

# Product Specifications

## 1-Port Long Reach PoE over Coaxial Extender

### LRP-101CE

Version 1.0

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#### Change History:

Revision:	Date:	Author:	Change List
Version 1.0	2015/6/9	Marc Liao	Initial Release

<b>Author:</b>	Marc Liao	<b>Editor:</b>	Marc Liao
<b>Reviewed by:</b>	Kent Kang	<b>Approved by:</b>	Tom Shih

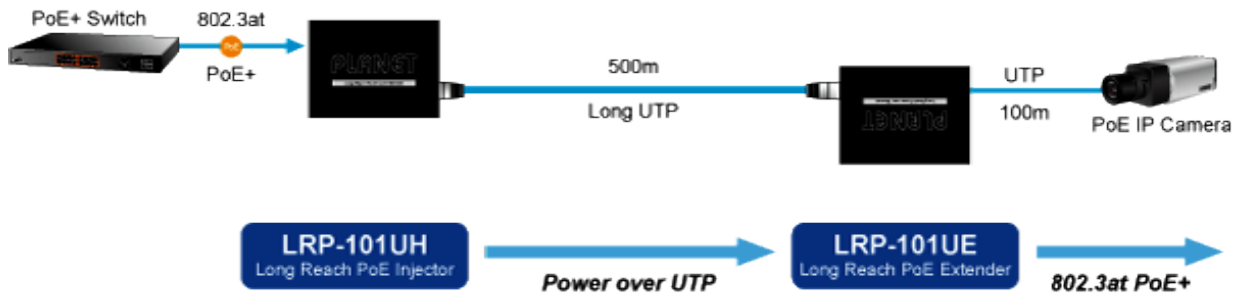
# 1. PRODUCT DESCRIPTION



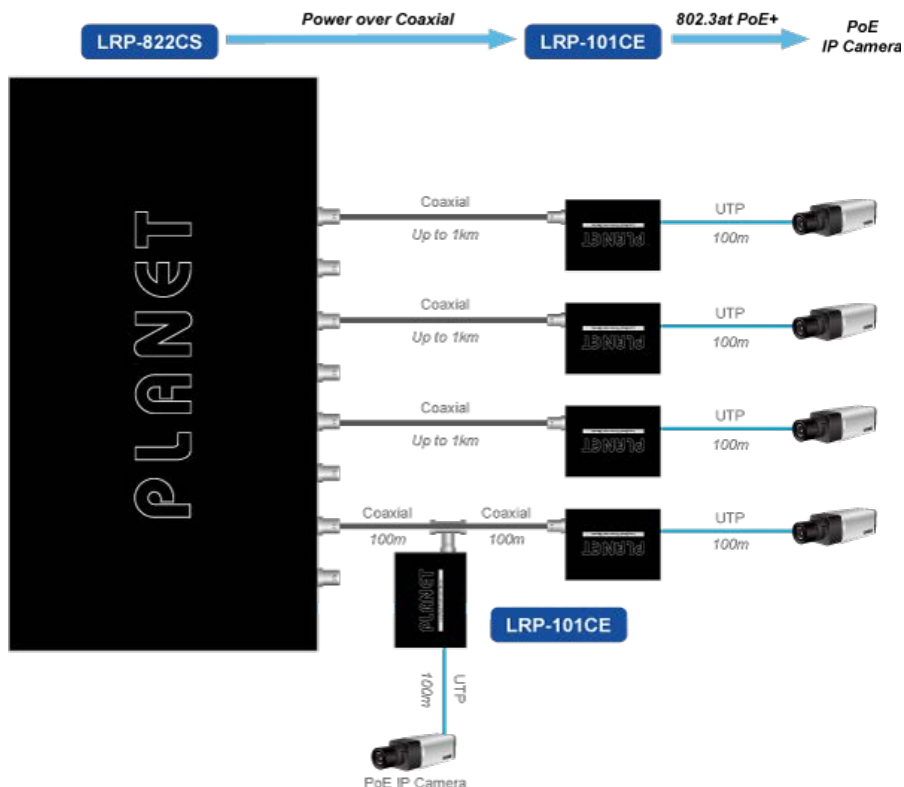
## Data and Power Transmitted over Long Distance

PLANET LRP-101CE, a PLANET Long Reach PoE solution, is a single-port 802.3at PoE+ Extender that is installed at a remote location connecting to a PoE IP camera or PoE wireless AP. The LRP-101CE has to work with PLANET single-port Long Reach PoE Injector or Multiple-channel Long Reach PoE Switch to be able to simultaneously transmit both data and power to a PD over a distance of up to 1,000m (3,280ft) over coaxial cable. The LRP-101CE provides a maximum of 25-watt power output over Ethernet cable to a remote PoE IP camera, PoE wireless AP or access control systems complied with **802.3af/at PoE**.

### ■ Point to Point Installation

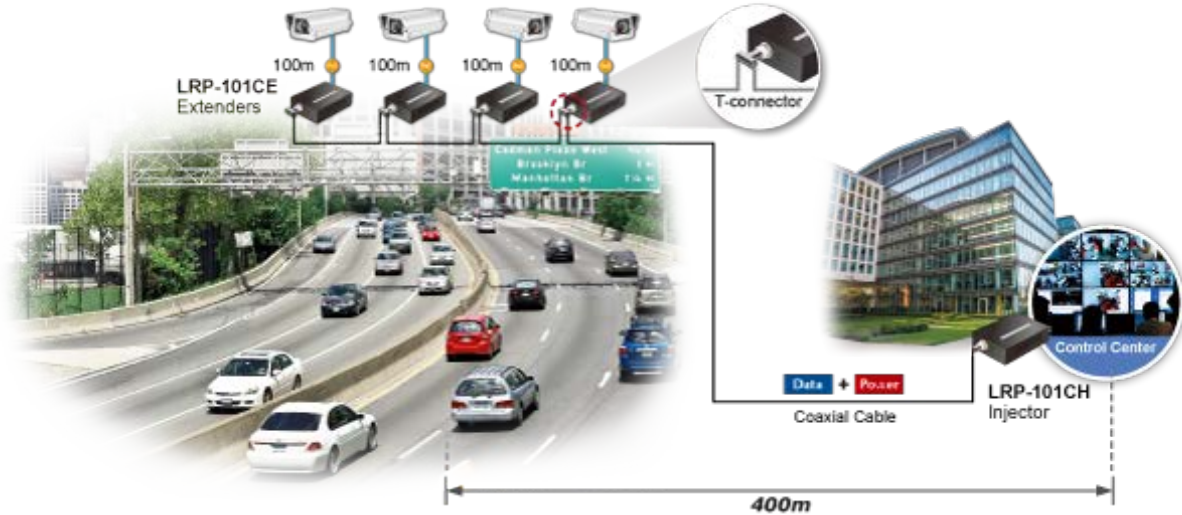


### ■ Point to Multi-point Installation



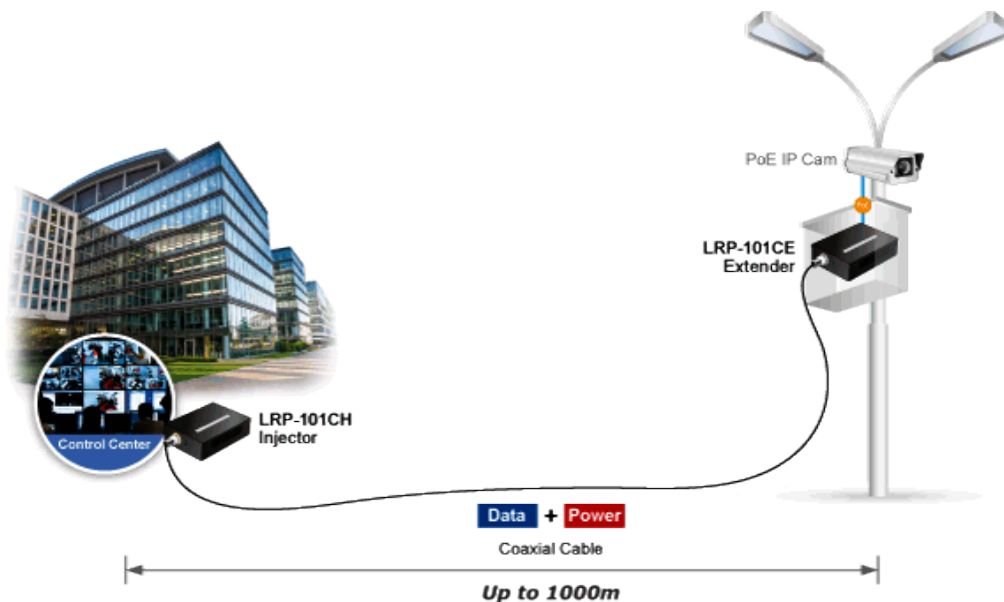
### Daisy-chaining Multiple Nodes

PLANET Long Reach PoE solution can easily build a power system for centrally-controlled IP cameras in a high availability network infrastructure. It gives users the flexibility to expand small area network with **BNC T-connector** for sharing **four nodes** per port when needed.



### IP Ethernet and Power over Long Existing Coaxial Cable

A normal UTP cable can only be extended up to 100 meters, but the LRP-101CE, when working with the LRP Injector or LRP Switch, can extend PoE networking up to **1,000 meters (3,280ft)** over 75 ohm coaxial cable with stable, high-quality video transmission. It eliminates the need for an additional electrical outlet as its single power source can provide power to a PoE PD at long range via the LRP-101CE.



### Stable Operating Performance under Difficult Environments

PLANET Long Reach PoE Extender is the perfect solution for extended data and power transmission for warehouses, parking lots, campuses, casinos, and many more. It can operate stably under temperature range from **-20 to 70 degrees C** which enables the users to conveniently apply the device in any harsh environment. Without the problem of power source, it makes the installation of remote PoE powered devices easier and more efficiently.

## Plug-n-play Installation

With the plug and play feature, the LRP-101CE can be used immediately without the need of configuration and is also compliant with all kinds of IP network protocols. If there is a network disconnection, it can be re-connected in less than 5 seconds. Moreover, the rich diagnostic LEDs on the front panel show the operating status of the individual port and the whole system, enabling the administrator to efficiently manage the network.

## 2. PRODUCT FEATURES

### ▶ **Physical Port**

- 1 x 10/100BASE-TX RJ45 copper interface, supporting IEEE 802.3af/at PoE PSE
- 1 x BNC connector, supporting 44~56V DC power input and Ethernet data transmission

### ▶ **Power over Ethernet**

- Supports Power over Ethernet PSE, PoE Injector
- Eliminates power cabling with PoE over Coaxial
- Power and Ethernet data transmission over coaxial up to 1km
- Complies with IEEE 802.3af / IEEE 802.3at Power over Ethernet PSE on RJ45 port
- Supports PoE power up to 25 watts (depending on Power Source and Coaxial Distance)
- Auto detects remote powered device (PD)

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

- Supports extensive LED indicators for network diagnostics
- Metal case protection
- Compact size, DIN-rail and wall-mount design
- Power Input: PoC (Power over Coaxial) power input
- Supports 4KV DC Ethernet ESD protection
- -20 to 70 degrees C operating temperature

### 3. PRODUCT SPECIFICATIONS

#### 3.1 MAIN COMPONENTS

IEEE 802.3at PSE IC: Microsemi PD69101

Long Reach Ethernet IC: Xingtera XT810

#### 3.2 FUNCTION SPECIFICATIONS

<b>Model</b>		<b>LRP-101CE</b>
<b>Functions</b>		Long Reach PoE Extender
<b>Hardware Specifications</b>		
<b>Ethernet Interface</b>	<b>Copper</b>	10/100BASE-TX RJ45, auto-negotiation/ auto-MDI/MDI-X
	<b>Power over Ethernet Standard</b>	IEEE 802.3at/af PoE PSE (Power Source Equipment)
	<b>PoE Output</b>	56V DC, 600mA max.
	<b>PoE Budget</b>	Up to 25 watts
	<b>PoE Mode</b>	End-span, RJ45 Pin 1/2(+), 3/6(-)
	<b>Data Rate</b>	100/100Mbps
	<b>Cabling</b>	Cat5e or above
	<b>Maximum Distance</b>	100 meters
	<b>Maximum Frame Size</b>	1522bytes
<b>Long Reach PoE Interface</b>	<b>Connectivity***</b>	1 x BNC female. Long Reach PoE over coaxial PD (Powered Device)
	<b>Power Input</b>	37~56V DC
	<b>Power Pin Assignment</b>	<ul style="list-style-type: none"> <li>■ BNC center pole : DC+</li> <li>■ BNC shield : DC -</li> </ul>
	<b>Cabling</b>	Coaxial cable: 75 ohm RG-6/U cable, less than 12Ω/1,000 ft. RG-59/U cable, less than 30Ω/1,000 ft.
	<b>Maximum Distance</b>	Max. 200m with PoE+ output (656ft.) Max. 600m with PoE output (1,968ft.) Max. 1,200m without PoE output (3,937ft.)
	<b>Long Reach Ethernet Standard</b>	IEEE 1901
	<b>Modulation Type</b>	Wavelet-OFDM
	<b>Security</b>	128-bit AES encryption
	<b>Frequency Band</b>	2 ~ 28 MHz
	<b>Encryption</b>	AES 128-bit

	Performance**	Distance	Data Rate* (Upload / Download)	LRP-101CE 802.3af/at PoE Output Capability**	
				LRP-101CH with 56V DC in	LRP-101CH with 30-watt PoE+ in
		200m	93 / 93Mbps	29W	16W
		400m	93 / 93Mbps	22W	14W
		600m	87 / 91Mbps	13W	10W
		800m	75 / 83Mbps	10W	8W
		1,000m	55 / 73Mbps	8W	7W
	<b>Multiple Nodes</b>	Supports up to 4 LRP extenders within 1km			
	<b>LRP Compatibility</b>	With power over coaxial input <ul style="list-style-type: none"> <li>■ LRP-101CH – 1-Port LRP Injector</li> <li>■ LRP-822CS – 8-Port LRP over Coax Switch</li> <li>■ LRP-1622CS – 16-Port LRP over Coax Switch</li> </ul>			
<b>LED Indicators</b>	4 x LEDs <ul style="list-style-type: none"> <li>■ PWR</li> <li>■ LRP LNK</li> <li>■ PoE-in-use</li> <li>■ LNK/ACT</li> </ul>				
<b>ESD Protection</b>	4KV DC				
<b>Enclosure</b>	Metal case				
<b>Installation</b>	Wall mount or DIN rail with optional kit				
<b>Power Requirements</b>	BNC Power over Coaxial Input: 44~56V DC				
<b>Standards Conformance</b>					
<b>Standards Compliance</b>	IEEE 802.3 10BASE-T Ethernet IEEE 802.3u 100BASE-TX Fast Ethernet IEEE 802.3af Power over Ethernet (802.3at Type 1) IEEE 802.3at Power over Ethernet Plus(802.3at Type 2)				

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

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.

\*\*\* The LRP coaxial interface is allowed for LRP-xxx-Cx connection; wrong connection could damage the connection partner.

### 3.3 PHYSICAL SPECIFICATIONS:

- **Dimensions:**  
94 x 70 x 26 mm (W x D x H)
- **Weight:**  
375g
- **Drawing**

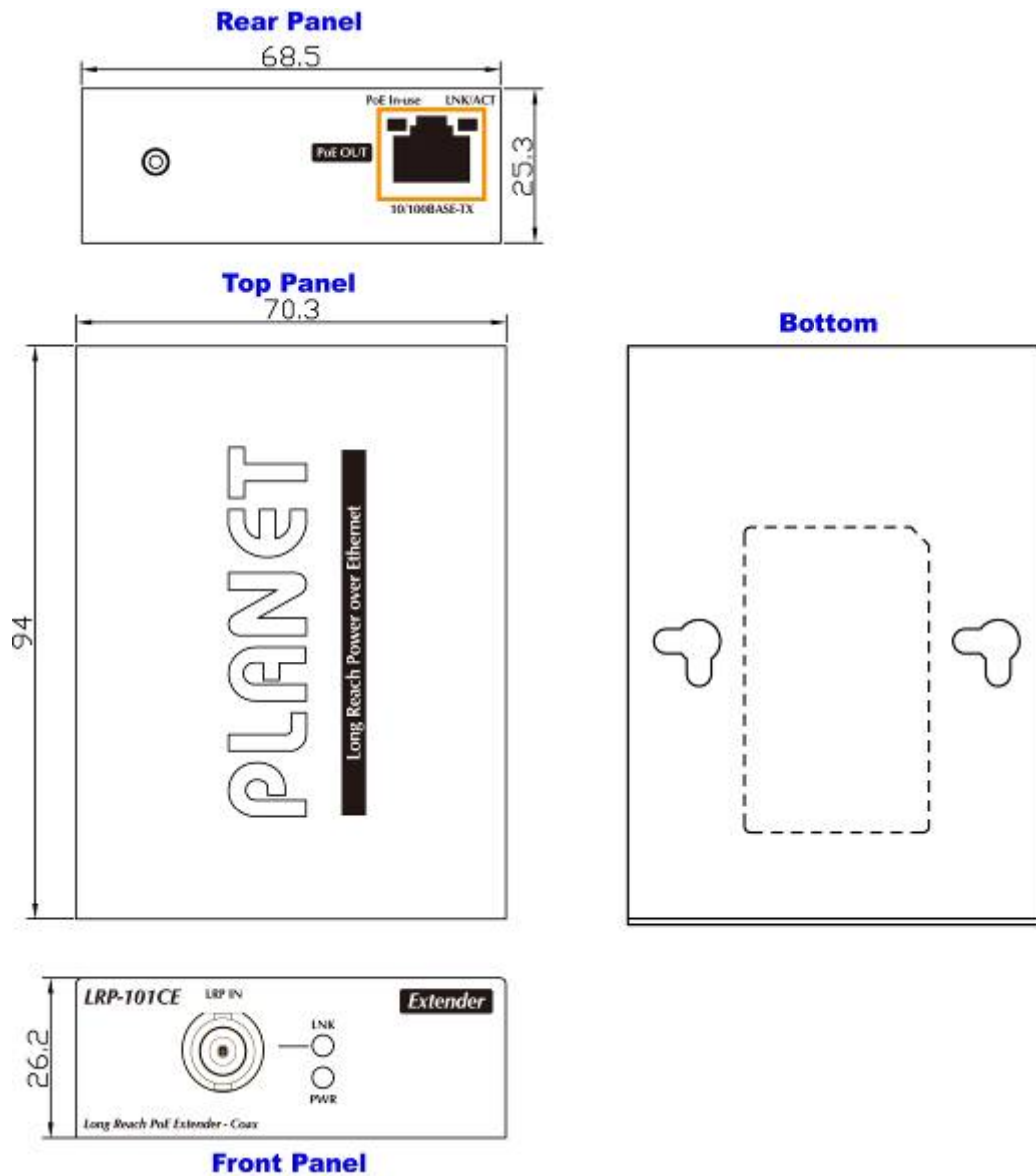


Figure 3-1: LRP-101CE Diagram

## ■ Front Panel

Figure 3-2 and Figure 3-3 show the front panel and rear panel of the LRP-101CE.

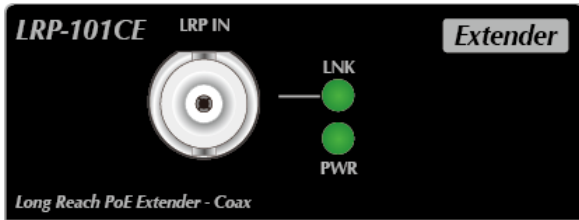


Figure 3-2: LRP-101CE front panel



Figure 3-3: LRP-101CE rear panel

## ■ LRP-101CE LED Indicators

### > System

LED	Color	Function
PWR	Green	Lit: indicates the power is on.

### > LRP Coaxial Interface

LED	Color	Function
LNK	Green	Lit: indicates that the LRP coaxial link is established.
		Off: indicates that the LRP coaxial link is down.

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

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

## 3.4 ENVIRONMENTAL SPECIFICATIONS

### Operating:

Temperature:	-20°C ~ 70 degrees C
Relative Humidity:	5% ~ 95% (non-condensing)

### Storage:

Temperature:	-40°C ~ 75 degrees C
Relative Humidity:	5% ~ 95% (non-condensing)

## 3.5 ELECTRICAL SPECIFICATIONS

### LRP-101CE Input Voltage:

- BNC Power over Coaxial Input: 44~56V DC



**Test with LRP-101CH:**

<b>Input Voltage:</b>		DC Input: 48V DC	DC Input: 56V DC	RJ45 802.3at PoE Input:
<b>Power</b>	Standby@1km	4.3 watts / 14BTU	5 watts / 17BTU	5.2 watts / 17BTU
<b>Consumption</b>	Ethernet Link@1km	4.8 watts / 16BTU	5 watts / 17BTU	5.3 watts / 18BTU

### 3.6 REGULATORY COMPLIANCE

FCC Part 15 Class A, CE

### 3.7 RELIABILITY

MTBF > 100,000 hrs @ 25 degrees C

### 3.8 BASIC PACKAGING

- LRP-101CE      X1
- User's Manual      X1

### 3.9 PACKING DIMENSIONS

<b>Dimensions: Box</b>	200 x 132 x 68mm (W x D x H)
<b>Weight:</b>	380g (gross weight)
<b>Dimensions: Carton</b>	580 x 360 x 305mm (W x D x H)
	26pcs in one carton