Industrial 1-Port Coax/UTP Long Reach PoE+ 4-Port 10/100TX PoE Extender

LRP-104CET

User's Manual
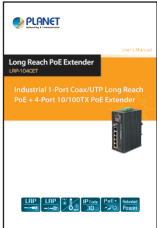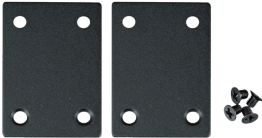
Table of Contents

1. Package Contents

Thank you for purchasing PLANET **Industrial 1-Port Long Reach PoE+ 4-Port 10/100TX PoE Extender**, LRP-104CET. In the following section, the term **"LRP Extender"** means the LRP-104CET.

Open the box of the LRP Extender and carefully unpack it. The box should contain the following items:

LRP Extender x 1	User's Manual x 1
DIN Rail Kit x 1	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.

2. Application Diagram

PLANET Long Reach PoE solution is designed to extend IP Ethernet transmission and inject power simultaneously into a remote 802.3af/at PoE compliant powered device (PD) beyond the 100 meters distance limit of Ethernet. The solution works in pairs for point to point and point to multipoint connectivity.

The LRP-104CET supports two ways as power source to inject 802.3af/at PoE to remote standard PDs (Powered Devices).

● **Remote LRP Power from LRP Injector/switch over coaxial cable**

● **Local DC power from power supply through LRP-104CET's terminal block**

In the following application topologies, users can find the suitable way to extend the distance and power on the remote PDs.

2.1 Point to Multi-point

Remote LRP Power through BNC/RJ45 with DC 56V input or Local Power with External DC input (DC 24V~48V)

2.1.1 LRP-101CH to LRP-104CET

Remote LRP Power over Coaxial

110-240V AC

AC-to-DC Adapter
60W~120W/48~56V DC IN

Ethernet Switch   Cat5e/6

LRP-101CH
Long Reach PoE Injector

Power over Coaxial

LRP-104CET
Long Reach PoE Extender

802.3af/802.3at PoE

PoE IP Camera

**PoE Power Budget
60 watts ~ 120 watts (max.)**

Local Power

110-240V AC

AC-to-DC Adapter
60W/48~56V DC IN

Ethernet Switch

Cat5e/6

LRP-101CH
Long Reach PoE Injector

LRP-104CET
Long Reach PoE Extender

120W/24-48V DC
Power Supply

802.3af/802.3at PoE

PoE IP Camera

**PoE Power Budget
120 watts (max.)**

2.1.2 LRP-101UH to LRP-104CET

Remote LRP Power over UTP

110-240V AC

AC-to-DC Adapter
60W~120W/48~56V DC IN

Ethernet Switch

Cat5e/6

LRP-101UH
Long Reach PoE Injector

Power over UTP

LRP-104CET
Long Reach PoE Extender

802.3af/802.3at PoE

PoE IP Camera

**PoE Power Budget
60 watts ~ 120 watts (max.)**

Local Power

110-240V AC

AC-to-DC Adapter
60W/48~56V DC IN

Ethernet Switch

Cat5e/6

LRP-101UH
Long Reach PoE Injector

LRP-104CET
Long Reach PoE Extender

120W/24-48V DC
Power Supply

802.3af/802.3at PoE

PoE IP Camera
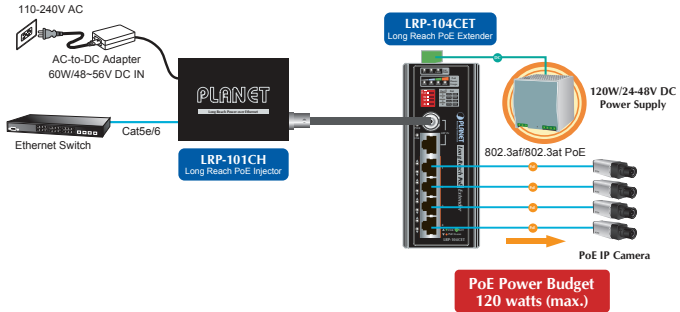
**PoE Power Budget
120 watts (max.)**

2.2 Multi-Point to Multi-Point

Remote power LRP Power through BNC with DC 56V input or Local Power with External DC input (DC 24V~48V)
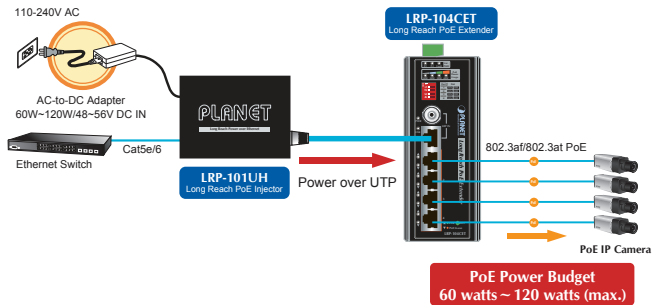
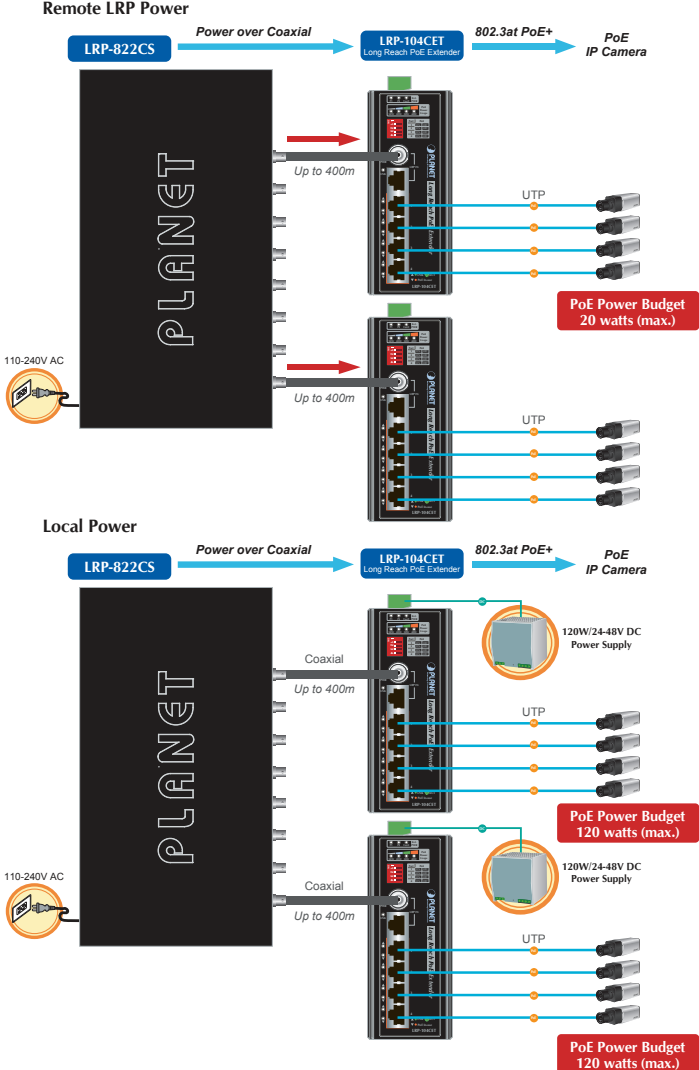### 2.2.1 LRP-822CS/LRP-1622CS to LRP-104CET

3. Hardware Introduction

3.1 Physical Dimensions

■ LRP-104CET LRP Extender dimensions (W x D x H): 135 x 87.8 x 56mm
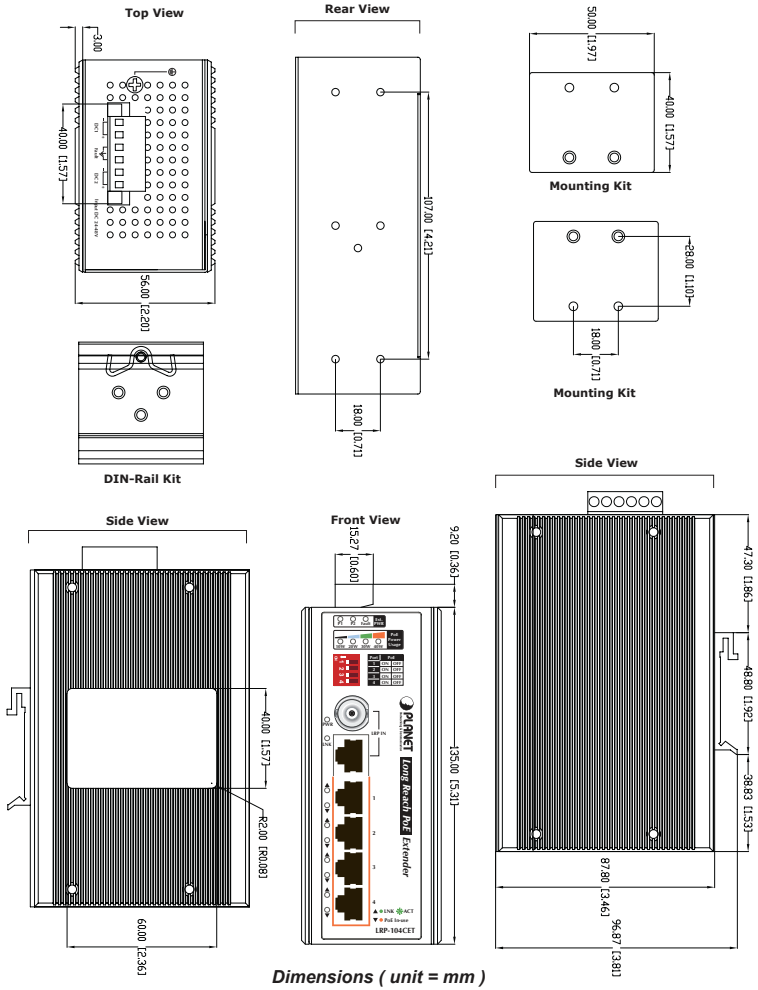
Dimensions (unit = mm)

Figure 3-1: shows the front panel of LRP Extender

3.2 Front Panel

The front panel of the LRP Extender consists of 1BNC female/RJ45 connector and 4 10/100BASE-TX RJ45 ports. The LED Indicators are also located on the RJ45 ports of LRP-104CET

Figure 3-2: LRP-104CET Front Panel

3.3 The Upper Panel

The upper panel of the LRP Extender consists of one terminal block connector within two DC power inputs.

Figure 3-3: LRP Extender Upper Panel

3.4 LED Indicators

External Power Supply

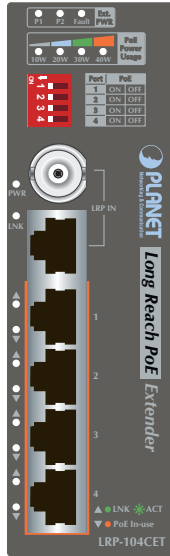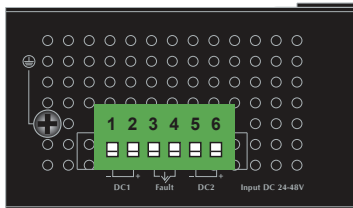| LED	Color	Function
P1	Green	**Lights** to indicate power 1 has power.
P2	Green	**Lights** to indicate power 2 has power.
FAULT	Red	**Lights** to indicate either power 1 or power 2 has no power.

PoE Usage

LED	Color	Function
10W	Green	**Lights** to indicate the power usage is ≥ 10W.
20W	Green	**Lights** to indicate the power usage is ≥ 20W.
30W	Green	**Lights** to indicate the power usage is ≥ 30W.
40W	Green	**Lights** to indicate the power usage is ≥ 40W.

LRP Interface

LED	Color	Function
PWR	Green	**Lights** to indicate the power is on.
LNK	Green	**Lights** to indicate that the Coaxial/UTP link is established. **Off:** indicates that the Coaxial/UTP link is down.

RJ45 10/100 BASE-TX Interface

LED	Color	Function
PoE In-Use	Orange	**Lights** to indicate the RJ45 port is providing PoE power.
10/100 LNK/ACT	Green	**Lights** to indicate the link through that port is successfully established at 10/100Mbps. **Blinks** to indicate that the port is actively sending or receiving data. **Off:** indicates that the port is link down.

3.5 PoE DIP Switch Indication

The LRP Extender provides an adjustable switch that can be used to control the operation of the PoE output.
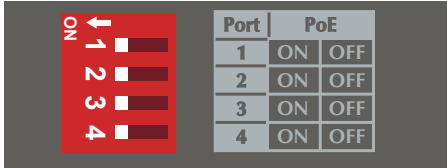
Port 1	ON (default)	Port-1 PoE Enable
	OFF	Port-1 PoE Disable
Port 2	ON (default)	Port-2 PoE Enable
	OFF	Port-2 PoE Disable
Port 3	ON (default)	Port-3 PoE Enable
	OFF	Port-3 PoE Disable
Port 4	ON (default)	Port-4 PoE Enable
	OFF	Port-4 PoE Disable

Note	For example, if administrator wants to stop remote Powered device of port1, simply turn the switch OFF to stop the output power.

Caution	When you turn off the PoE function of any ports, per port output will not enhance the output capacity.

4. Hardware Specifications

Model	LRP-104CET	
Hardware Specifications		
Ethernet Interface	Copper Ports	Four 10/100BASE-TX RJ45 auto-MDI/MDI-X
	PoE Injector Ports	Four ports with 802.3at/af PoE injector function with Port-1 to Port-4
	Functionality	Four DIP switches to control PoE output on or off with Port-1 to Port-4
	PoE Standards Compliance	IEEE 802.3at Power over Ethernet Plus/PSE
	PoE Type	End-span
	PoE Power output	52V DC, PoE output depends on LRP Injector or LRP Switch
		52V DC, 25-watt per port (External DC input)
	Cabling	Ethernet : 10BASE-T: 2-pair UTP Cat.3, 4 and 5 Ethernet : 100BASE-TX: 2-pair UTP Cat.5, 5e and 6
	Maximum Distance	100m
	Maximum Frame size	1522 bytes
Long Reach PoE Interface	Connectivity	One BNC female Long Reach PoE over Coaxial PD (Powered Device)	One RJ45 connector Long Reach PoE over UTP PD (Powered Device)
	Power Input	44~56V DC	
	Power Pin Assignment	BNC center pole: DC+ BNC shield: DC-	RJ45 Pin 1, 3, 5, 7: VCC+ RJ45 Pin 2, 4, 6, 8: VCC-

Long Reach PoE Interface	Cabling	Coaxial cable: 75 ohm RG-6/U cable, less than12Ω/1000 ft RG-59/U cable, less than 30Ω/1000 ft.	Cat. 3, 4, 5, 5e UTP cable (100 meters, max.) EIA/TIA-568 100-ohm STP (100 meters, max.)
	Maximum Distance	Max. 200m with PoE+ output (656ft.) Max. 400m with PoE output (1,312ft.) Max. 1000m without PoE output (3,280ft.)	Max. 100m with PoE+ output (328ft.) Max. 400m with PoE output (1,312ft.)
	Long Reach Ethernet Standard	IEEE 1901	
	Modulation Type	Wavelet-OFDM	
	Security	128-bit AES encryption	
	Frequency Band	2~28 MHz	
	Encryption	AES 128-bit	
	LRP Compatibility	With power over coaxial input: • LRP-101CH – 1-Port LRP Injector • LRP-822CS – 8-Port LRP over Coax Switch • LRP-1622CS – 16-Port LRP over Coax Switch	With power over UTP input: • LRP-101UH – 1-Port LRP Injector

		Green: DC Power 1
LED Indicator	3 x LED for External power supply:	Green: DC Power 2
		Red: Power Fault
	4 x LED for PoE Usage:	Green: 10W/20W/30W/40W
	2 x LED for Long Reach PoE In:	Green: PWR
		Green: LNK
	2 x LED for each RJ45 interface (Port-1 and Port-4)	Green: 10/100Mbps LNK/ACT
		Orange: PoE-in-use
Installation	DIN rail kit and wall mount kit	
Dimensions (W x D x H)	135 x 87.8 x 56 mm	
Weight	644g	
Power Requirements	44~56V DC power over coaxial input	
	DC 24~48V, redundant power with polarity reverses protection function	
Power Consumption/ Dissipation	130watts/446BTU (Ethernet with PoE Full Loading)	
Alarm	One relay output for power failure. Alarm relay current carry ability: 1A @ 24V DC	
Enclosure	Aluminum metal case	
Standards Conformance		
Standards Compliance	IEEE 802.3 Ethernet/10BASE-T IEEE 802.3u Fast Ethernet/100BASE-TX IEEE 802.3x Full-Duplex Flow Control IEEE 802.3at Power over Ethernet Plus	
Regulatory Compliance	FCC Part 15 Class A, CE	
Stability Testing	IEC60068-2-32 (free fall) IEC60068-2-27 (anti-shock) IEC60068-2-6 (anti-vibration)	

Environment	
Temperature	Operating: -20~70 degrees C Storage: -20~70 degrees C
Humidity	Operating: 5~95% (non-condensing) Storage: 5~95% (non-condensing)

Performance					
Coaxial Performance	Distance	Data rate(Upload/ Download)	802.3af/at PoE Total Output Capability		
			Remote LRP power through BNC W/56VDC IN	Remote LRP power by LRP-822CS/ LRP-1622CS	Local DC power through terminal block
	200m	91/88 Mbps	24W	18W/19W	120W
	400m	89/87 Mbps	21W	14W/16W	120W
	600m	83/81 Mbps	15W	10W/12W	120W
	800m	68/69 Mbps	11W	7W/8W	120W
	1000m	57/60 Mbps	8W		120W
UTP Performance	Distance	Data rate (Upload/ Download)	802.3af/at PoEtotal Output Capability		
			Remote LRP power through RJ45 W/56VDC IN	Local DC power through terminal block	
	100m	90/87Mbps	24W	120W	
	200m	76/77Mbps	21W	120W	
	300m	54/61Mbps	20W	120W	
	400m	39/47Mbps	20W	120W	
	500m	14/18Mbps	20W	120W	

* As there are various resistance values in the category of RG-59/U or RG-6/U cable, the actual data rate will vary on the quality of the copper wire and environment factors.

** Depending on what the DC/PoE Power Input and the length of coaxial cable are.

5. Installation Precautions

The LRP-104CET supports two ways as power source to inject 802.3af/at PoE to remote standard PDs.

- Remote LRP Power from LRP Injector/switch over coaxial/UTP cable
- Local DC power from power supply through LRP-104CET's terminal block

5.1 Installation Precautions of Remote Power by Coaxial Cable

When installing LRP PoE over coaxial injector, it only can work with PLANET LRP Extender, the LRP-104CET or LRP-101CE. Please confirm that other non-PoE equipment is not connected with the coaxial cable. When you connect the coaxial cable with coax-LAN converter, CCTV camera, etc, it might cause other equipment to damage.

⚠ Caution	After the power over coaxial injector is enabled, the center pin of the coaxial cable is with electricity. Please do not touch the center pin.

📝 Note	All PLANET power over coaxial injectors or switches have the Warning Sticker, including LRP-101CH, LRP-822CS and LRP-1622CS.

5.2. Installation Precautions of Remote Power by UTP Cable

When installing LRP PoE over UTP injector, it only can work with PLANET LRP Extender, the LRP-104CET or LRP-101UE. Please confirm that other non-PoE equipment is not connected with the UTP cable. If connected with standard Ethernet equipment, it might cause damage to the equipment.

5.3 Installation Precautions of Local Power

Installation of LRP injector or LRP switch. If you need to increase the PoE power budget of the LRP-104CET, you must use an external DC power supply. The 6-contact terminal block connector on the upper panel of LRP Extender is used for two DC redundant power inputs. Please follow the steps below to insert the power wire.

|	
Note	When the user is connected with an external power supply, the LRP-104CET will give priority to external power supply, LRP Injector or LRP Switch where data is transmitted to the LRP-104CET.

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 1, or 5 and 6 for POWER 2.
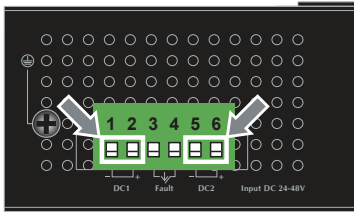
2. Tighten the wire-clamp screws for preventing the wires from loosening.
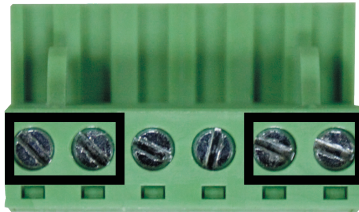

```
1    2    3    4    5    6
Power 1   Fault    Power 2
-    +              -    +
```
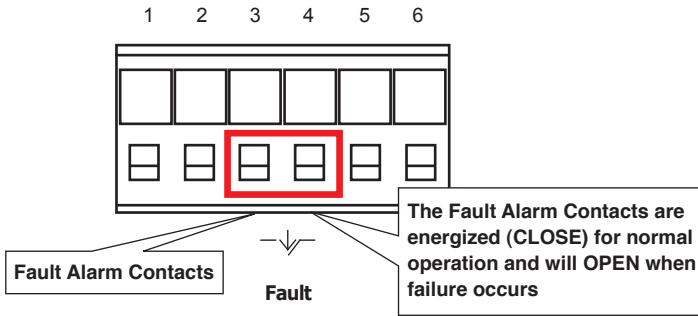
5.4 Wiring the Fault Alarm Contact

The fault alarm contacts are in the middle of the terminal block connector as the picture shows below. Inserting the wires, the LRP Extender will detect the fault status of the power failure and then forms an open circuit. The following illustration shows an application example for wiring the fault alarm contacts.

Insert the wires into the fault alarm contacts

6. Installation

This section describes the functionalities of the LRP Extender's components and guides you to how to install it. Basic knowledge of networking is expected. Please read this chapter completely before continuing.

Note

Before installation, please consider the distance and watts value demand for PD devices. The LRP-104CET output capacity and upload / download performance depends on the length of coaxial cable and UTP cable.

Note

When the remote PD's total power consumption is higher than LRP-104CET PoE power budget, the device will reboot and the LED Indicators will flash continuously. Please remove UTP cables of RJ45 ports to avoid the LRP-104CET to malfunction.

6.1 Applications of LRP-101CH or LRP Switch with coaxial cable

Type 1 One LRP-101CH with PoE power input and one LRP-104CET with PoE power output

The LRP Injector is powered via IEEE 802.3at/af PoE. An IEEE 802.3at/af compliant PoE PD will automatically be powered by the LRP Extender via UTP.
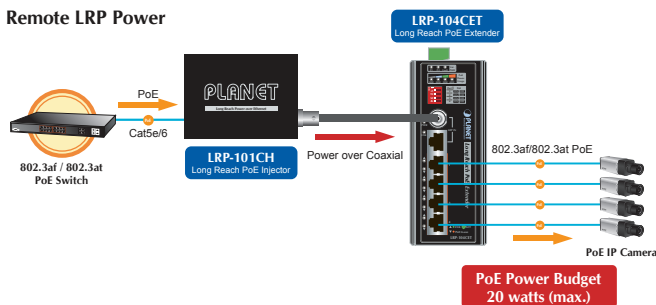
Functions	LRP Injector	LRP Extender
	LRP-101CH	LRP-104CET
Power Input	**RJ45** with 802.3at/af PoE input	**BNC** with DC power over coaxial input
Power Output	**BNC** with DC power over coaxial output	**RJ45** with **802.3at/af** PoE output

Installation Instructions

Step 1. Connect the LRP Injector (LRP-101CH) and LRP Extender (LRP-104CET) to ends of BNC terminated coaxial cable.

Stick the "Warning Sticker" on the coaxial cable.

Step 2. Connect Cat5/6 UTP cable to LRP-101CH and IEEE 802.3at compliant PoE Switch or PoE Injector. If the PoE switch or PoE injector is powered on already, then the PWR LED of LRP-101CH and LRP-104CET should be lit up immediately.

Step 3. Connect Cat5/6 UTP cable to LRP-104CET and IEEE 802.3at/af complied PoE IP camera or PoE Wireless AP.

> **Warning**
>
> The LRP-101CH accepts IEEE 802.3at equipment for optimal power injection. The other non-standard PoE power devices may cause the LRP-101CH to malfunction.

Type 2 One LRP-101CH with 48~56V power adapter and one LRP-104CET with PoE power output

The LRP Injector is powered via the external power adapter. The IEEE 802.3at/af compliant PoE PD will automatically be powered by the LRP Extender via UTP.

Remote LRP Power over Coaxial
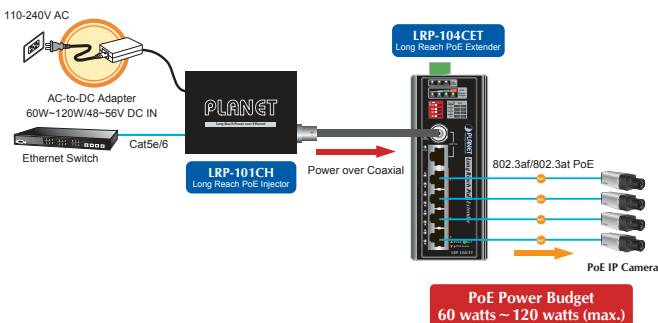
Functions	LRP Injector	LRP Extender
	LRP-101CH	LRP-104CET
Power Input	**Power adapter** with **48~56V DC** in The LRP-101CH accepts up to 120W external power input	**BNC** with DC power over coaxial input
Power Output	**BNC** with DC power over coaxial output	**RJ45** with 802.3at/af PoE output

Installation Instructions

Step 1. Connect the LRP Injector (LRP-101CH) and LRP Extender (LRP-104CET) to ends of BNC terminated coaxial cable.

Stick the "Warning Sticker" on the coaxial cable.

Step 2. Connect Cat5/6 UTP cable to LRP-101CH and non-PoE switch or workstation.

Step 3. Connect 48~56V DC power adapter to LRP-101CH power socket, then the PWR LED of LRP-101CH and LRP-104CET should be lit up immediately.

Step 4. Connect Cat5/6 UTP cable to LRP-104CET and IEEE 802.3at/af complied PoE IP camera or PoE Wireless AP.

Note	1. PoE output capacity is based on different DC Power Input / PoE Input.
	2. The LRP-101CH 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 56V is selected.

Type 3 One LRP-822CS/LRP-1622CS with AC power input and one LRP-104CET with PoE power output

The LRP Switch is powered via the AC power. The IEEE 802.3at/af compliant PoE PD will automatically be powered by the LRP Extender via UTP.
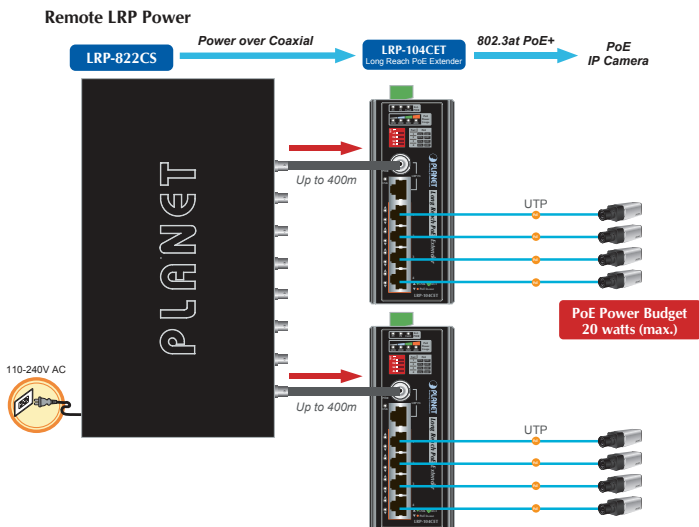
Functions	LRP Switch	LRP Extender
	LRP-822CS/LRP-1622CS	LRP-104CET
Power Input	Power cord with AC 100~240V, 50/60Hz, auto-sensing	**BNC** with DC power over coaxial input
Power Output	**BNC** with DC power over coaxial output	**RJ45** with 802.3at/af PoE output

Installation Instructions

Step 1. Connect the LRP Switch (LRP-822CS/LRP-1622CS) and LRP Extender (LRP-104CET) to ends of BNC terminated coaxial cable.

Step 2. Connect 100~240V AC power cord to LRP Switch (LRP-822CS/LRP-1622CS) power socket, then the PWR LED of LRP Switch (LRP-822CS/LRP-1622CS) should be lit up immediately.

The LRP Managed Switch is configured **DISABLED** Long Reach PoE function as default. So you must Enable Long Reach PoE function for all LRP ports from WebUI.

Step 3. After **enabling** the LRP function of LRP Switch (LRP-822CS/LRP-1622CS) from WebUI, the PWR LED of LRP-104CET should be lit up immediately.

Step 4. Connect Cat5/6 UTP cable to LRP-104CET and IEEE 802.3at/af complied PoE IP camera or PoE Wireless AP.
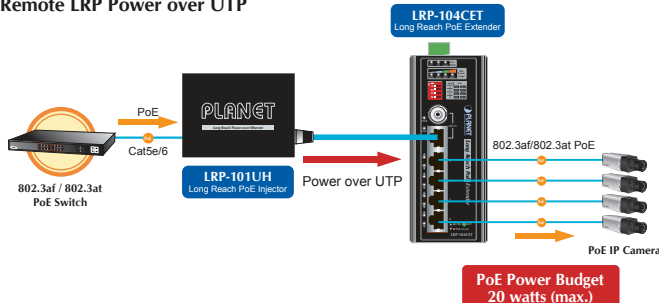
Note	Additional advanced settings for the LRP Switch (LRP-822CS / LRP-1622CS) can be downloaded from the PLANET website or contact the PLANET support team.

6.2 Applications of LRP-101U-KIT with UTP/Twisted-pair Cable

Type 1 LRP-101UH with PoE power input and LRP-104CET with PoE power output

Remote LRP Power over UTP

Functions	LRP Injector	LRP Extender
	LRP-101UH	LRP-104CET
Power Input	**RJ45** with **802.3at/af** PoE input	**UTP** with DC power over UTP input
Power Output	**UTP** with DC power over UTP output	**RJ45** with **802.3at/af** PoE output

Installation Instructions

Step 1. Remove the **"Danger – No Ethernet"** label stuck on the RJ45 LRP port of LRP-101UH.

Step 2. Connect the LRP Injector (LRP-101UH) and LRP Extender (LRP-104CET) to ends of RJ45 terminated long UTP/twisted-pair cable.

Warning

1. Please do not connect any Ethernet equipment to LRP OUT Port of the LRP-101UH; otherwise, it will damage the Ethernet equipment.
2. Please do not connect any Ethernet equipment to LRP IN Port of the LRP-104CET; otherwise, it will damage the Ethernet equipment.

Step 3. Connect Cat5/6 UTP cable to LRP-101UH and IEEE 802.3at compliant PoE Switch or PoE Injector. If the PoE switch or PoE injector is powered on already, then the PWR LED of LRP-101UH and LRP-104CET should be lit up accordingly.

Step 4. Connect Cat5/6 UTP cable to LRP-104CET and IEEE 802.3at/af complied PoE IP camera or PoE Wireless AP.

Warning

The LRP-101UH accepts IEEE 802.3at equipment for optimal power injection. The other non-standard PoE Power devices may cause the LRP-101UH to malfunction.
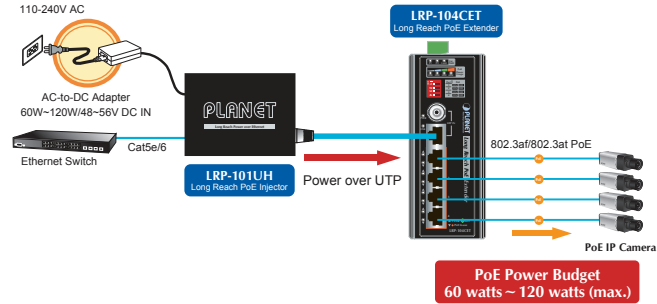
Note

As there are various resistance values in the category 5/5e cable, the actual data rate will vary on the quality of the copper wire and environmental factors.

Type 2 LRP-101UH with 48~56V power adapter and LRP-104CET with PoE power output

Remote LRP Power over UTP

Functions	LRP Injector	LRP Extender
	LRP-101UH	LRP-104CET
Power Input	**Power adapter** with **48~56V DC** in The LRP-101UH accepts up to 120W external power input	**UTP** with DC power over UTP input
Power Output	**UTP** with DC power over UTP output	**RJ45** with 802.3at/af PoE output

Installation Instructions

Step 1. Remove the "Danger – No Ethernet" label stuck on the RJ45 LRP ports of LRP-101UH.

Step 2. Connect the LRP Injector (LRP-101UH) and LRP Extender (LRP-104CET) to ends of RJ45 terminated long UTP/twisted-pair cable.

⚠ Warning	1. Please do not connect any Ethernet equipment to LRP OUT Port of the LRP-101UH; otherwise, it will damage the Ethernet equipment.
	2. Please do not connect any Ethernet equipment to LRP IN Port of the LRP-104CET; otherwise, it will damage the Ethernet equipment.

Step 3. Connect Cat5/6 UTP cable to LRP-101UH and non-PoE switch or workstation.

Step 4. Connect 48~56V DC power adapter to LRP-101UH power socket, and then the PWR LED of LRP-101UH and LRP-104CET should be lit up immediately.

Step 5. Connect Cat5/6 UTP cable to LRP-104CET and IEEE 802.3at/af complied PoE IP camera or PoE Wireless AP.

6.3 Applications of LRP Injector or LRP Switch powered by External DC power supply
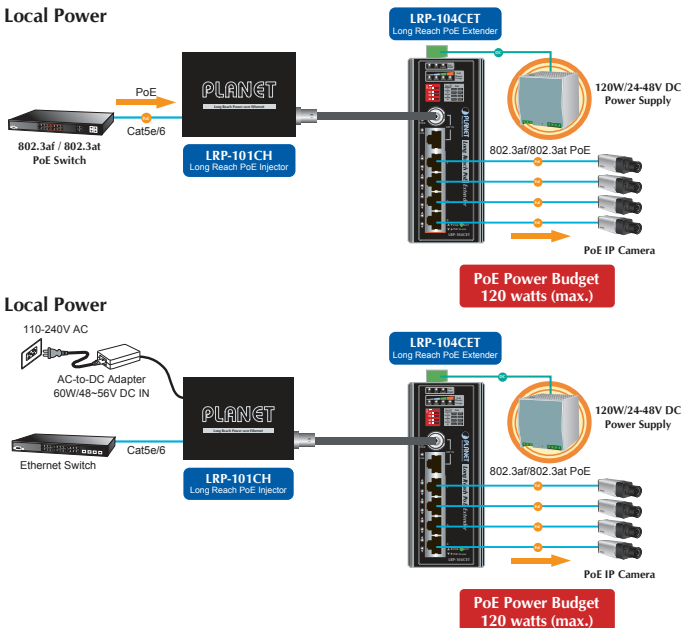
The LRP-104CET can be powered via **External DC 24~48V** input. You can refer to Section **5.3** for **Installation Precautions of Local Power**. This section describes its applications and precautions.

	When the External DC power in is used, the LRP-104CET can provide each port up to 25 watts of PoE output. The PoE power budget can be increased to 120 watts.
Note	

Type 1 One LRP-101CH and one LRP-104CET with PoE power output

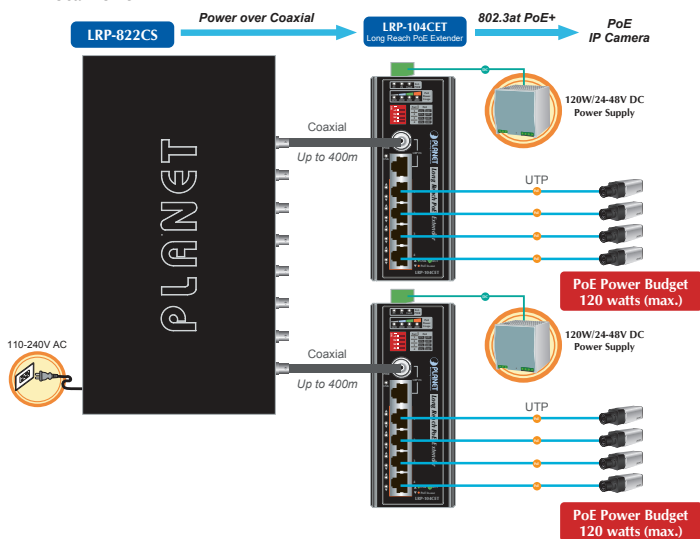| Functions	LRP Injector	LRP Extender
	LRP-101CH	LRP-104CET
Power Input	**RJ45** with **802.3at/af** PoE input	**External DC 24~48V power input**
	Power adapter with **48~56V DC** in	
Power Output	**BNC** with DC power over coaxial output	**RJ45** with **802.3at/af** PoE output

> **Warning**
> After the power over coaxial injector is enabled, the center pin of the coaxial cable has electricity. Please do not touch the center pin.

Type 2 One LRP-822CS/LRP-1622CS and one LRP-104CET with PoE power output
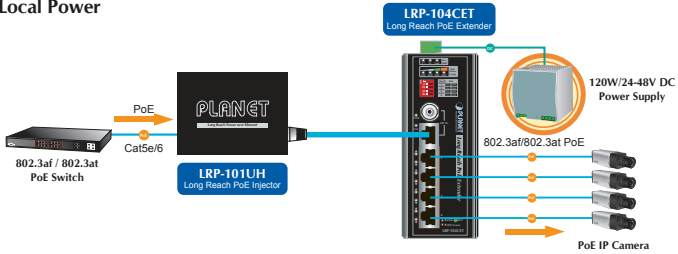
Local Power

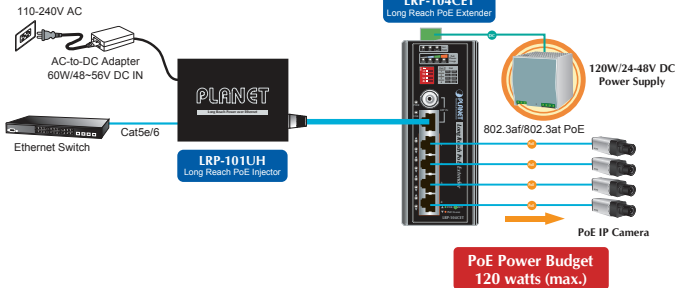| Functions	LRP Switch	LRP Extender
	LRP-822CS/LRP-1622CS	LRP-104CET
Power Input	Power cord with AC 100~240V, 50/60Hz, auto-sensing	External DC 24~48V power input
Power Output	**BNC** with DC power over coaxial output	**RJ45** with 802.3at/af PoE output

Warning — After the power over coaxial injector is enabled, the center pin of the coaxial cable has electricity. Please do not touch the center pin.

Type 3 LRP-101UH and LRP-104CET with PoE power output

Local Power

Local Power

Functions	LRP Injector	LRP Extender
	LRP-101UH	LRP-104CET
Power Input	**RJ45** with **802.3at/af** PoE input	**External DC 24~48V power input**
	Power adapter with **48~56V DC** in	
Power Output	**UTP** with DC power over UTP output	**RJ45** with **802.3at/af** PoE output

Warning
1. Please do not connect any Ethernet equipment to LRP OUT Port of the LRP-101UH; otherwise, it will damage the Ethernet equipment.
2. Please do not connect any Ethernet equipment to LRP IN Port of the LRP-104CET; otherwise, it will damage the Ethernet equipment.

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		Not used
6	Rx - (receive)	Tx - (transmit)	Negative (VCC-)
7, 8	Not used		Not used

A.2 RJ45 Cable Pin Assignments
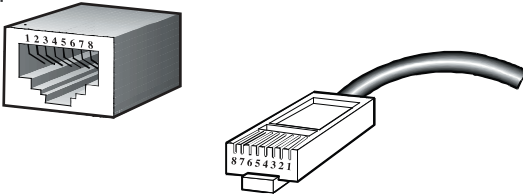
The standard RJ45 receptacle/connector

There are 8 wires on a standard UTP/STP cable and each wire is color-coded. The following shows the pin allocation and color of straight cable and crossover cable connection:
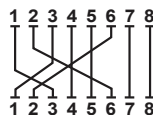
Straight Cable

	SIDE 1	SIDE 2
1 2 3 4 5 6 7 8 SIDE 1	1 = White/Orange	1 = White/Orange
	2 = Orange	2 = Orange
	3 = White/Green	3 = White/Green
	4 = Blue	4 = Blue
	5 = White/Blue	5 = White/Blue
1 2 3 4 5 6 7 8 SIDE 2	6 = Green	6 = Green
	7 = White/Brown	7 = White/Brown
	8 = Brown	8 = Brown

Cross Over Cable

	SIDE 1	SIDE 2
1 2 3 4 5 6 7 8 SIDE 1	1 = White/Orange	1 = White/Green
	2 = Orange	2 = Green
	3 = White/Green	3 = White/Orange
	4 = Blue	4 = Blue
	5 = White/Blue	5 = White/Blue
1 2 3 4 5 6 7 8 SIDE 2	6 = Green	6 = Orange
	7 = White/Brown	7 = White/Brown
	8 = Brown	8 = Brown

Figure A-1: Straight-through and Crossover Cable

Please make sure your connected cables are with the same pin assignment and color as the above picture before deploying the cables into your network.