

Product Specifications

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

LRP-104CET

Version 1.0

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Change History:

Revision:	Date:	Author:	Change List
Version 1.0	2017/3/7	Calvin Chao	Initial Release

Author:	Calvin Chao	Editor:	Calvin Chao
Reviewed by:		Approved by:	Kent Kang

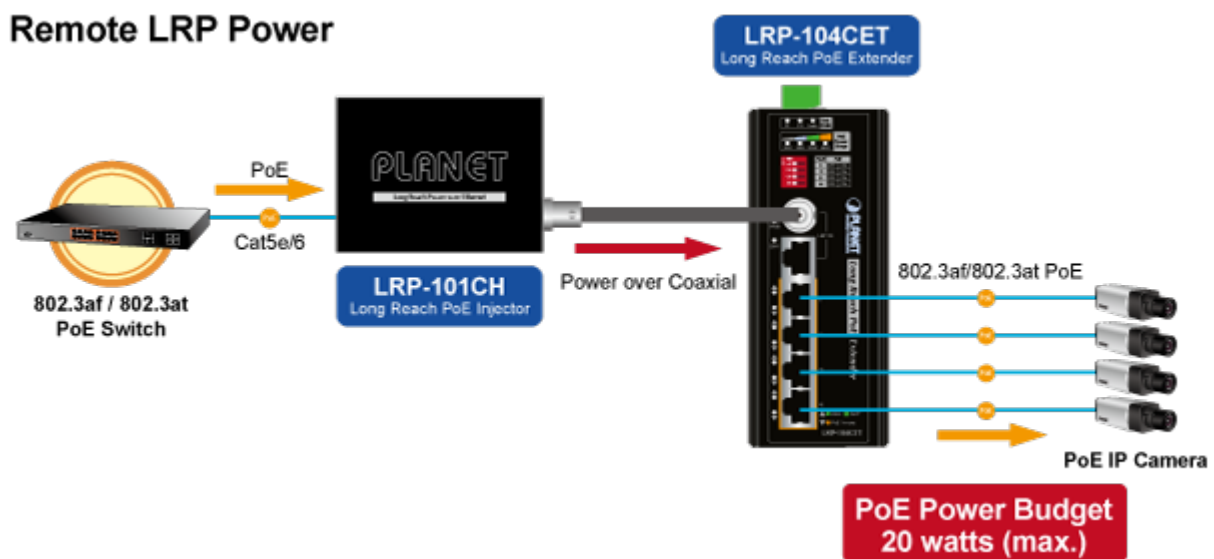
1. PRODUCT DESCRIPTION



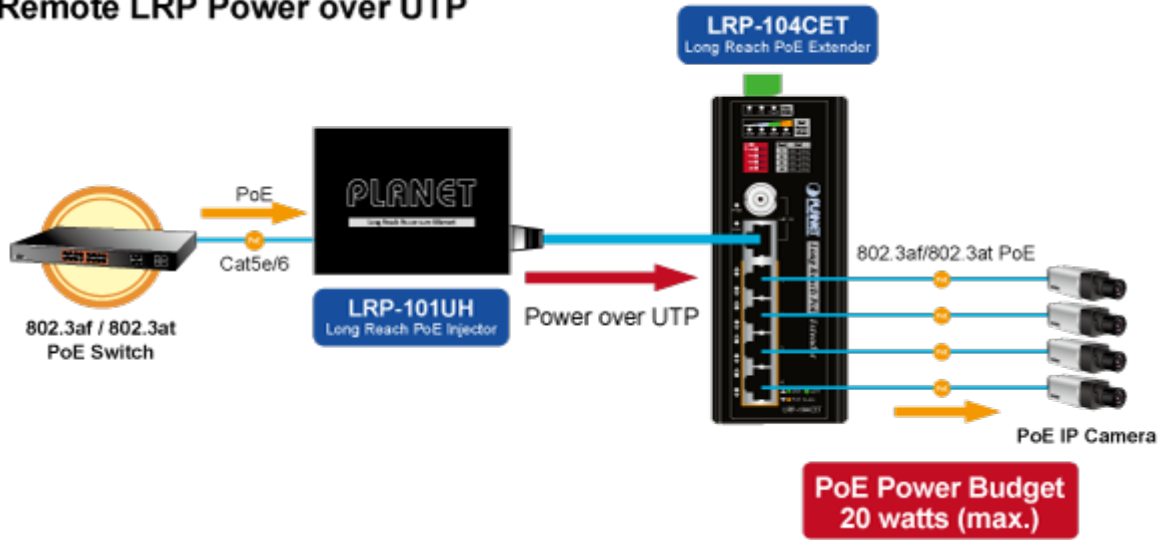
PLANET **Long Reach PoE solution** is designed to extend IP Ethernet transmission and inject power simultaneously into a remote 802.3af/at PoE compliant powered device (PD) beyond the 100 meters distance limit of Ethernet.

Perfect 1-to-4 PoE over Coaxial/UTP Extender in Harsh Environment

The LRP-104CET, a PLANET Long Reach PoE solution, is an industrial-grade **Single-port Long Reach PoE to 4-port 802.3af/at PoE Extender** delivered in an IP30 rugged strong case. It features long-range data and power transmission over **any existing coaxial, UTP, twisted-pair cable or telephone wires** for distance up to **1,000m** and **converts power to standard 802.3af/at PoE over another 100-meter Ethernet cable connected to four remote PoE PDs** at the same time. The LRP-104CET provides one to multi applications for configure-free operation and deployment in climatically demanding environments with wide temperature range from **-20 to 70 degrees C**. It makes the installation of remote PoE powered devices easier and more efficient.



Remote LRP Power over UTP



One Power Sourcing for Multi Powered Devices Solution

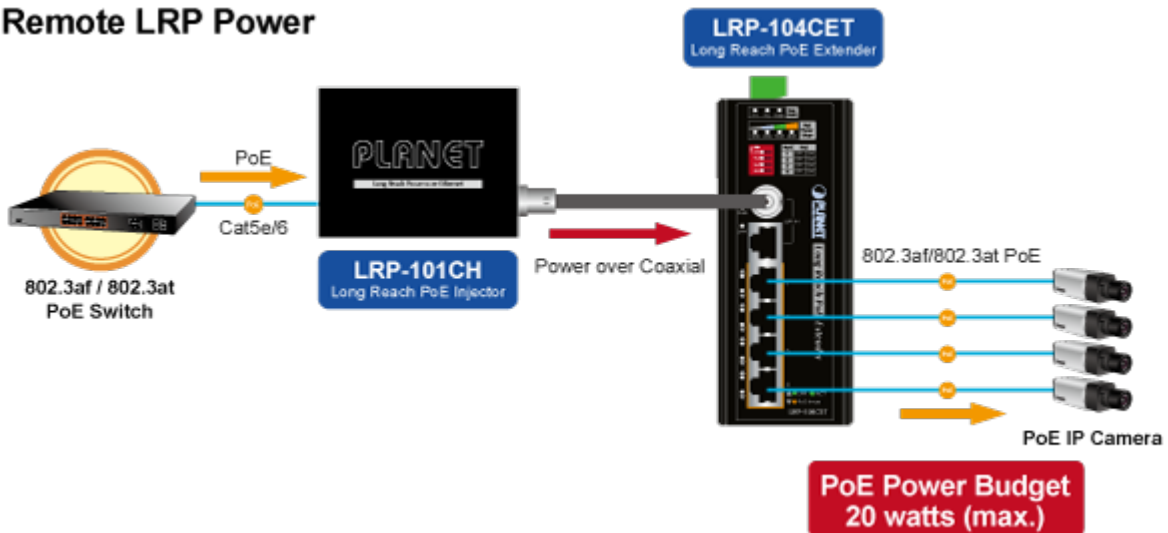
PLANET Long Reach PoE solution is designed to extend IP Ethernet transmission and inject power simultaneously into a remote 802.3af/at PoE compliant powered device (PD) beyond the 100 meters distance limit of Ethernet. The solution works in pairs for point to point and point to multi-point connectivities.

Point to Multi Points

Type 1: Remote LRP Power through BNC/RJ45 with DC 56V input

The LRP-101 Injector, powered by IEEE 802.3at/af PoE or DC power adapter, transmits data and power over coaxial/ UTP cable to the LRP-104CET extender. An IEEE 802.3at/af compliant PoE PD will then automatically be powered by the LRP-104CET via UTP cabling.

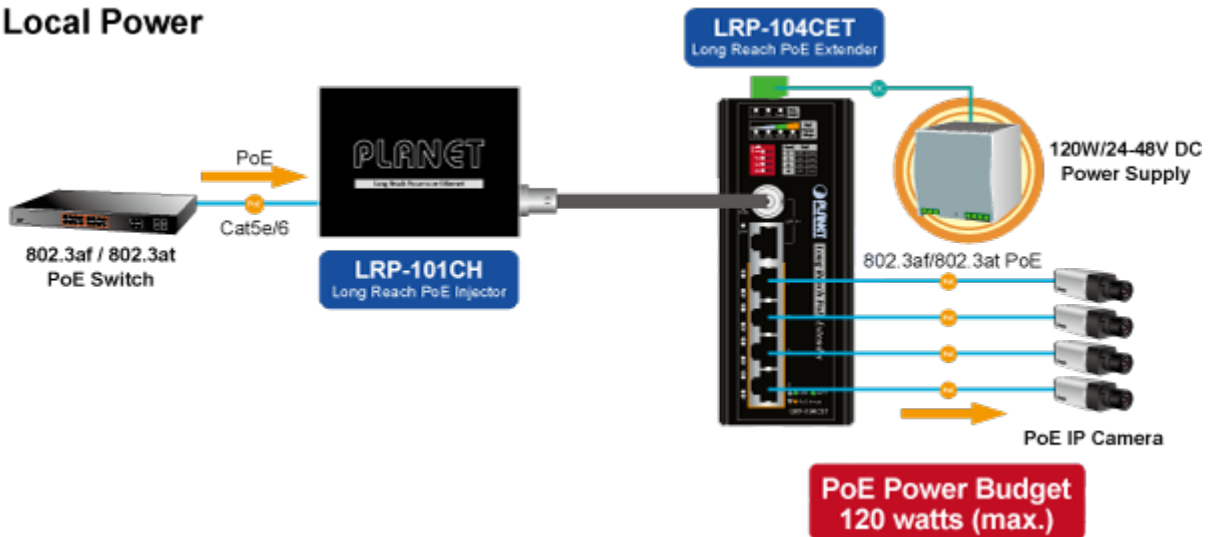
Remote LRP Power



Type 2: Local Power with External DC Input (DC 24V~48V)

The LRP-101 Injector, powered by IEEE 802.3at/af PoE or DC power adapter, transmits data through coaxial/ UTP cable to the LRP-104CET extender powered by external DC power. An IEEE 802.3at/af compliant PoE PD will then automatically be powered by the LRP-104CET via UTP cabling.

Local Power

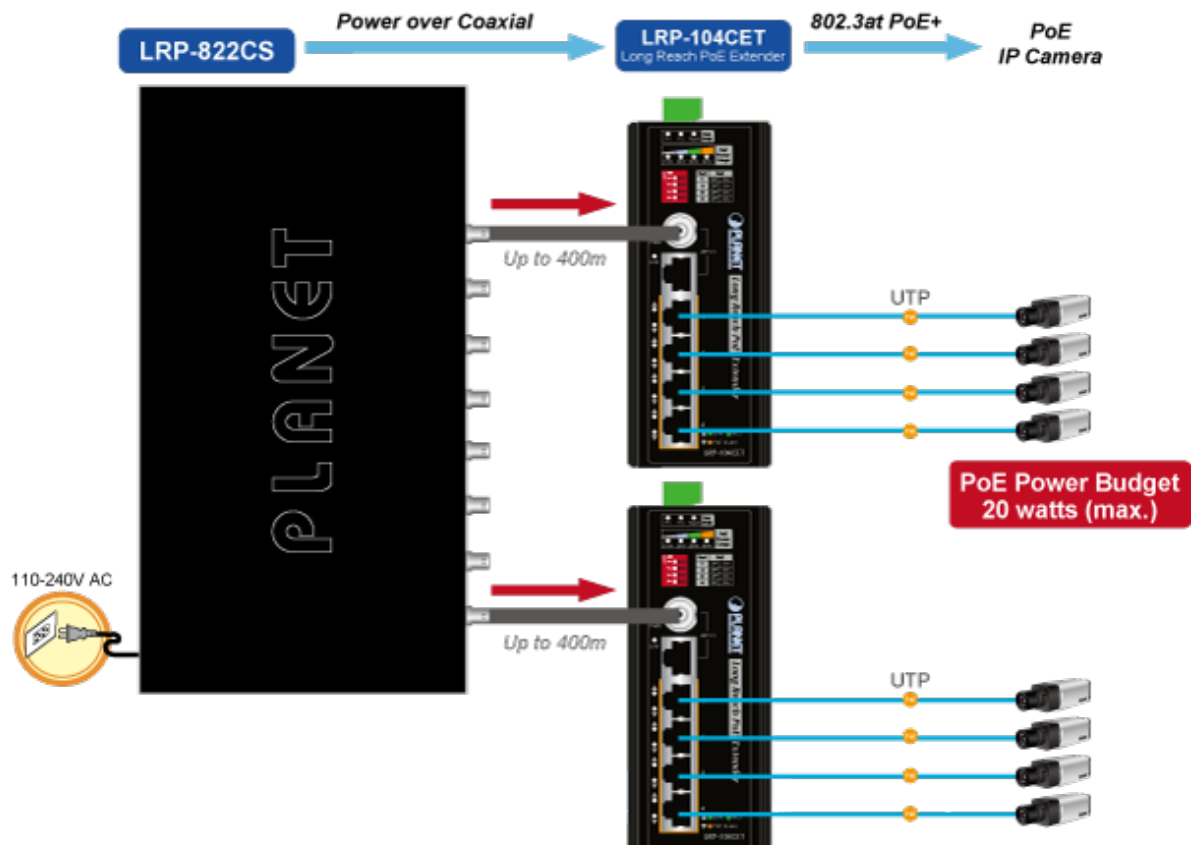


Multi Points to Multi Points:

Type 1: Remote LRP Power through BNC with DC 56V input

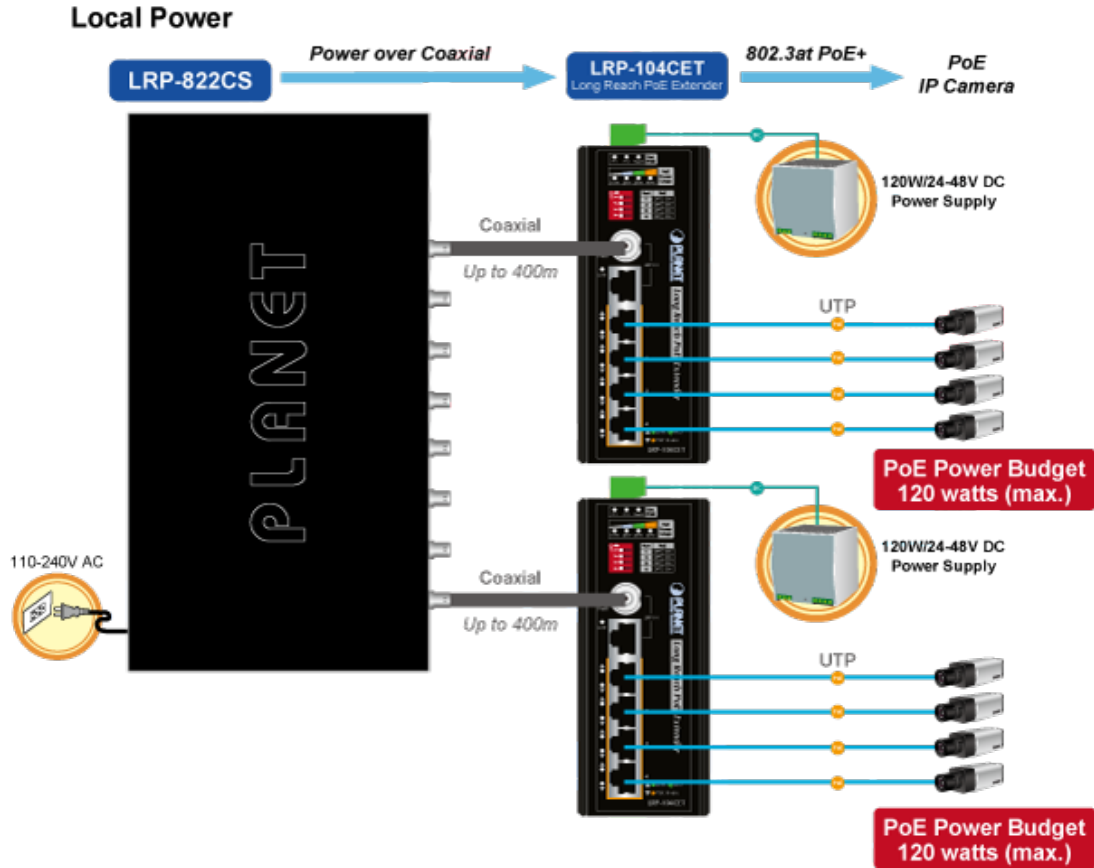
The LRP Switch, powered by itself, transmits data and power over coaxial cable to the LRP-104CET extender. An IEEE 802.3at/af compliant PoE PD will then automatically be powered by the LRP-104CET via UTP cabling.

Remote LRP Power



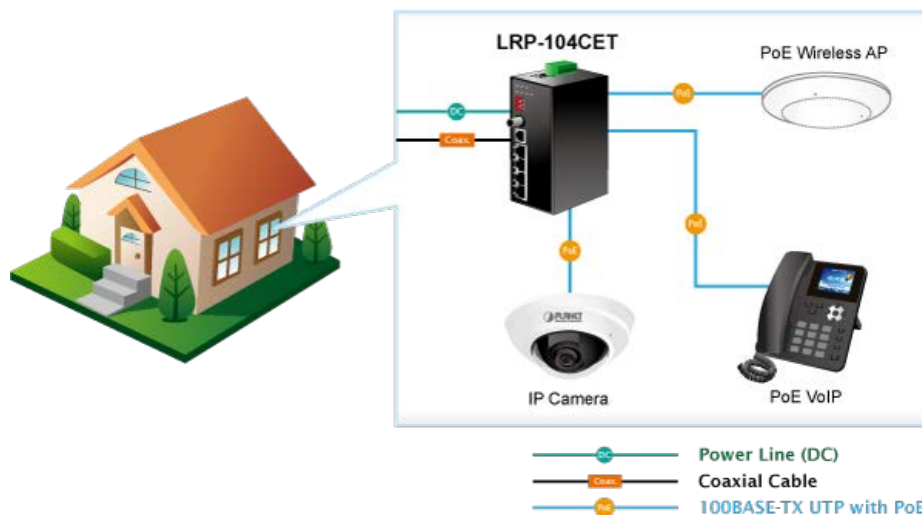
Type 2: Local Power with External DC input (DC 24V~48V)

Powered by external DC power, the LRP Switch transmits data through coaxial cable to the LRP-104CET extender. An IEEE 802.3at/af compliant PoE PD will then automatically be powered by the LRP-104CET via UTP cabling.



Two Types of Power Input: Remote LRP Power through BNC/RJ45 and Local Power

In the Long Reach PoE mode, the LRP-104CET's PoE budget depends on the output of the Long Reach PoE Injector or Long Reach Switch, but with External DC Power input, it is possible to increase the PoE budget up to 120W. It means the four IEEE 802.3at PDs can be powered by the LRP-104CET. It also features a strong dual power input system (**Dual 24V~48V DC**) incorporated into customer's automation network to enhance system reliability and uptime.



Configure-free Installation

The LRP-104CET can be used immediately without the need of configuration and is also compliant with all kinds of IP network protocols. Moreover, the rich diagnostic LEDs and PoE Power Usage LEDs on the front panel show the operating status of the individual port and the whole system. The DIP switch can control PoE output of each port by turning ON or OFF, enabling the administrator to efficiently manage the network.

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 efficient.

2. PRODUCT FEATURES

- **Physical Ports**
 - LRP interfaces
 - 1 BNC female, Long Reach PoE over Coaxial PD
 - 1 RJ45 connector, Long Reach PoE over UTP PD
 - Copper interfaces
 - 4 10/100BASE-TX RJ45 ports with IEEE 802.3at PoE Plus PSE
- **Long Reach Power over Ethernet**
 - Power and Ethernet data transmission over coaxial up to 1km
 - Power and Ethernet data transmission over UTP up to 500m
 - Supports Long Reach PoE power up to 25 watts (depending on LRP Injector/Switch and cable distance)
- **Power over Ethernet**
 - Complies with IEEE 802.3at Power over Ethernet Plus/end-span PSE
 - Supports PoE power budget up to 120 watts (external DC power input)
 - Supports PoE power up to 30 watts for each PoE port (external DC power input)
 - Auto detects remote PD
- **Industrial Design**
 - IP30 aluminum case
 - DIN rail and wall-mount design
 - -20 to 70 degrees C operating temperature
 - 24~48V DC, redundant power with polarity reverse protect function

3. PRODUCT SPECIFICATIONS

3.1 MAIN COMPONENTS

IEEE 802.3at PSE IC: Microsemi PD69104B

Long Reach Ethernet IC: Witlink CR700

3.2 FUNCTION 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 watts 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	One RJ45 connector Long Reach PoE over UTP PD
	Power Input	44~ 56V DC	
	Power Assignment	Pin BNC center pole: DC+ BNC shield: DC-	RJ45 Pins 1, 3, 5, 7: VCC+ RJ45 Pins 2, 4, 6, 8: VCC-
Cabling	Coaxial cable: 75 ohm RG-6/U cable, less than 12Ω/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. 1000m with PoE output (3,280ft.)	Max. 500 with PoE + output (1,640ft.)
	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: <ul style="list-style-type: none"> ■ 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: <ul style="list-style-type: none"> ■ LRP-101UH – 1-Port LRP Injector
LED Indicator	3 x LED for External Power Supply:	Green: DC Power 1	
		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	130 watts/446BTU (Ethernet with PoE Full Loading)		
Alarm	One relay output for power failure. Alarm relay current carry ability: 1A @ 24V DC		

Enclosure	Aluminum 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: -40~75 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-822C/ LRP-1622C S	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
UTP Performance	Distance	Data Rate (Upload/Download)	802.3af/at PoE Total 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 environmental factors.

**Depending on what the DC/PoE power input and the length of coaxial cable are.

3.3 PHYSICAL SPECIFICATIONS:

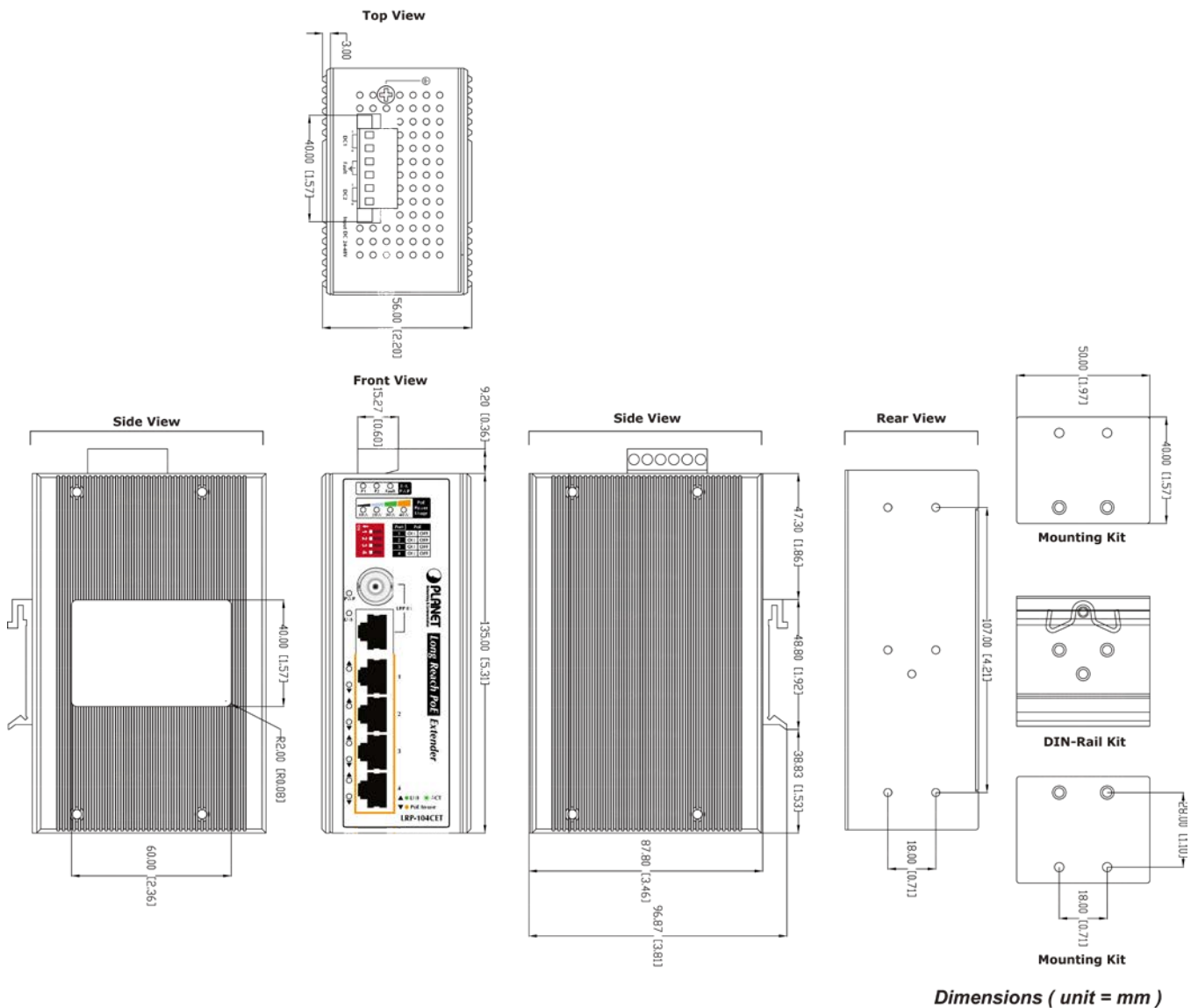
Dimensions:

135 x 87.8 x 56 mm (W x D x H)

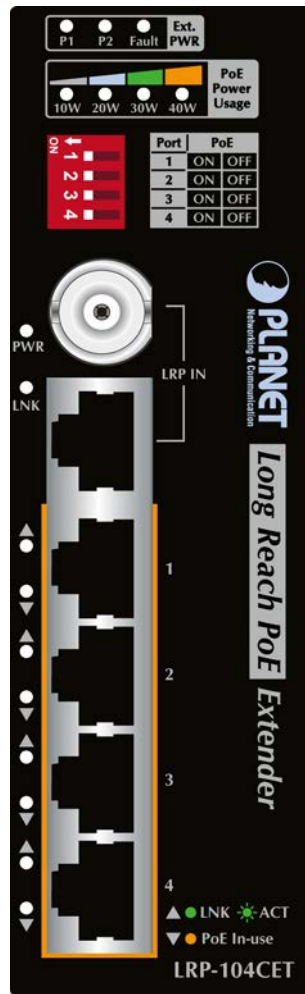
Weight:

644g

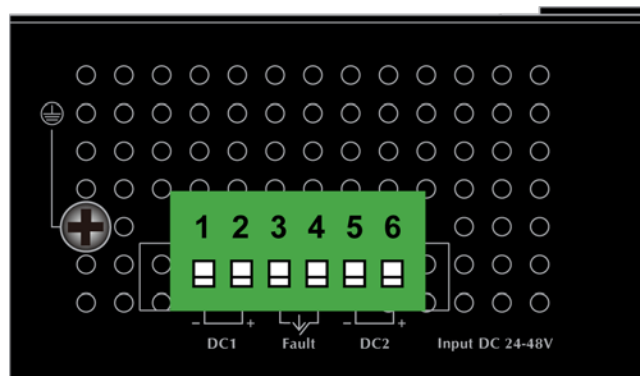
Drawing



Front View



Top View



LED Definition:

■ **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 $\geq 10W$.
20W	Green	Lights to indicate the power usage is $\geq 20W$.
30W	Green	Lights to indicate the power usage is $\geq 30W$.
40W	Green	Lights to indicate the power usage is $\geq 40W$.

■ **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 .

3.4 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-104CET Input Voltage:

- DC power input: DC 24~48V

LOADING DC INPUT	System on without any devices attached	Ethernet Full Loading	Ethernet + PoE Full Loading
24V	4.7W, 0.198A	4.9W, 0.204A	124W, 5.2A
36V	4.6, 0.128A	4.75W, 0.132A	124.2W, 3.45A
48V	4.9W, 0.104A	5W, 0.106A	124.8W, 2.6A

3.6 REGULATORY COMPLIANCE

FCC Part 15 Class A, CE

Stability Testing:

- IEC60068-2-32 (Free Fall)
- IEC60068-2-27 (Shock)
- IEC60068-2-6 (Vibration)

3.7 RELIABILITY

MTBF > 100,000 hrs @ 25 degrees C

3.8 BASIC PACKAGING

- The LRP-104CET x 1
- User's manual x 1
- DIN-rail Kit x 1
- Wall Mounting Kit x 1
- RJ45 Dust Cap x 5
- BNC Dust Cap x 1

3.9 PACKING DIMENSIONS

Dimensions: 585 x 224 x 312mm

Weight: TBD

Quantity: 12pcs in one carton