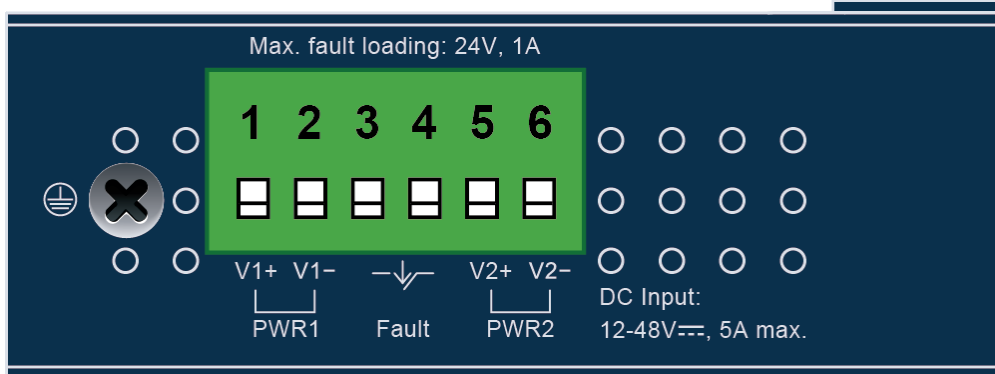
3.5 ELECTRICAL SPECIFICATIONS

Power over Ethernet Capability

- **Power Requirement:** 12~48V DC*, 5A max.
 *The industrial injector adopts 12~54V DC to 54V power boost technology. When the DC input is 55~56V, the DC output power will be 54.5~55.5V (more or less).
- **Power Consumption:**

	12V DC Input	24V DC Input	48V DC Input
System On (without PoE output)	5.28 Watts / 18.01 BTU	4.4 Watts / 15.01 BTU	5.28 Watts / 18.01 BTU
95W PoE Output (with 100 meters UTP cable)	N/A	110.2 Watts / 376 BTU	110.3 Watts / 376.35 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-171-95W 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
Box Weight:	590g
Carton Dimensions (W x D x H):	435 x 325 x 280 mm
Carton Weight:	12.3kg
Quantity:	20pcs in one carton