

**Long Reach  
PoE over Coaxial / UTP  
Extender Kit**

**LRP-101C-KIT and LRP-101U-KIT**

User's Manual

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## 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 Coaxial / UTP Extender Kit User's Manual

MODELS: LRP-101C-KIT / LRP-101U-KIT

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# TABLE OF CONTENTS

|                                                          |    |
|----------------------------------------------------------|----|
| 1. INTRODUCTION .....                                    | 6  |
| 1.1 Package Contents .....                               | 6  |
| 1.2 Introduction of Long Reach Power over Ethernet ..... | 8  |
| 1.3 Product Features.....                                | 9  |
| 1.4 Product Specifications .....                         | 10 |
| 1.4.1 LRP-101C-KIT Specifications .....                  | 10 |
| 1.4.2 LRP-101U-KIT Specifications.....                   | 13 |
| 2. HARDWARE DESCRIPTION .....                            | 16 |
| 2.1 LRP-101CH.....                                       | 16 |
| 2.1.1 LRP-101CH Physical Dimensions.....                 | 16 |
| 2.1.2 LRP-101CH Front Panel and Rear Panel .....         | 17 |
| 2.1.3 LRP-101CH LED Indicators.....                      | 17 |
| 2.2 LRP-101CE .....                                      | 18 |
| 2.2.1 LRP-101CE Physical Dimensions .....                | 18 |
| 2.2.2 LRP-101CE Front Panel and Rear Panel.....          | 19 |
| 2.2.3 LRP-101CE LED Indicators.....                      | 19 |
| 2.3 LRP-101UH.....                                       | 20 |
| 2.3.1 LRP-101UH Physical Dimensions .....                | 20 |
| 2.3.2 LRP-101UH Front Panel and Rear Panel .....         | 21 |
| 2.3.3 LRP-101UH LED Indicators .....                     | 21 |

|                                                                   |    |
|-------------------------------------------------------------------|----|
| 2.4 LRP-101UE .....                                               | 22 |
| 2.4.1 LRP-101UE Physical Dimensions .....                         | 22 |
| 2.4.2 LRP-101UE Front Panel and Rear Panel.....                   | 23 |
| 2.4.3 LRP-101UE LED Indicators.....                               | 23 |
| 3. INSTALLATION .....                                             | 24 |
| 3.1 Installation Precautions of LRP-101C-KIT.....                 | 24 |
| 3.2 Installation Precautions of LRP-101U-KIT .....                | 24 |
| 3.3 Power options: .....                                          | 25 |
| 3.4 Applications of LRP-101C-KIT with coaxial cable .....         | 25 |
| 3.5 Applications of LRP-101U-KIT with UTP/Twisted-pair Cable .... | 28 |
| 3.6. Optional - DIN-Rail Mounting .....                           | 31 |
| 4. TROUBLESHOOTING .....                                          | 33 |
| APPENDIX A: NETWORKING CONNECTION .....                           | 34 |
| A.1 Switch's RJ45 Pin Assignments .....                           | 34 |
| A.2 RJ45 Cable Pin Assignments .....                              | 34 |

# 1. INTRODUCTION

Thank you for purchasing PLANET Long Reach PoE over Coaxial / UTP Extender Kit, the LRP-101C-KIT and LRP-101U-KIT. The descriptions of the four models are as follows:

| LRP-101C-KIT |                                                               |
|--------------|---------------------------------------------------------------|
| LRP-101CH    | 1-Port 10/100TX PoE PD + 1-Port Coax Long Reach PoE Injector  |
| LRP-101CE    | 1-Port 10/100TX PoE PSE + 1-Port Coax Long Reach PoE Extender |
| LRP-101U-KIT |                                                               |
| LRP-101UH    | 1-Port 10/100TX PoE PD + 1-Port UTP Long Reach PoE Injector   |
| LRP-101UE    | 1-Port 10/100TX PoE PSE + 1-Port UTP Long Reach PoE Extender  |

**"Long Reach PoE over Coaxial / UTP Extender Kit"** mentioned in this Manual represents the above four models.

## 1.1 Package Contents

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

| For LRP-101C-KIT                                                                    |                                                                                     |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |
| 1-Port 10/100TX PoE PD + 1-Port Coax Long Reach PoE Injector – LRP-101CH x 1        | 1-Port 10/100TX PoE PSE + 1-Port Coax Long Reach PoE Extender – LRP-101CE x 1       |

|                                                                                                            |                                                                                                                                                                                         |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  <p>User's Manual x 1</p> | <p>Please stick the sticker on the connector going to the LRP Extender</p>  <p>Warning Sticker x 1</p> |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

| For LRP-101U-KIT                                                                                                                                                                          |                                                                                                                                                                       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  <p>1-Port 10/100TX PoE PD + 1-Port UTP Long Reach PoE Injector – LRP-101UH x 1</p>                      |  <p>1-Port 10/100TX PoE PSE + 1-Port UTP Long Reach PoE Extender – LRP-101UE x 1</p> |
|  <p>User's Manual x 1</p>                                                                               |  <p>Warning Sticker x 2</p>                                                         |
| <p>Please stick the sticker on the connector going to the LRP Extender</p>  <p>Warning Sticker x 1</p> |                                                                                                                                                                       |



### Note

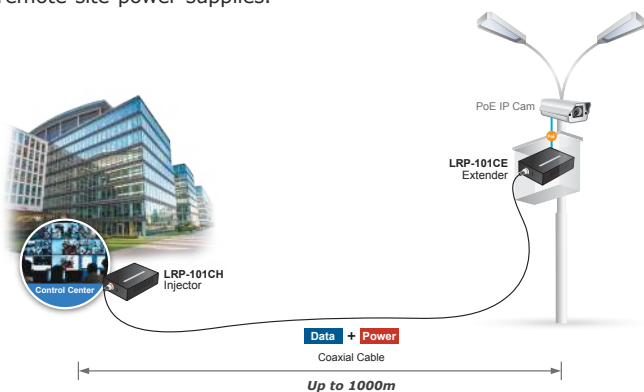
If any of these are missing or damaged, please contact your dealer immediately; if possible, retain the carton including the original packing material, and use them again to repack the product in case there is a need to return it to us for repair.

## 1.2 Introduction of Long Reach Power over Ethernet

PLANET LRP-101C-KIT and LRP-101U-KIT series PoE over Coaxial Extender and PoE over UTP Extender are designed to extend IP Ethernet transmission and inject power over an existing coaxial, UTP or twisted-pair cable or for distance up to 1000m (3280ft) to PoE IP camera, PoE wireless AP and any 802.3af/at complied powered device (PD). It is a perfect solution for sending IP video links and power to remotely-installed PoE IP cameras that are beyond the 100 meters distance limit of Ethernet.

### Power over Coaxial, UTP or Twisted-pair cable

The Long Reach PoE solution allows Ethernet Data and PoE or PoE+ to be transmitted using coaxial, UTP or twisted-pair cable. Based on IEEE 802.3at Power over Ethernet Plus and up to 25 watts of power output, PLANET Long Reach PoE extender solution eliminates the need for additional remote site power while allowing a single PoE source, such as a PoE network switch, to provide power to both LRP Extenders and the camera at long range. This feature eliminates the need for local and remote site power supplies.





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## **Stable Operating Performance under Difficult Environments**

PLANET Long Reach PoE Extender is the perfect solution for extended distance data and power transmission for warehouses, parking lots, campuses, casinos, and many more. They can operate stably under temperature range from -20 to 70 degrees C which enables the users to conveniently apply the device in almost any location of the network.

### **1.3 Product Features**

#### **Power over Ethernet**

- Eliminates Power cabling with PoE over Coaxial
- Supports Power over Ethernet PSE, PoE Injector
- Power and Ethernet data transmission over coaxial up to 1km
- Power and Ethernet data transmission over UTP up to 500m
- Complies with IEEE 802.3af / IEEE 802.3at Power over Ethernet PD on RJ45 port
- Supports Long Reach PoE power up to 30.8 watts (Vary on power source and cable distance)
- Supports PoE Power up to 25 watts (Vary on power source and cable distance)
- Auto detect remote powered device (PD)
- Plug and Play, no PC required

#### **Industrial Case / Installation**

- Supports extensive LED indicators for network diagnostics
- Metal case protection
- Compact size, DIN-rail and wall-mount design
- Supports 2000V DC EFT surge protection for power line
- Supports 2000V DC Ethernet ESD protection
- -20 to 70 degrees C operating temperature

## 1.4 Product Specifications

### 1.4.1 LRP-101C-KIT Specifications

| Model                    |                              | LRP-101CH                                                                            | LRP-101CE                                                         |
|--------------------------|------------------------------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| Functions                |                              | Long Reach PoE Injector                                                              | Long Reach PoE Extender                                           |
| Hardware Specifications  |                              |                                                                                      |                                                                   |
| Ethernet Interface       | Copper                       | 10/100BASE-TX RJ45<br>Auto-negotiation/ Auto-MDI/MDI-X                               |                                                                   |
|                          | Power over Ethernet Standard | IEEE 802.3at/af PoE PD (Powered Device)                                              | IEEE 802.3at/af PoE PSE (Power Source Equipment)                  |
|                          | PoE Input                    | Supports both Mid-Span and End-Span PSE<br>Input Range: 48~56V DC                    | —                                                                 |
|                          | PoE Output                   | —                                                                                    | 48~56V DC, 600mA max.                                             |
|                          | PoE Budget                   | —                                                                                    | Up to 25 watts                                                    |
|                          | PoE Mode                     | —                                                                                    | End-span, RJ45 Pin 1/2(+), 3/6(-)                                 |
|                          | Data Rate                    | 100/100Mbps                                                                          |                                                                   |
|                          | Cabling                      | Cat5e or above                                                                       |                                                                   |
|                          | Maximum Distance             | 100 meters                                                                           |                                                                   |
|                          | Maximum Frame sizes          | 1522bytes                                                                            |                                                                   |
| Long Reach PoE Interface | Connectivity                 | 1 x BNC female connector<br>Long Reach PoE over coaxial PSE (Power Source Equipment) | 1 x BNC female<br>Long Reach PoE over coaxial PD (Powered Device) |

|                          |                              |                                                                                                                        |              |                                                |                                              |                         |
|--------------------------|------------------------------|------------------------------------------------------------------------------------------------------------------------|--------------|------------------------------------------------|----------------------------------------------|-------------------------|
| Long Reach PoE Interface | Power Input                  | —                                                                                                                      |              | 37~56V DC                                      |                                              |                         |
|                          | Power Output                 | 41~56V DC                                                                                                              |              | —                                              |                                              |                         |
|                          | Power Pin Assignment         | ■ BNC center pole : DC+<br>■ BNC shield : DC -                                                                         |              | ■ BNC center pole : DC+<br>■ BNC shield : DC - |                                              |                         |
|                          | Cabling                      | Coaxial cable: 75 ohm<br>RG-6/U cable, less than 12Ω/1000 ft<br>RG-59/U cable, less than 30Ω/1000 ft.                  |              |                                                |                                              |                         |
|                          | Maximum Distance             | Max. 200m with PoE+ output (656ft.)<br>Max. 600m with PoE output (1968ft.)<br>Max. 1200m without PoE output (3,937ft.) |              |                                                |                                              |                         |
|                          | Long Reach Ethernet Standard | IEEE 1901                                                                                                              |              |                                                |                                              |                         |
|                          | Modulation Type              | Wavelet-OFDM                                                                                                           |              |                                                |                                              |                         |
|                          | Security                     | 128-bit AES encryption                                                                                                 |              |                                                |                                              |                         |
|                          | Frequency Band               | 2 ~ 28 MHz                                                                                                             |              |                                                |                                              |                         |
|                          | Encryption                   | AES 128-bit                                                                                                            |              |                                                |                                              |                         |
|                          | Performance**                |                                                                                                                        | Distance     | Data Rate*<br>(Upload / Download)              | LRP-101CE 802.3af/at PoE Output Capability** |                         |
|                          |                              |                                                                                                                        |              |                                                | LRP-101CH W/56V DC IN                        | LRP-101CH W/30W PoE+ IN |
|                          |                              |                                                                                                                        | 200m         | 93 / 93 Mbps                                   | 29W                                          | 16W                     |
|                          |                              | 400m                                                                                                                   | 93 / 93 Mbps | 22W                                            | 14W                                          |                         |
|                          |                              | 600m                                                                                                                   | 87 / 91 Mbps | 13W                                            | 10W                                          |                         |
|                          |                              | 800m                                                                                                                   | 75 / 83 Mbps | 10W                                            | 8W                                           |                         |
|                          |                              | 1000m                                                                                                                  | 55 / 73 Mbps | 8W                                             | 7W                                           |                         |

|                          |                   |                                                                                                                                                                                |                                                                                                                                                                |
|--------------------------|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Long Reach PoE Interface | LRP Compatibility | LRP-101CE - 1-Port LRP Extender                                                                                                                                                | With power over coaxial input<br>■ LRP-101CH – 1-Port LRP Injector<br>■ LRP-822CS – 8-Port LRP over Coax Switch<br>■ LRP-1622CS – 16-Port LRP over Coax Switch |
| LED Indicators           |                   | 4 x LEDs<br>■ PWR<br>■ LRP LNK<br>■ PoE IN<br>■ LNK/ACT                                                                                                                        | 4 x LEDs<br>■ PWR<br>■ LRP LNK<br>■ PoE-in-use<br>■ LNK/ACT                                                                                                    |
| ESD Protection           |                   | 2KV DC                                                                                                                                                                         |                                                                                                                                                                |
| EFT Protection           |                   | 2KV                                                                                                                                                                            | —                                                                                                                                                              |
| Enclosure                |                   | Metal case                                                                                                                                                                     |                                                                                                                                                                |
| Installation             |                   | Wall mount or DIN rail with optional kit                                                                                                                                       |                                                                                                                                                                |
| Dimensions (W x D x H)   |                   | 94 x 70 x 26 mm                                                                                                                                                                |                                                                                                                                                                |
| Weight                   |                   | 200g                                                                                                                                                                           | 375g                                                                                                                                                           |
| Power Requirements       |                   | ■ RJ45 PoE Input: 802.3at/af 48~56V DC<br>■ DC Input: 48~56V DC                                                                                                                | BNC Power over Coaxial Input: 44~56V DC                                                                                                                        |
| Standards Conformance    |                   |                                                                                                                                                                                |                                                                                                                                                                |
| Standards Compliance     |                   | IEEE 802.3 10BASE-T Ethernet<br>IEEE 802.3u 100BASE-TX Fast Ethernet<br>IEEE 802.3af Power over Ethernet (802.3at Type 1)<br>IEEE 802.3at Power over Ethernet (802.3at Type 2) |                                                                                                                                                                |
| Regulation Compliance    |                   | FCC Part 15 Class A, CE                                                                                                                                                        |                                                                                                                                                                |
| Environment              |                   |                                                                                                                                                                                |                                                                                                                                                                |
| Temperature              |                   | Operating: -20~70 degrees C<br>Storage: -40~75 degrees C                                                                                                                       |                                                                                                                                                                |

|          |                                                                      |
|----------|----------------------------------------------------------------------|
| Humidity | Operating: 5~95% (Non-condensing)<br>Storage: 5~95% (Non-condensing) |
|----------|----------------------------------------------------------------------|

- \* 1. Upload: LRP-101CE to LRP-101CH. Download: LRP-101CH to LRP-101CE.
- 2. 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.

## 1.4.2 LRP-101U-KIT Specifications

| Model                   |                              | LRP-101UH                                                         | LRP-101UE                                        |
|-------------------------|------------------------------|-------------------------------------------------------------------|--------------------------------------------------|
| Hardware Specifications |                              |                                                                   |                                                  |
| Ethernet Interface      | Copper                       | 10/100BASE-TX RJ45<br>Auto-negotiation/ Auto-MDI/MDI-X            |                                                  |
|                         | Power over Ethernet Standard | IEEE 802.3at/af PoE PD (Powered Device)                           | IEEE 802.3at/af PoE PSE (Power Source Equipment) |
|                         | PoE Input                    | Supports both Mid-Span and End-Span PSE<br>Input Range: 48~56V DC |                                                  |
|                         | PoE Output                   | —                                                                 | 48~56V DC, 600mA max.                            |
|                         | PoE Budget                   | —                                                                 | Up to 25 watts                                   |
|                         | PoE Mode                     | —                                                                 | End-span, RJ45 Pin 1/2(+), 3/6(-)                |
|                         | Data Rate                    | 100/100Mbps                                                       |                                                  |
|                         | Cabling                      | Cat5e or above                                                    |                                                  |
|                         | Maximum Distance             | 100m                                                              |                                                  |
|                         | Maximum Frame sizes          | 1522bytes                                                         |                                                  |

|                          |                              |                                                                                                                           |          |                                                                   |                                              |  |
|--------------------------|------------------------------|---------------------------------------------------------------------------------------------------------------------------|----------|-------------------------------------------------------------------|----------------------------------------------|--|
| Long Reach PoE Interface | Connectivity                 | 1 x RJ45 connector<br>Long Reach PoE over UTP PSE (Power Source Equipment)                                                |          | 1 x RJ45 connector<br>Long Reach PoE over UTP PD (Powered Device) |                                              |  |
|                          | Power Input                  | —                                                                                                                         |          | 37~56V DC                                                         |                                              |  |
|                          | Power Output                 | 41~56V DC                                                                                                                 |          |                                                                   |                                              |  |
|                          | Power Pin assignment         | RJ45 PIN 1,3,5,7: VCC+                                                                                                    |          | RJ45 PIN 1,3,5,7: VCC+                                            |                                              |  |
|                          |                              | RJ45 PIN 2,4,6,8: VCC-                                                                                                    |          | RJ45 PIN 2,4,6,8: VCC-                                            |                                              |  |
|                          | Cabling                      | UTP cable:                                                                                                                |          |                                                                   |                                              |  |
|                          | Maximum distance             | Max. 100m with PoE+ output (328 ft.)<br>Max. 400m with PoE output (1,312 ft.)<br>Max. 500m without PoE output (1,640 ft.) |          |                                                                   |                                              |  |
|                          | Long Reach Ethernet Standard | IEEE 1901                                                                                                                 |          |                                                                   |                                              |  |
|                          | Modulation Type              | Wavelet-OFDM                                                                                                              |          |                                                                   |                                              |  |
|                          | Security                     | 128-bit AES encryption                                                                                                    |          |                                                                   |                                              |  |
|                          | Frequency Band               | 2 ~ 28 MHz                                                                                                                |          |                                                                   |                                              |  |
|                          | Encryption                   | AES 128-bit                                                                                                               |          |                                                                   |                                              |  |
|                          | Performance**                |                                                                                                                           | Distance | Data Rate* (Upload / Download)                                    | LRP-101UE 802.3af/at PoE Output Capability** |  |
| LRP-101UH W/56V DC IN    |                              |                                                                                                                           |          |                                                                   | LRP-101UH W/30W PoE+ IN                      |  |
| 100m                     |                              | 94 / 94 Mbps                                                                                                              | 30W      | 19W                                                               |                                              |  |
| 200m                     |                              | 82 / 82 Mbps                                                                                                              | 30W      | 18W                                                               |                                              |  |
| 300m                     |                              | 63 / 67 Mbps                                                                                                              | 30W      | 17W                                                               |                                              |  |
| 400m                     |                              | 44 / 48 Mbps                                                                                                              | 22W      | 14W                                                               |                                              |  |
| 500m                     |                              | 30 / 30 Mbps                                                                                                              | 18W      | 12W                                                               |                                              |  |

|                        |                                                                                                                                                                                |                                                             |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|
| LED Indicators         | 4 x LEDs<br>■ PWR<br>■ LRP LNK<br>■ PoE IN<br>■ LNK/ACT                                                                                                                        | 4 x LEDs<br>■ PWR<br>■ LRP LNK<br>■ PoE-in-use<br>■ LNK/ACT |
| ESD Protection         | 2KV DC                                                                                                                                                                         |                                                             |
| EFT Protection         | 2KV                                                                                                                                                                            | —                                                           |
| Enclosure              | Metal case                                                                                                                                                                     |                                                             |
| Installation           | Wall mount or DIN rail with optional kit                                                                                                                                       |                                                             |
| Dimensions (W x D x H) | 94 x 70 x 26 mm                                                                                                                                                                |                                                             |
| Weight                 | 193g                                                                                                                                                                           | 190g                                                        |
| Power Requirements     | ■ RJ45 PoE Input:<br>802.3at/af 48~56V DC<br>■ DC Input: 48~56V DC                                                                                                             | Power over RJ45 Input:<br>44~56V DC                         |
| Standards Conformance  |                                                                                                                                                                                |                                                             |
| Standards Compliance   | IEEE 802.3 10BASE-T Ethernet<br>IEEE 802.3u 100BASE-TX Fast Ethernet<br>IEEE 802.3af Power over Ethernet (802.3at Type 1)<br>IEEE 802.3at Power over Ethernet (802.3at Type 2) |                                                             |
| Regulation Compliance  | FCC Part 15 Class A, CE                                                                                                                                                        |                                                             |
| Environment            |                                                                                                                                                                                |                                                             |
| Temperature            | Operating: -20~70 degrees C<br>Storage: -40~75 degrees C                                                                                                                       |                                                             |
| Humidity               | Operating: 5~95% (non-condensing)<br>Storage: 5~95% (non-condensing)                                                                                                           |                                                             |

\* 1. Upload: LRP-101UE to LRP-101UH. Download: LRP-101UH to LRP-101UE.

2. 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 environment factors.

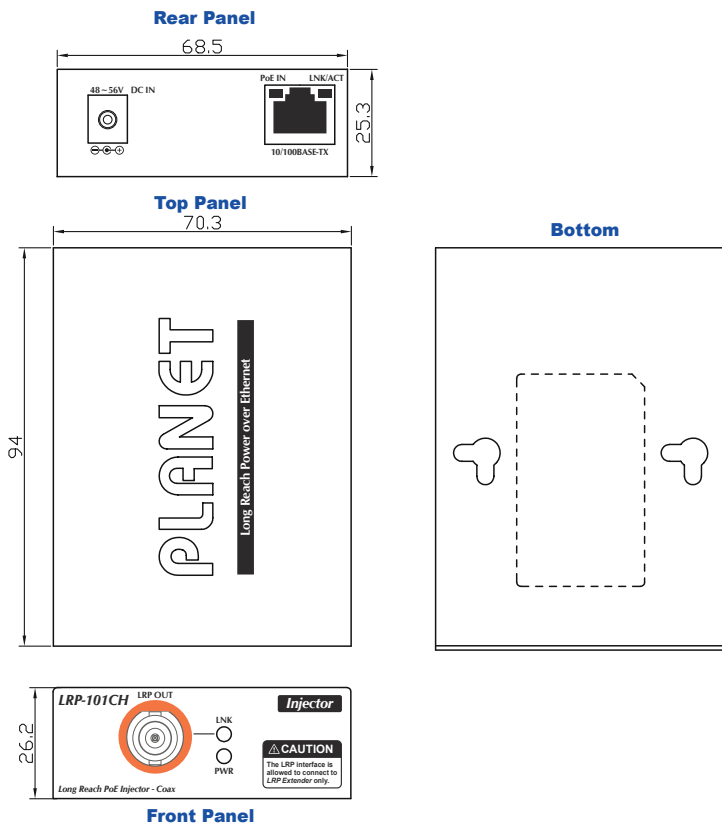
\*\* Depending on what the DC/PoE Power Input and the length of UTP cable are.

## 2. HARDWARE DESCRIPTION

### 2.1 LRP-101CH

#### 2.1.1 LRP-101CH Physical Dimensions

- **LRP-101CH** dimensions (W x D x H): 94 x 70.3 x 26.2 mm





## 2.1.2 LRP-101CH Front Panel and Rear Panel

Figure 2-1 and Figure 2-2 show the front and rear panels of the LRP-101CH Long Reach PoE over Coaxial Injector.



Figure 2-1: LRP-101CH Front Panel

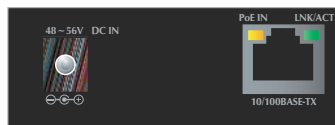


Figure 2-2: LRP-101CH Rear Panel

## 2.1.3 LRP-101CH LED Indicators

### ➤ System

| LED | Color | Function |                                                                                                        |
|-----|-------|----------|--------------------------------------------------------------------------------------------------------|
| PWR | Green | Lit      | Power ON: PoE+ / PoE power input from RJ45 PoE PD port<br>Power ON: 48~56V DC power input from DC jack |
|     |       | Off      | Power Off                                                                                              |

### ➤ LRP Coaxial Interface

| LED | Color | Function                                                    |
|-----|-------|-------------------------------------------------------------|
| LNK | Green | <b>Lit:</b> indicates that the coaxial link is established. |
|     |       | <b>Off:</b> indicates that the coaxial link is down.        |

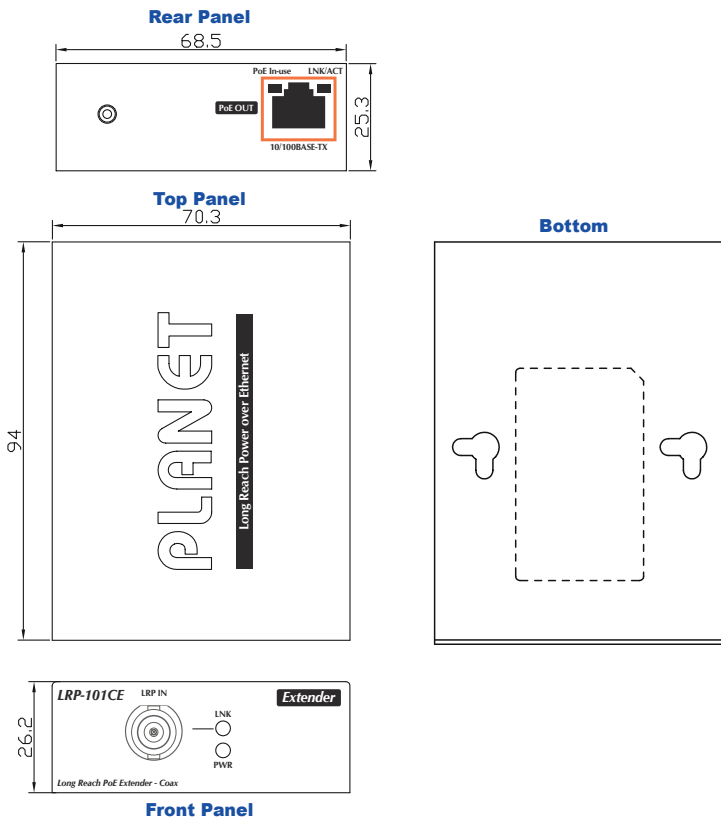
### ➤ RJ45 10/100BASE-TX Interface

| LED     | Color | Function                                                                                   |
|---------|-------|--------------------------------------------------------------------------------------------|
| PoE IN  | Amber | <b>Lit:</b> indicates the RJ45 port is receiving the PoE Power.                            |
| LNK/ACT | Green | <b>Blink:</b> indicates the extender is actively sending or receiving data over that port. |

## 2.2 LRP-101CE

### 2.2.1 LRP-101CE Physical Dimensions

- **LRP-101CE** dimensions (W x D x H): 94 x 70.3 x 26.2 mm



## 2.2.2 LRP-101CE Front Panel and Rear Panel

Figure 2-3 and Figure 2-4 show the front and rear panels of the LRP-101CE Long Reach PoE over Coaxial Extender.



Figure 2-3: LRP-101CE Front Panel

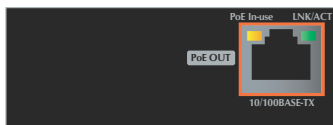


Figure 2-4: LRP-101CE Rear Panel

## 2.2.3 LRP-101CE LED Indicators

### ➤ System

| LED | Color | Function                               |
|-----|-------|----------------------------------------|
| PWR | Green | <b>Lit:</b> indicates the power is on. |

### ➤ LRP Coaxial Interface

| LED | Color | Function                                                    |
|-----|-------|-------------------------------------------------------------|
| LNK | Green | <b>Lit:</b> indicates that the coaxial link is established. |
|     |       | <b>Off:</b> indicates that the coaxial link is down.        |

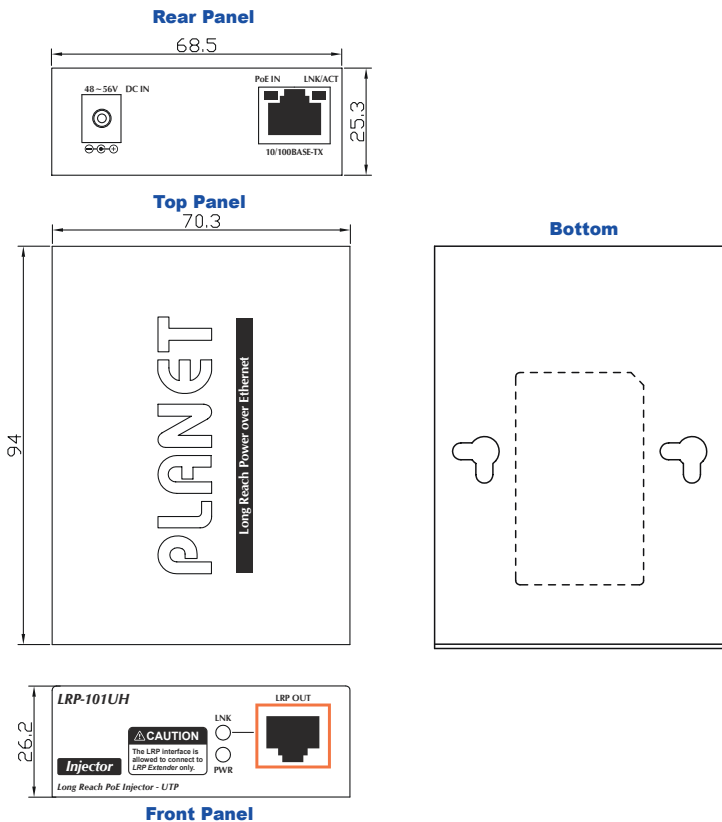
### ➤ RJ45 10/100BASE-TX Interface

| LED        | Color | Function                                                                                   |
|------------|-------|--------------------------------------------------------------------------------------------|
| PoE-in-Use | Amber | <b>Lit:</b> indicates the RJ45 Port is providing PoE power.                                |
| LNK/ACT    | Green | <b>Blink:</b> indicates the extender is actively sending or receiving data over that port. |

## 2.3 LRP-101UH

### 2.3.1 LRP-101UH Physical Dimensions

- **LRP-101UH** dimensions (W x D x H): 94 x 70.3 x 26.2 mm



### 2.3.2 LRP-101UH Front Panel and Rear Panel

Figure 2-5 and Figure 2-6 show the front and rear panels of the LRP-101UH Long Reach PoE over UTP Injector.

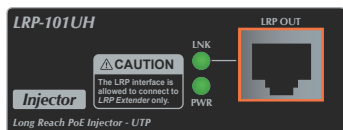


Figure 2-5: LRP-101UH Front Panel

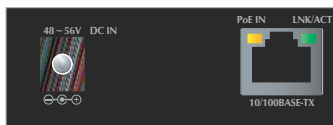


Figure 2-6: LRP-101UH Rear Panel

### 2.3.3 LRP-101UH LED Indicators

#### > System

| LED | Color | Function |                                                                                                        |
|-----|-------|----------|--------------------------------------------------------------------------------------------------------|
| PWR | Green | Lit      | Power ON: PoE+ / PoE power input from RJ45 PoE PD port<br>Power ON: 48~56V DC power input from DC jack |
|     |       | Off      | Power Off                                                                                              |

#### > LRP UTP Interface

| LED | Color | Function                                                |
|-----|-------|---------------------------------------------------------|
| LNK | Green | <b>Lit:</b> indicates that the UTP link is established. |
|     |       | <b>Off:</b> indicates that the UTP link is down.        |

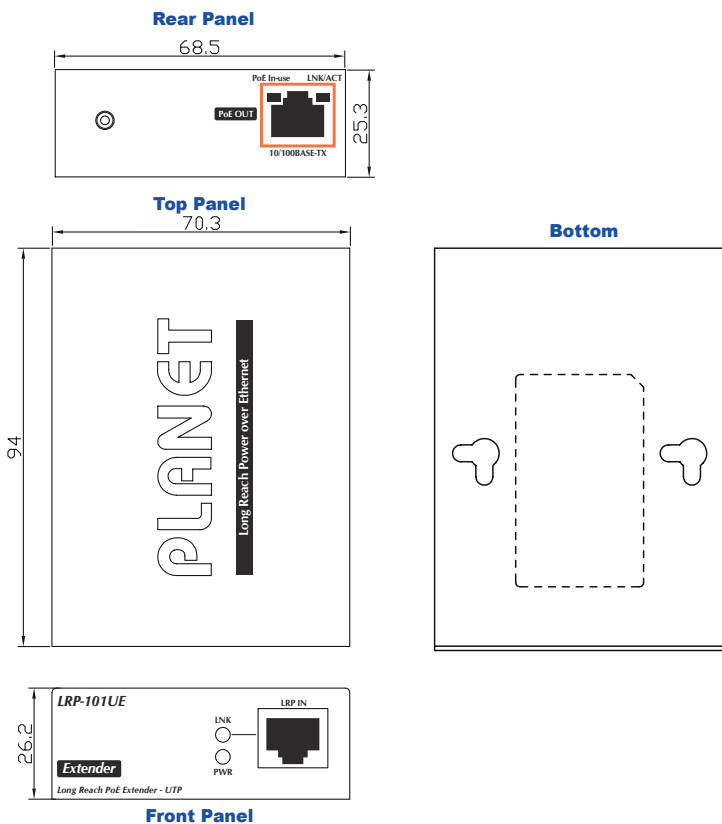
#### > RJ45 10/100BASE-TX Interface

| LED     | Color | Function                                                                                   |
|---------|-------|--------------------------------------------------------------------------------------------|
| PoE IN  | Amber | <b>Lit:</b> indicates the RJ45 port is receiving the PoE Power.                            |
| LNK/ACT | Green | <b>Blink:</b> indicates the extender is actively sending or receiving data over that port. |

## 2.4 LRP-101UE

### 2.4.1 LRP-101UE Physical Dimensions

- **LRP-101UE** dimensions (W x D x H): 94 x 70.3 x 26.2 mm



## 2.4.2 LRP-101UE Front Panel and Rear Panel

Figure 2-7 and Figure 2-8 show the front and rear panels of the LRP-101UE Long Reach PoE over UTP Extender.

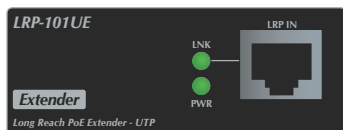


Figure 2-7: LRP-101UE Front Panel

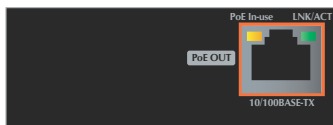


Figure 2-8: LRP-101UE Rear Panel

## 2.4.3 LRP-101UE LED Indicators

### ➤ System

| LED | Color | Function                               |
|-----|-------|----------------------------------------|
| PWR | Green | <b>Lit:</b> indicates the power is on. |

### ➤ LRP UTP Interface

| LED | Color | Function                                                    |
|-----|-------|-------------------------------------------------------------|
| LNK | Green | <b>Lit:</b> indicates that the LRP UTP link is established. |
|     |       | <b>Off:</b> indicates that the LRP UTP link is down.        |

### ➤ RJ45 10/100BASE-TX Interface

| LED        | Color | Function                                                                                   |
|------------|-------|--------------------------------------------------------------------------------------------|
| PoE-in-Use | Amber | <b>Lit:</b> indicates the RJ45 Port is providing PoE power.                                |
| LNK/ACT    | Green | <b>Blink:</b> indicates the extender is actively sending or receiving data over that port. |

### 3. INSTALLATION

This section describes the functionalities of the Long Reach PoE over Coaxial / UTP Extender Kit's components and guides you to how to install it on the desktop. Basic knowledge of networking is expected. Please read this chapter completely before continuing.

#### 3.1 Installation Precautions of LRP-101C-KIT

As the LRP-101CH is power over coaxial injector, it only can work with PLANET power over coaxial extender, the 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

The package contains one Warning Sticker, which should be stuck on the coaxial cable connector before using PLANET Long Reach PoE over Coaxial Extender Kit.

**Please stick the sticker on the connector going to the LRP Extender**

|                                                                                                                                                                                                      |  |                                                                                                                                                                                                      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  <b>Warning:</b> This side of connector contains electric power. Please be careful before plugging into the device. |  |  <b>Warning:</b> This side of connector contains electric power. Please be careful before plugging into the device. |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



#### 3.2 Installation Precautions of LRP-101U-KIT

The package contains one Warning Sticker and it is stuck on the PoE IN / LRP OUT RJ45 connector of PLANET Long Reach PoE over UTP Extender Kit. As the LRP-101UH is power over UTP, it only can work with PLANET LRP-101UE. If connected with standard Ethernet equipment, it might cause damage to the equipment.



### 3.3 Power options:

#### ■ LRP Injector

There are two ways to power the **LRP Injector** (LRP-101CH and LRP-101UH):

- Powered via PoE
- Powered via DC adapter

#### ■ LRP Extender

The **LRP Extender** must be powered by the **LRP Injector** or LRP Switch

- LRP-101CE must be powered by the LRP-101CH or LRP CS-series switch over coaxial cable
- LRP-101UE must be powered by the LRP-101UH or LRP US-series switch over UTP/Twisted-pair cable



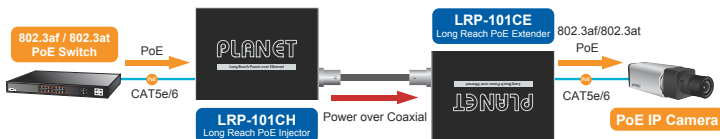
**Caution**

Please don't connect the LRP Extender to any PoE PSE (Power Sourcing Equipment).

### 3.4 Applications of LRP-101C-KIT with coaxial cable

**Type 1** – One LRP-101CH with PoE power input and one LRP-101CE 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-101CE                                     |
| Power Input  | <b>RJ45</b> with <b>802.3at/af</b> PoE input | <b>BNC</b> with DC power over coaxial input   |
| Power Output | <b>BNC</b> with DC power over coaxial output | <b>RJ45</b> with <b>802.3at/af</b> PoE output |

## Installation Instructions

|               |                                                                                                                                                                               |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Step 1</b> | Connect the <b>LRP Injector</b> (LRP-101CH) and <b>LRP Extender</b> (LRP-101CE) to ends of BNC terminated coaxial cable.<br>Stick the "Warning Sticker" on the coaxial cable. |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|               |                                                                                                                                                                                                                              |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Step 2</b> | 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-101CE should lit up immediately. |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

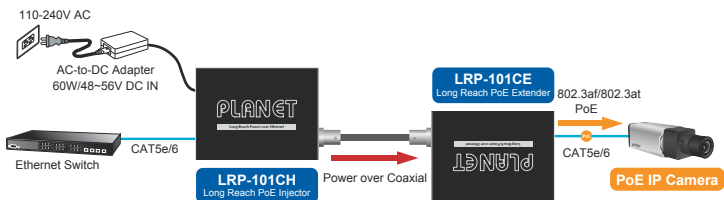
|               |                                                                                                      |
|---------------|------------------------------------------------------------------------------------------------------|
| <b>Step 3</b> | Connect Cat5/6 UTP cable to LRP-101CE and IEEE 802.3at/af complied PoE IP camera or PoE Wireless AP. |
|---------------|------------------------------------------------------------------------------------------------------|

|                                                                                                     |                                                                                                                                                            |
|-----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br><b>Warning</b> | 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. |
|-----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br><b>Note</b> | <ol style="list-style-type: none"> <li>Before installation, please consider the distance and watts value demand for PD devices. The LRP-101C-KIT PoE powers output capacity and upload / download performance depending on the length of coaxial cable.</li> <li>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 environmental factors.</li> </ol> |
|----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**Type 2** – One LRP-101CH with 48~56V power adapter and one LRP-101CE 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.



| Functions    | LRP Injector                          | LRP Extender                         |
|--------------|---------------------------------------|--------------------------------------|
|              | LRP-101CH                             | LRP-101CE                            |
| Power Input  | Power adapter with 48~56V DC in       | 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

|               |                                                                                                                                                                               |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Step 1</b> | Connect the <b>LRP Injector</b> (LRP-101CH) and <b>LRP Extender</b> (LRP-101CE) to ends of BNC terminated coaxial cable.<br>Stick the "Warning Sticker" on the coaxial cable. |
| <b>Step 2</b> | Connect Cat5/6 UTP cable to LRP-101CH and non-PoE switch or workstation.                                                                                                      |
| <b>Step 3</b> | Connect 48~56V DC power adapter to LRP-101CH power socket, then the PWR LED of LRP-101CH and LRP-101CE should lit up immediately.                                             |
| <b>Step 4</b> | Connect Cat5/6 UTP cable to LRP-101CE and IEEE 802.3at/af complied PoE IP camera or PoE Wireless AP.                                                                          |

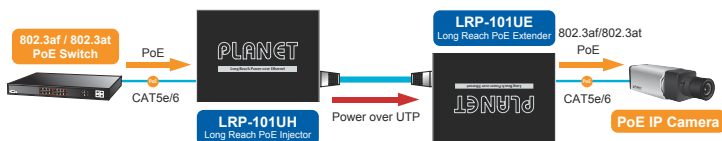


#### Note

1. Before installation, please consider the distance and watts value demand for PD devices. The LRP-101C-KIT PoE powers output capacity and upload / download performance depending on the length of coaxial cable.
2. 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 environmental factors.
3. PoE output capacity is based on different DC Power Input / PoE Input.
4. 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.

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

**Type 1** – LRP-101UH with PoE power input and LRP-101UE with PoE power output



| Functions           | LRP Injector                                 | LRP Extender                                  |
|---------------------|----------------------------------------------|-----------------------------------------------|
|                     | LRP-101UH                                    | LRP-101UE                                     |
| <b>Power Input</b>  | <b>RJ45</b> with <b>802.3at/af</b> PoE input | <b>UTP</b> with DC power over UTP input       |
| <b>Power Output</b> | <b>UTP</b> with DC power over UTP output     | <b>RJ45</b> with <b>802.3at/af</b> PoE output |

## Installation Instructions

### Step 1

Remove the **"Danger – No Ethernet"** labels stuck on the RJ45 LRP port of LRP-101UH and LRP-101UE.

### Step 2

Connect the **LRP Injector** (LRP-101UH) and **LRP Extender** (LRP-101UE) 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-101UE; 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-101UE should lit up accordingly.

### Step 4

Connect Cat5/6 UTP cable to LRP-101UE and IEEE 802.3at/af complied PoE IP camera or PoE Wireless AP.

### Warning



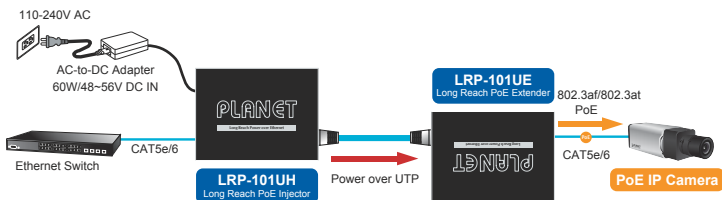
The LRP-101UH accepts IEEE 802.3at equipment for optimal power injection. The other non-standard PoE Power devices may cause the LRP-101UH to malfunction.

### Note



1. Before installation, please consider the distance and watts value demand for PD devices. The LRP-101U-KIT PoE powers output capacity and upload / download performance depending on the length of UTP cable.
2. 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-101UE with PoE power output



| Functions           | LRP Injector                                  | LRP Extender                            |
|---------------------|-----------------------------------------------|-----------------------------------------|
|                     | LRP-101UH                                     | LRP-101UE                               |
| <b>Power Input</b>  | <b>Power adapter</b> with <b>48~56V DC</b> in | <b>UTP</b> with DC power over UTP input |
| <b>Power Output</b> | <b>UTP</b> with DC power over UTP output      | <b>RJ45</b> with 802.3at/af PoE output  |

## Installation Instructions

|               |                                                                                                                                         |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| <b>Step 1</b> | Remove the “ <b>Danger – No Ethernet</b> ” labels stuck on the RJ45 LRP ports of LRP-101UH and LRP-101UE.                               |
| <b>Step 2</b> | Connect the <b>LRP Injector</b> (LRP-101UH) and <b>LRP Extender</b> (LRP-101UE) to ends of RJ45 terminated long UTP/twisted-pair cable. |

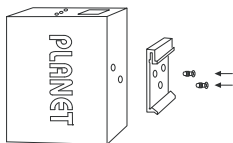
|                                                                                                       |                                                                                                                                                                                                                                                                                                                                   |
|-------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br><b>Warning</b> | <ol style="list-style-type: none"> <li>1. Please do not connect any Ethernet equipment to LRP OUT Port of the LRP-101UH; otherwise, it will damage the Ethernet equipment.</li> <li>2. Please do not connect any Ethernet equipment to LRP IN Port of the LRP-101UE; otherwise, it will damage the Ethernet equipment.</li> </ol> |
|-------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|--------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Step 3</b>                                                                                    | Connect Cat5/6 UTP cable to LRP-101UH and non-PoE switch or workstation.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Step 4</b>                                                                                    | Connect 48~56V DC power adapter to LRP-101UH power socket, and then the PWR LED of LRP-101UH and LRP-101UE should lit up immediately.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Step 5</b>                                                                                    | Connect Cat5/6 UTP cable to LRP-101UE and IEEE 802.3at/af complied PoE IP camera or PoE Wireless AP.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <br><b>Note</b> | <ol style="list-style-type: none"> <li>1. Before installation, please consider the distance and watts value demand for PD devices. The LRP-101U-KIT PoE powers output capacity and upload / download performance depending on the length of UTP cable.</li> <li>2. 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.</li> <li>3. PoE Output Capacity is based on different DC Power Input / PoE Input.</li> <li>4. The LRP-101UH 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.</li> </ol> |

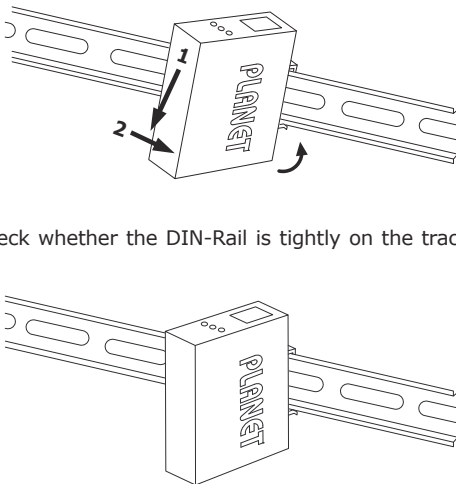
### 3.6. Optional - DIN-Rail Mounting

There are two DIN-Rail holes on the left side of the Long Reach PoE over Coaxial / UTP Extender Kit that allow the device to be easily installed with DIN-Rail mounting. The PLANET optional DIN-Rail mounting Kit – RKE-DIN can be ordered separately. When you need to replace the wall mount application with DIN-Rail application on the Long Reach PoE over Coaxial / UTP Extender Kit, please refer to following figures to screw the DIN-Rail on the Long Reach PoE over Coaxial/UTP Extender Kit. To hang the Long Reach PoE over Coaxial / UTP Extender Kit, follow the steps below:

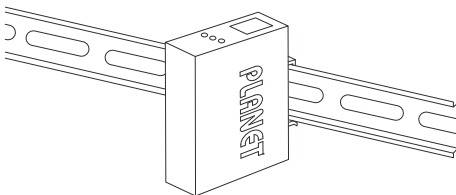
**Step 1:** Screw the DIN-Rail on the Long Reach PoE over Coaxial / UTP Extender Kit.



**Step 2:** Lightly slide the DIN-Rail into the track.



**Step 3:** Check whether the DIN-Rail is tightly on the track.



**Caution**

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



---

## **4. TROUBLESHOOTING**

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

### **What is the maximum distance supported by LRP-101C-KIT and LRP-101U-KIT?**

#### **Solution:**

1. The LRP-101C-KIT supports a maximum distance of 1km.
2. The LRP-101U-KIT supports a maximum distance of 500m.

### **May I know which power source that can be accepted by LRP-101C-KIT and LRP-101U-KIT?**

#### **Solution:**

1. DC 56V power adapter.
2. DC 48V power adapter.
3. IEEE 802.3at High Power over Ethernet Switch.
4. IEEE 802.3af Power over Ethernet Switch.

### **The LRP-101C-KIT and LRP-101U-KIT Performance is bad.**

#### **Solution:**

The actual data rate will vary on the quality of the coaxial / UTP cable and environment factors.

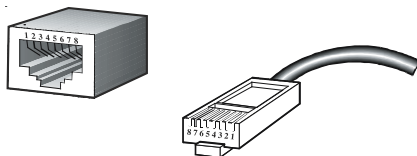
## APPENDIX A: NETWORKING CONNECTION

### 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                      |                                       | 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:

|                               |                      |                      |                      |
|-------------------------------|----------------------|----------------------|----------------------|
| <b><u>Straight Cable</u></b>  |                      | <b><u>SIDE 1</u></b> | <b><u>SIDE 2</u></b> |
| 1 2 3 4 5 6 7 8               | <b><u>SIDE 1</u></b> | 1 = White/Orange     | 1 = White/Orange     |
| 1 2 3 4 5 6 7 8               |                      | 2 = Orange           | 2 = Orange           |
| 1 2 3 4 5 6 7 8               |                      | 3 = White/Green      | 3 = White/Green      |
| 1 2 3 4 5 6 7 8               | <b><u>SIDE 2</u></b> | 4 = Blue             | 4 = Blue             |
| 1 2 3 4 5 6 7 8               |                      | 5 = White/Blue       | 5 = White/Blue       |
| 1 2 3 4 5 6 7 8               |                      | 6 = Green            | 6 = Green            |
| 1 2 3 4 5 6 7 8               |                      | 7 = White/Brown      | 7 = White/Brown      |
| 1 2 3 4 5 6 7 8               |                      | 8 = Brown            | 8 = Brown            |
| <b><u>Crossover Cable</u></b> |                      | <b><u>SIDE 1</u></b> | <b><u>SIDE 2</u></b> |
| 1 2 3 4 5 6 7 8               | <b><u>SIDE 1</u></b> | 1 = White/Orange     | 1 = White/Green      |
| 1 2 3 4 5 6 7 8               |                      | 2 = Orange           | 2 = Green            |
| 1 2 3 4 5 6 7 8               |                      | 3 = White/Green      | 3 = White/Orange     |
| 1 2 3 4 5 6 7 8               |                      | 4 = Blue             | 4 = Blue             |
| 1 2 3 4 5 6 7 8               | <b><u>SIDE 2</u></b> | 5 = White/Blue       | 5 = White/Blue       |
| 1 2 3 4 5 6 7 8               |                      | 6 = Green            | 6 = Orange           |
| 1 2 3 4 5 6 7 8               |                      | 7 = White/Brown      | 7 = White/Brown      |
| 1 2 3 4 5 6 7 8               |                      | 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.



## EC Declaration of Conformity

For the following equipment:

\*Type of Product: 1-Port 10/100TX PoE PD + 1-Port Coax Long Reach PoE Injector  
1-Port 10/100TX PoE PSE + 1-Port Coax Long Reach PoE Extender  
1-Port 10/100TX PoE PD + 1-Port UTP Long Reach PoE Injector  
1-Port 10/100TX PoE PSE + 1-Port UTP Long Reach PoE Extender

\*Model Number: LRP-101CH, LRP-101CE  
LRP-101UH, LRP-101UE

\* Produced by:

Manufacturer's Name : **Planet Technology Corp.**  
Manufacturer's Address: 10F., No.96, Minquan Rd., Xindian Dist.  
New Taipei City 231, Taiwan (R.O.C.).

We hereby confirmed that the products mentioned comply with the requirements set out in the Council Directive on the Approximation of the Laws of the Member States relating to Electromagnetic Compatibility (2004/108/EC).

For the evaluation regarding the EMC, the following standards were applied:

|                |                              |
|----------------|------------------------------|
| EN55022        | (2010)                       |
| EN 61000-3-2   | (2006 + A1:2009 + A2:2009)   |
| EN 61000-3-3   | (2008)                       |
| EN55024        | (2010)                       |
| IEC 61000-4-2  | (2008)                       |
| IEC 61000-4-3  | (2006 + A1: 2007 + A2: 2010) |
| IEC 61000-4-4  | (2012)                       |
| IEC 61000-4-5  | (2005)                       |
| IEC 61000-4-6  | (2008)                       |
| IEC 61000-4-8  | (2009)                       |
| IEC 61000-4-11 | (2004)                       |

Responsible for marking this declaration if the:

☒ Manufacturer ☐ Authorized representative established within the EU

Authorized representative established within the EU (if applicable):

Company Name: **Planet Technology Corp.**

Company Address: 10F., No.96, Minquan Rd., Xindian Dist., New Taipei City 231, Taiwan (R.O.C.)

Person responsible for making this declaration

Name, Surname **Kent Kang**

Position / Title : **Product Manager**

Taiwan  
Place

31<sup>st</sup> March, 2015  
Date

  
Legal Signature

### **PLANET TECHNOLOGY CORPORATION**

e-mail: sales@planet.com.tw http://www.planet.com.tw  
10F., No.96, Minquan Rd., Xindian Dist., New Taipei City, Taiwan, R.O.C. Tel:886-2-2219-9518 Fax:886-2-2219-9528