

**Long Reach PoE over UTP  
Extender Kit**

**LRP-111U-KIT**  
User's Manual

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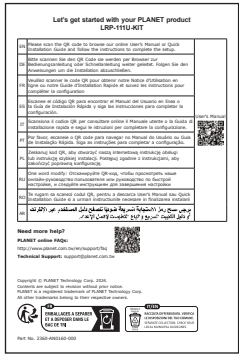

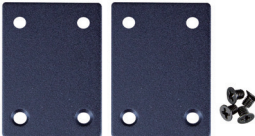
# 1. Introduction

Thank you for purchasing PLANET Long Reach PoE over UTP Extender Kit, the LRP-111U-KIT. The descriptions of the two models are as follows:

LRP-111U-KIT	
LRP-111UH	Industrial 1-Port 10/100TX 802.3bt PoE PD + 1-Port UTP Long Reach PoE Injector
LRP-111UE	Industrial 1-Port 10/100TX 802.3bt PoE + 1-Port UTP Long Reach PoE Extender

## 1.1 Package Contents

Open the box of the Long Reach PoE over UTP Extender Kit and carefully unpack it. The box should contain the following items:

LRP-111UH	LRP-111UE	QR code sheet x 1
		
RJ45 Dust cap x 4		Wall-mount Kit x 1
		



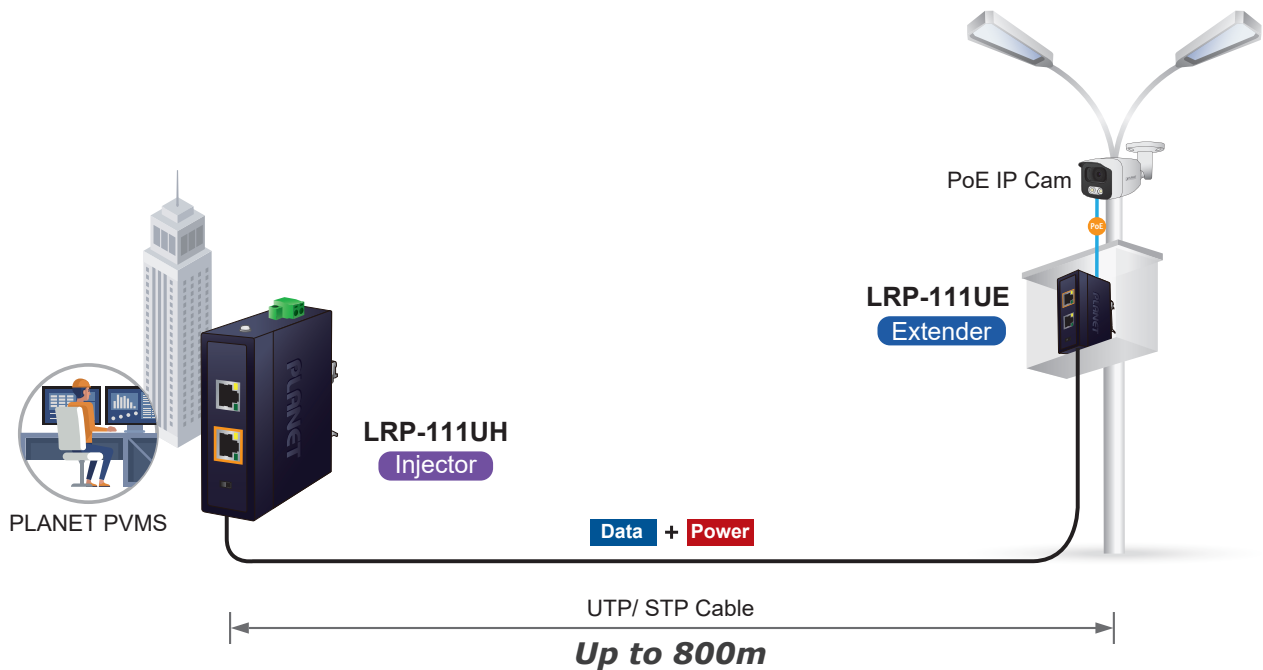
If any of these are missing or damaged, please contact your dealer immediately; if possible, retain the carton including the original packing material, and use them again to repack the product in case there is a need to return it to us for repair.

## 1.2 Introduction of Long Reach Power over Ethernet

The LRP-111U-KIT, a PLANET brand-new industrial-grade Long Reach PoE solution, is a **Single-port PoE over UTP Extender Kit** featuring long-range data and power transmission for distance up to **800m (2,624ft.)** over **UTP/STP** cable. The LRP-111U-KIT consists of the LRP-111UE Extender and the LRP-111UH Injector, which is connected to the Extender. Another Ethernet cable is connected from the Extender to a remote PoE IP camera, PoE wireless AP or access control system complied with **802.3at/bt PoE**. The LRP-111U-KIT provides point to point application for easy Plug and Play operation and deployment in climatically demanding environments with wide temperature range from **-40 to 75 degrees C**. Without the problem of power source, it makes the installation of remote PoE powered devices easier and more efficient.

### IP Ethernet and Power over Long UTP

A normal UTP cable can only be extended up to 100 meters, but the LRP-111U-KIT can extend PoE networking up to **800 meters (2,624ft.)**, enabling stable, **high-quality video transmission**. It eliminates the need for additional remote site power while allowing a single power source to provide power to both LRP extender and PoE IP camera at long range.



## 1.3 Product Features

### PoE over Long UTP

- Eliminates power cabling with PoE over UTP
- Supports Power over Ethernet PSE (PoE Injector)
- Power and Ethernet data transmission of 800m over UTP/STP cabling
- Complies with IEEE 802.3af/IEEE 802.3at/IEEE 802.3bt Power over Ethernet PD on RJ45 port
- Supports Long Reach PoE power up to 70 watts (depending on power source and cable distance)
- Supports PoE Power up to 60 watts (depending on power source and cable distance)
- Auto detects remote powered device (PD)
- Plug and Play; no PC required

### Industrial Case and Installation

- Supports extensive LED indicators for network diagnostics
- IP30 Metal case
- Compact size; DIN-rail or wall-mount design
- Supports Ethernet ESD protection of 6KV DC
- -40 to 75 degrees C operating temperature
- Free fall, shock-proof and vibration-proof for industries
- 52~54V DC power with reverse polarity protection (LRP-111UH only)

## 1.4 Product Specifications

### 1.4.1 Specifications

Model	LRP-111UH		LRP-111UE	
Functions	Long Reach PoE Injector		Long Reach PoE Extender	
Hardware Specifications				
Ethernet Interface	Copper	10/100BASE-TX RJ45 Half- or Full-duplex/Auto-Sensing, MDI/MDI-X		
	Power over Ethernet Standard	IEEE 802.3bt PoE PD (Powered Device)	IEEE 802.3bt PoE PSE (Power Source Equipment)	
	PoE Input	Supports both mid-span and end-span PSE Input Range: 52~54V DC	Supports both mid-span and end-span PSE	
	PoE Output	-	54V DC, 1.1A max.	
	PoE Budget	-	Up to 60 watts	
	PoE Mode	-	End-span + Mid-span, RJ45 Pin 1/2(-), 3/6(+), 4/5(+), 7/8(-)	
	Data Rate	10/100Mbps		
	Cabling	Cat5e or above UTP cable		
	Maximum Distance	100m		
	Maximum Frame Size	1522bytes		
Long Reach PoE Interface	Connectivity	1 x 10/100Mbps RJ45 connector Long Reach PoE over UTP PSE	1 x 10/100Mbps RJ45 connector Long Reach PoE over UTP PD	
	Power Input	-	52-54V DC	
	Power Output	54V DC	-	
	Power Pin Assignment	RJ45 Pin 1, 2, 4, 5 VCC+	RJ45 Pin 1, 2, 4, 5 VCC+	
		RJ45 Pin 3, 6, 7, 8 VCC-	RJ45 Pin 3, 6, 7, 8 VCC-	
Cabling	Cat.5e or above UTP cable			

Long Reach PoE Interface	Maximum Distance	Max. 500m with PoE output at 100Mbps (328ft.) Max. 800m with PoE output at 10Mbps (1,640ft.)			
	Performance**			LRP-111UE 802.3bt PoE Output Capability**	
		Distance	Data Rate*	LRP-111UH with 54V DC in	LRP-111UH with bt PoE++ in
		100m	100Mbps	65.62W	66.74W
		200m	100Mbps	53.42W	57.77W
		300m	100Mbps	38.82W	39.9W
		400m	100Mbps	34.2W	35.37W
		500m	100Mbps	27.26W	29.6W
		600m	10Mbps	22.6W	23.75W
		700m	10Mbps	17.91W	17.91W
800m	10Mbps	15.56W	15.56W		
DIP Switch	Long Reach port mode: - <b>Auto:</b> Auto-negotiation mode with maximum <b>100Mbps</b> data rate and UTP cable distance of up to <b>500 meters</b> - <b>Long Distance:</b> Long-reach port configured with <b>10Mbps</b> data rate and UTP cable distance of up to <b>800 meters</b>				
Power Connector	Removable 2-pin terminal block	-			
Power Requirements	■ RJ45 PoE Input: 802.3bt 52~54V DC ■ DC Input: 52~54V DC	Power over RJ45 Input: 52~54V DC			
Power Consumption	Max. 3 watts (System On) Max. 98 watts (Ethernet + PoE Full Loading)	Max. 4 watts (System On) Max. 98 watts (Ethernet + PoE Full Loading)			
Dimensions (W x D x H)	30 x 70 x 104 mm				
Weight	240g	238g			
Enclosure	IP 30 compact-size metal case				
Installation	DIN-rail kit or wall-mount ear				

ESD Protection	6KV DC	
LED Indicators	5 x LEDs ■ PWR ■ PoE In ■ PoE-in-use ■ LAN speed: 10Mbps (green), 100Mbps (amber) ■ LRP speed: 10Mbps (green), 100Mbps (amber)	4 x LEDs ■ PoE In ■ PoE-in-use ■ LAN speed: 10Mbps (green), 100Mbps (amber) ■ LRP speed: 10Mbps (green), 100Mbps (amber)
Standards Conformance		
Regulatory Compliance	FCC Part 15 Class A, CE	
Stability Testing	IEC 60068-2-32 (free fall) IEC 60068-2-27 (shock) IEC 60068-2-6 (vibration)	
Standards Compliance	IEEE 802.3 10BASE-T Ethernet IEEE 802.3u 100BASE-TX Fast Ethernet IEEE 802.3af Power over Ethernet (802.3at Type 1) IEEE 802.3at Power over Ethernet (802.3at Type 2) IEEE 802.3bt Power over Ethernet (802.3bt Type 3) IEEE 802.3bt Power over Ethernet (802.3bt Type 4)	
Environment		
Temperature	Operating: -40~75 degrees C Storage: -40~85 degrees C	
Humidity	Operating: 5~90% (non-condensing) Storage: 5~95% (non-condensing)	
Note	The speed and performance of the LRP-111U-KIT are related to the quality of the cable used.	



## 2. Hardware Description

### 2.1 Physical Dimensions

■ **Dimensions:**

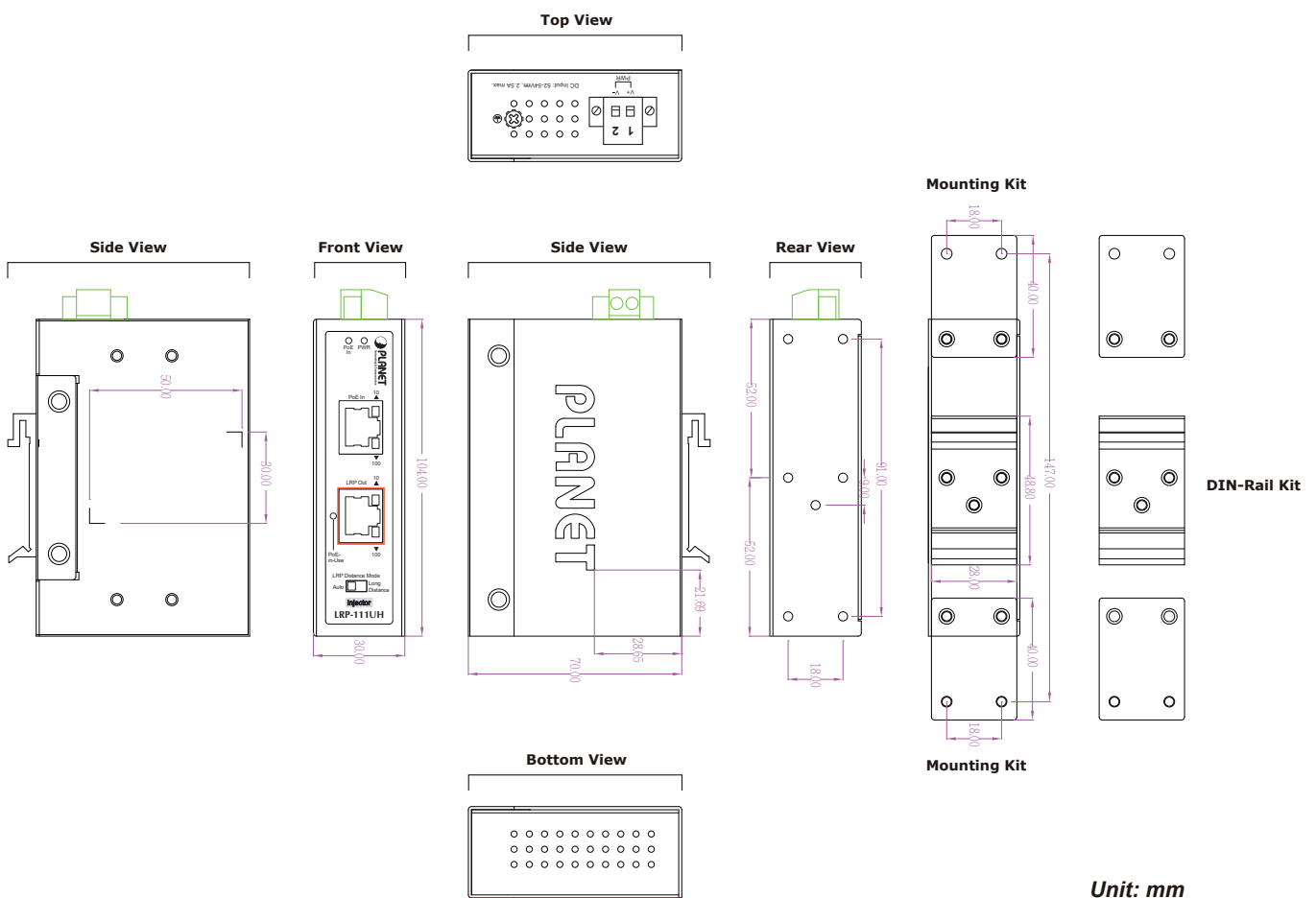
30 x 70 x 104 mm (W x D x H)

■ **Weight:**

LRP-111UH: 240g

LRP-111UE: 238g

■ **LRP-111UH Dimensions**





## 2.2 Front Panel and LED Indicators

### 2.2.1 LRP-111UH Front Panel and LED Indicators

Figure 2-1 shows the front panel of the LRP-111UH.

#### ➤ System

LED	Color	Function	
PWR	Green	On	Power ON: PoE++ / PoE power input from RJ45 PoE PD port. Power ON: 52~54V DC power input from DC jack.
		Off	Power Off
PoE IN	Amber	On: It indicates the RJ45 port is receiving the PoE Power.	

#### ➤ LRP UTP Interface

LED	Color	Function	
PoE-in-Use	Green	On:	It indicates that the LRP UTP link is established.
		Off:	It indicates that the LRP UTP link is down.
LNK/ACT	Green	Link speed at 10Mbps	
	Amber	Link speed at 100Mbps	

#### ➤ RJ45 10/100BASE-TX Interface

LED	Color	Function	
LNK/ACT	Green	Link speed at 10Mbps	
	Amber	Link speed at 100Mbps	

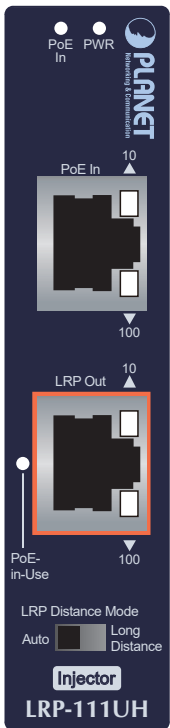


Figure 2-1: LRP-111UH front panel

## 2.2.2 LRP-111UE Front Panel and LED Indicators

Figure 2-2 shows the front panel of the LRP-111UE.

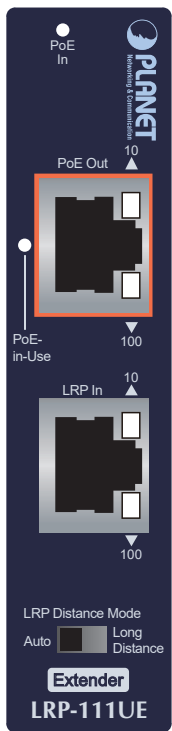


Figure 2-2: LRP-111UE front panel

### ➤ System

LED	Color	Function	
PoE IN	Green	On	Power ON: PoE++ / PoE power input from RJ45 PoE PD port.
		Off	Power Off

### ➤ LRP UTP Interface

LED	Color	Function
LNK/ACT	Green	Link speed at 10Mbps
	Amber	Link speed at 100Mbps

### ➤ RJ45 10/100BASE-TX Interface

LED	Color	Function
PoE-in-Use	Green	On: It indicates power is being supplied to the device via 802.3bt.
	Amber	Off: It indicates power is being supplied to the device via 802.3at.
LNK/ACT	Green	Link speed at 10Mbps
	Amber	Link speed at 100Mbps

## 2.3 LRP Distance Mode DIP Switch

The DIP switch in the front panel of LRP-111U-KIT configures the link speed and distance capability of the LRP ports.

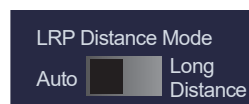


Figure 2-3: LRP Distance Mode DIP Switch

Mode	Function
Auto	Auto-negotiation mode with maximum <b>100Mbps</b> data rate and UTP cable distance of up to <b>500 meters</b> .
Long Distance	Long-reach port configured with <b>10Mbps</b> data rate and UTP cable distance of up to <b>800 meters</b> .



Note

After changing the DIP switch settings, please restart the device for the changes to take effect

## 2.4 Upper Panel

The upper panel of the LRP-111UH consists of one terminal block connector within one DC power inputs.

Figure 2-4 shows the upper panel of the LRP-111UH.

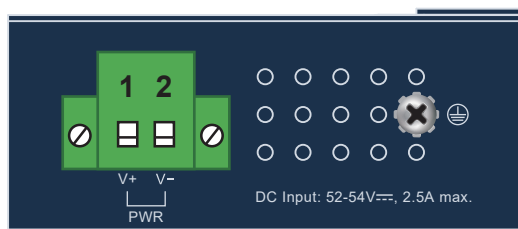


Figure 2-4: LRP-111UH Upper Panel

## 2.5 Wiring the Power Inputs

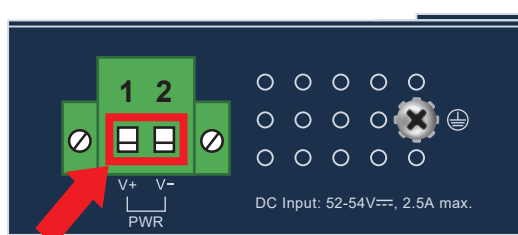
The 2-contact terminal block connector on the top panel of LRP-111UH is used for DC power input. Please follow the steps below to insert the power wire.



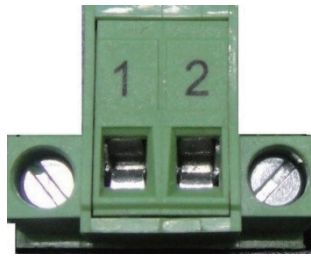
Caution

When performing any of the procedures like inserting the wires or tightening the wire-clamp screws, make sure the power is OFF to prevent from getting an electric shock.

1. Insert positive and negative DC power wires into contacts 1 and 2 for POWER



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



1 2  
Power  
+ -

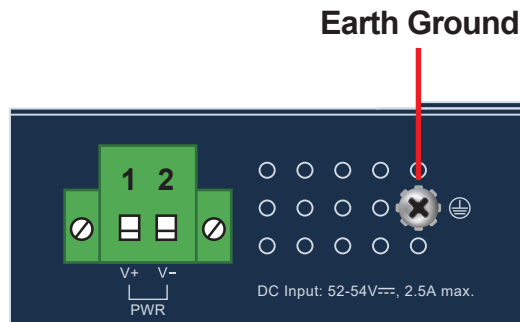


Note

1. The wire gauge for the terminal block should be in the range between 12 and 24 AWG.
2. The DC power input range is 52V ~ 54V DC.

## 2.6 Grounding the Device

User **MUST** complete grounding wired with the device; otherwise, a sudden lightning could cause fatal damage to the device. EMD (Lightning) DAMAGE IS NOT COVERED UNDER WARRANTY.



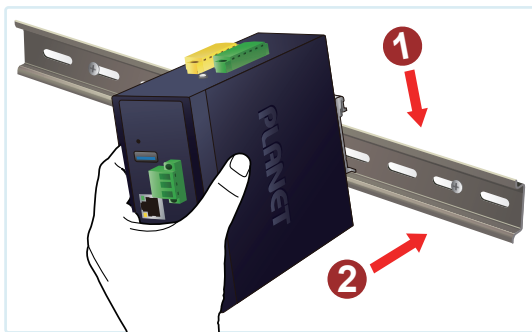
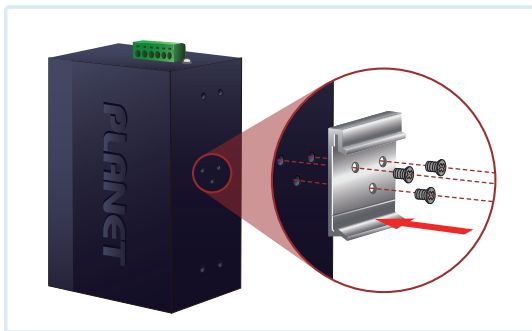
### 3. Installation

This section describes the functionalities of the Industrial Ethernet Switch's components and guides you to installing it on the DIN rail and wall. Please read this chapter completely before continuing.

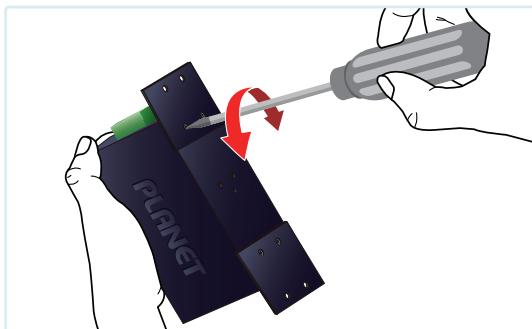


This following pictures show the user how to install the device, and the device is not LRP-111UH or LRP-111UE.

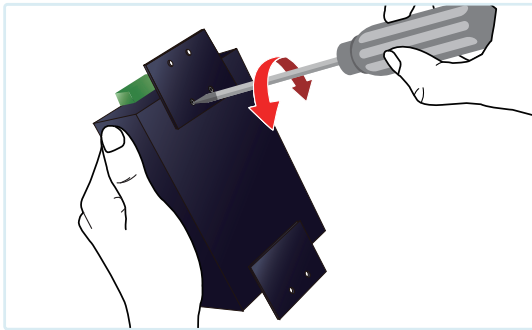
#### 3.1 DIN-rail Mounting Installation



#### 3.2 Wall-mount Plate Mounting



### 3.3 Side Wall-mount Plate Mounting



Caution

You must use the screws supplied with the wall-mounting brackets. Damage caused to the parts by using incorrect screws would invalidate your warranty.

### 3.4 Power Options:

#### ■ LRP-111UH

There are two ways to power the LRP-111UH:

- Powered via PoE
- Powered via DC adapter (52~54V)

#### ■ LRP-111UE

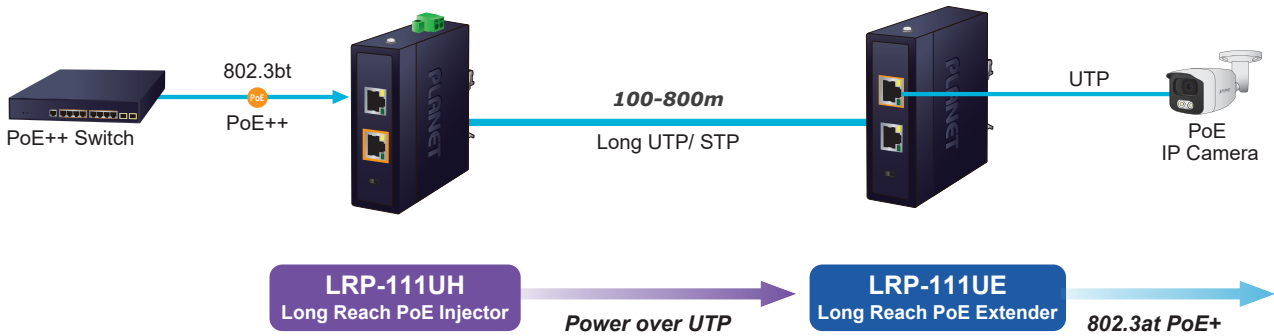
There is only one way to power the LRP-111UE:

- Powered via PoE



### 3.5 Applications of LRP-111U-KIT with UTP Cable

**Type 1** – LRP-111UH with PoE power input connects to LRP-111UE via UTP cable



Functions	LRP Injector
	LRP-111UH
Power Input	<b>RJ45</b> with <b>802.3bt</b> PoE input
Power Output	<b>UTP</b> with DC power over UTP output

Functions	LRP Extender
	LRP-111UE
Power Input	<b>UTP</b> with DC power over UTP input
Power Output	<b>RJ45</b> with <b>802.3bt</b> PoE output

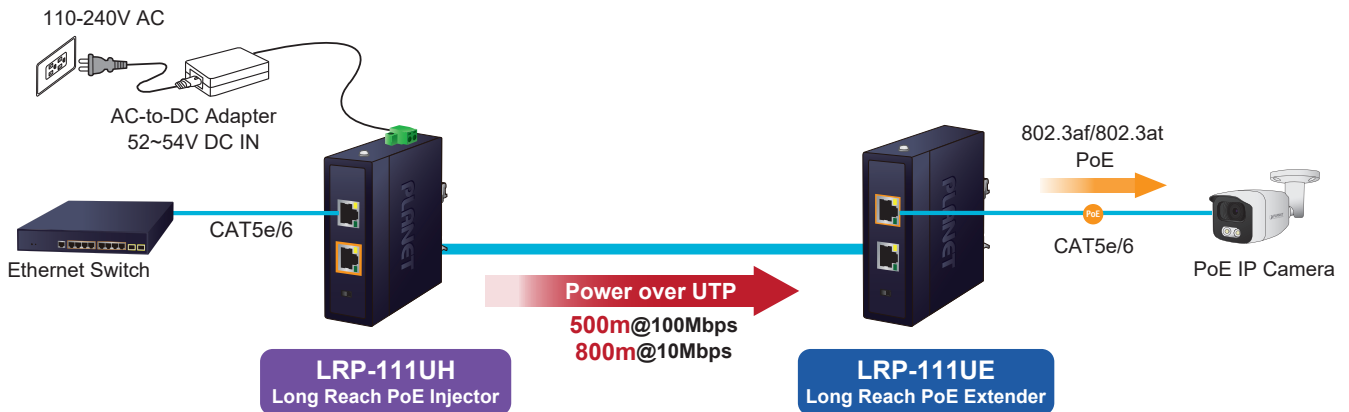
#### Installation Instructions

- Step 1.** Connect the LRP-111UH RJ45 port to the LRP-111UE RJ45 port with UTP cable.
- Step 2.** Connect Cat5/6 UTP cable to LRP-111UH and IEEE 802.3bt compliant PoE++ Switch or PoE++ Injector. If the PoE++ switch or PoE++ injector is powered on already, then the PWR LED of LRP-111UH and LRP-111UE should light up accordingly.
- Step 3.** Connect Cat5/6 UTP cable to LRP-111UE and IEEE 802.3at complied PoE IP camera or PoE wireless AP.

**Note**

1. Before installation, please consider the distance and watts value demand for PD devices.
2. As there are various resistance values in the category 5/5e cable, the actual PoE output will vary on the quality of the copper wire and environmental factors.

**Type 2** – LRP-111UH with 52~54V power input and LRP-111UE with PoE power output



Functions	LRP Injector
	LRP-111UH
Power Input	<b>Power supply</b> with <b>52~54V DC</b> in
Power Output	<b>UTP</b> with DC power over UTP output

Functions	LRP Extender
	LRP-111UE
Power Input	<b>UTP</b> with DC power over UTP input
Power Output	<b>RJ45</b> with 802.3bt PoE output

**Installation Instructions**

- Step 1.** Connect the LRP-111UH RJ45 port to the LRP-111UE RJ45 port with UTP cable.
- Step 2.** Connect Cat5/6 UTP cable to LRP-111UH and non-PoE switch or workstation.
- Step 3.** Connect 52~54V DC power adapter to LRP-111UH power socket, and then the PWR LED of LRP-111UH and LRP-111UE should light up immediately.
- Step 4.** Connect Cat5/6 UTP cable to LRP-111UE and IEEE 802.3bt/at complied PoE IP camera or PoE wireless AP.

**Note**

1. Before installation, please consider the distance and watts value demand for PD devices. The LRP-111U-KIT PoE output capacity performance depends on the length of UTP cable.
2. As there are various resistance values in the category 5/5e cable, the actual PoE output will vary on the quality of the copper wire and environmental factors.
3. The LRP-111UH has two power input options; only one mode is available at one time. PoE power input cannot be used if power input of DC 52V or 54V is selected.

## 4. Troubleshooting

This chapter contains information to help you solve issues. If the Long Reach PoE over UTP Extender Kit is not functioning properly, make sure the Long Reach PoE over UTP Extender Kit is set up according to instructions in this manual.

- **What is the maximum distance supported by LRP-111U-KIT?**

Solution:

The LRP-111U-KIT supports a maximum distance of 800m.

- **May I know which power source can be accepted by LRP-111U-KIT?**

Solution:

1. DC 54V power adapter.
2. DC 52V power adapter.
3. IEEE 802.3at High Power over Ethernet Switch.
4. IEEE 802.3af Power over Ethernet Switch.
5. IEEE 802.3bt Power over Ethernet Switch.

- **The LRP-111U-KIT Performance is bad.**

Solution:

The actual performance will vary on the quality of the UTP cable and environment factors.

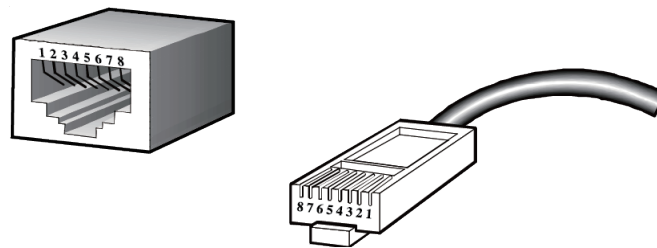
## APPENDIX A: Networking Connection

### A.1 Switch's RJ45 Pin Assignments

10/100Mbps, 10/100BASE-TX

RJ45 Connector Pin Assignment			
Contact	MDI Media Dependent Interface	MDI-X Media Dependent Interface -- Cross	PoE++
1	Tx + (transmit)	Rx + (receive)	Positive (VCC+)
2	Tx - (transmit)	Rx - (receive)	Positive (VCC+)
3	Rx + (receive)	Tx + (transmit)	Negative (VCC-)
4, 5	Not used		Positive (VCC+)
6	Rx - (receive)	Tx - (transmit)	Negative (VCC-)
7, 8	Not used		Negative (VCC-)

### A.2 RJ45 Cable Pin Assignments



The standard RJ45 receptacle/connector

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## **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 Long Reach PoE over UTP Extender Kit User's Manual

MODEL: LRP-111U-KIT

REVISION: 1.0 (June 2024)

Part No: EM-LRP-111U-KIT\_v1.0 (2350-AN0120-001)