

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

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

User's Manual

Trademarks

Copyright © PLANET Technology Corp. 2015.

Contents are subject to revision without prior notice.

PLANET is a registered trademark of PLANET Technology Corp. All other trademarks belong to their respective owners.

Disclaimer

PLANET Technology does not warrant that the hardware will work properly in all environments and applications, and makes no warranty and representation, either implied or expressed, with respect to the quality, performance, merchantability, or fitness for a particular purpose.

PLANET has made every effort to ensure that this User's Manual is accurate; PLANET disclaims liability for any inaccuracies or omissions that may have occurred.

Information in this User's Manual is subject to change without notice and does not represent a commitment on the part of PLANET. PLANET assumes no responsibility for any inaccuracies that may be contained in this User's Manual. PLANET makes no commitment to update or keep current the information in this User's Manual, and reserves the right to make improvements to this User's Manual and/or to the products described in this User's Manual, at any time without notice.

If you find information in this manual that is incorrect, misleading, or incomplete, we would appreciate your comments and suggestions.

FCC Warning

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the Instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

CE Mark Warning

This is a Class A product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

WEEE Warning



To avoid the potential effects on the environment and human health as a result of the presence of hazardous substances in electrical and electronic equipment, end users of electrical and electronic equipment should understand the meaning of the crossed-out wheeled bin symbol. Do not dispose of WEEE as unsorted municipal waste and have to collect such WEEE separately.

Revision

PLANET Long Reach PoE over Coaxial / UTP Extender Kit User's Manual

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

REVISION: 1.0 (January 2015)

Part No: EM-LRP-101x-KIT_v1.0 (2350-AN0100-000)

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

 User's Manual x 1	Please stick the sticker on the connector going to the LRP Extender  Warning Sticker x 1
--	---

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



Note

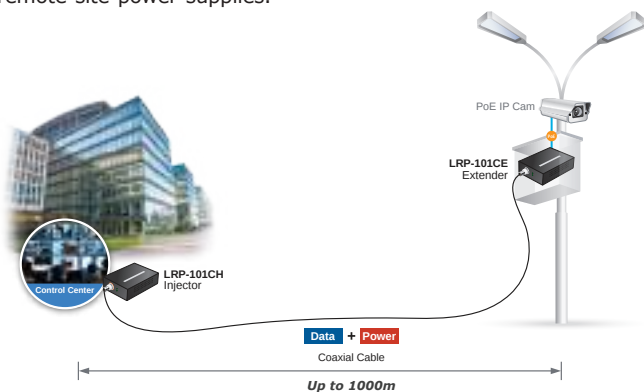
If any of these are missing or damaged, please contact your dealer immediately; if possible, retain the carton including the original packing material, and use them again to repack the product in case there is a need to return it to us for repair.

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.



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 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 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 Long Reach PoE over coaxial PSE (Power Source Equipment)	1 x BNC female 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+ ■ BNC shield : DC -		■ BNC center pole : DC+ ■ BNC shield : DC -		
	Cabling	Coaxial cable: 75 ohm RG-6/U cable, less than 12Ω/1000 ft RG-59/U cable, less than 30Ω/1000 ft.				
	Maximum Distance	Max. 200m with PoE+ output (656ft.) Max. 600m with PoE output (1968ft.) 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* (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 ■ LRP-101CH – 1-Port LRP Injector ■ LRP-822CS – 8-Port LRP over Coax Switch ■ LRP-1622CS – 16-Port LRP over Coax Switch
LED Indicators		4 x LEDs ■ PWR ■ LRP LNK ■ PoE IN ■ LNK/ACT	4 x LEDs ■ PWR ■ LRP LNK ■ PoE-in-use ■ 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 ■ DC Input: 48~56V DC	BNC Power over Coaxial Input: 44~56V DC
Standards Conformance			
Standards Compliance		IEEE 802.3 10BASE-T Ethernet IEEE 802.3u 100BASE-TX Fast Ethernet IEEE 802.3af Power over Ethernet (802.3at Type 1) IEEE 802.3at Power over Ethernet (802.3at Type 2)	
Regulation Compliance		FCC Part 15 Class A, CE	
Environment			
Temperature		Operating: -20~70 degrees C Storage: -40~75 degrees C	

Humidity	Operating: 5~95% (Non-condensing) 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 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 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 Long Reach PoE over UTP PSE (Power Source Equipment)		1 x RJ45 connector 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.) Max. 400m with PoE output (1,312 ft.) 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 ■ PWR ■ LRP LNK ■ PoE IN ■ LNK/ACT	4 x LEDs ■ PWR ■ LRP LNK ■ PoE-in-use ■ 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: 802.3at/af 48~56V DC ■ DC Input: 48~56V DC	Power over RJ45 Input: 44~56V DC
Standards Conformance		
Standards Compliance	IEEE 802.3 10BASE-T Ethernet IEEE 802.3u 100BASE-TX Fast Ethernet IEEE 802.3af Power over Ethernet (802.3at Type 1) IEEE 802.3at Power over Ethernet (802.3at Type 2)	
Regulation Compliance	FCC Part 15 Class A, CE	
Environment		
Temperature	Operating: -20~70 degrees C Storage: -40~75 degrees C	
Humidity	Operating: 5~95% (non-condensing) 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.

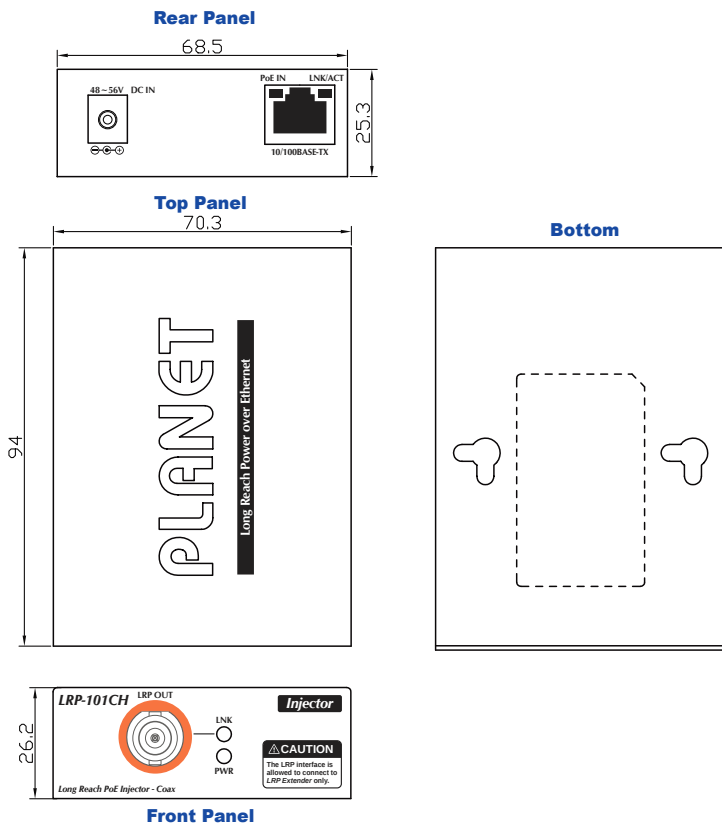
** Depending on what the DC/PoE Power Input and the length of UTP cable are.

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.

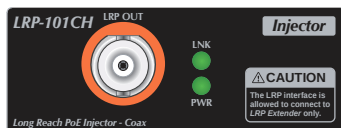


Figure 2-1: LRP-101CH Front Panel

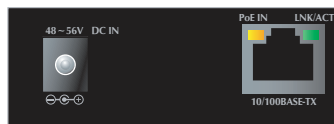


Figure 2-2: LRP-101CH Rear Panel

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 Power ON: 48~56V DC power input from DC jack
		Off	Power Off

➤ LRP Coaxial Interface

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

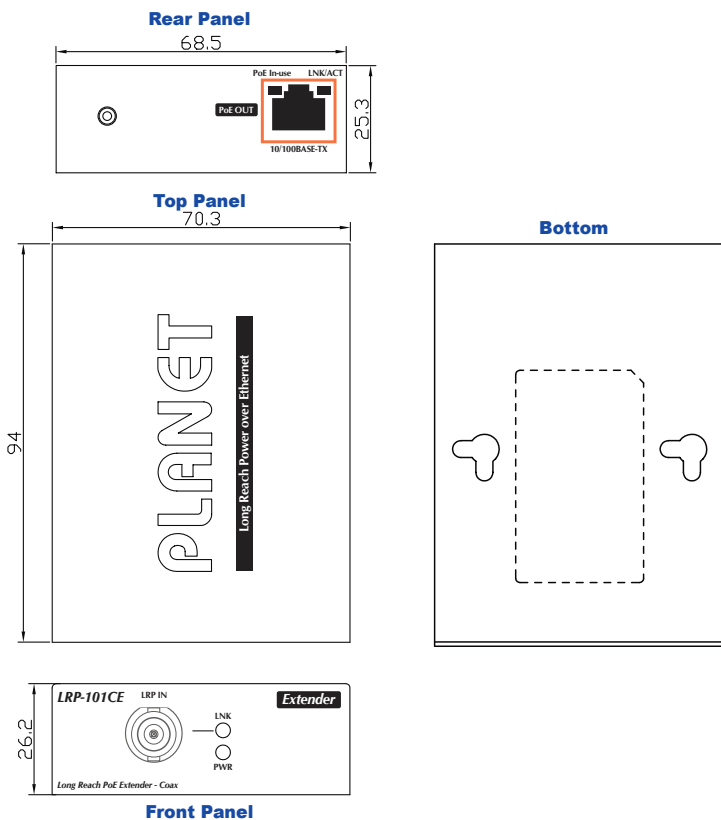
➤ RJ45 10/100BASE-TX Interface

LED	Color	Function
PoE IN	Amber	Lit: indicates the RJ45 port is receiving the PoE Power.
LNK/ACT	Green	Blink: 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	Lit: indicates the power is on.

➤ LRP Coaxial Interface

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

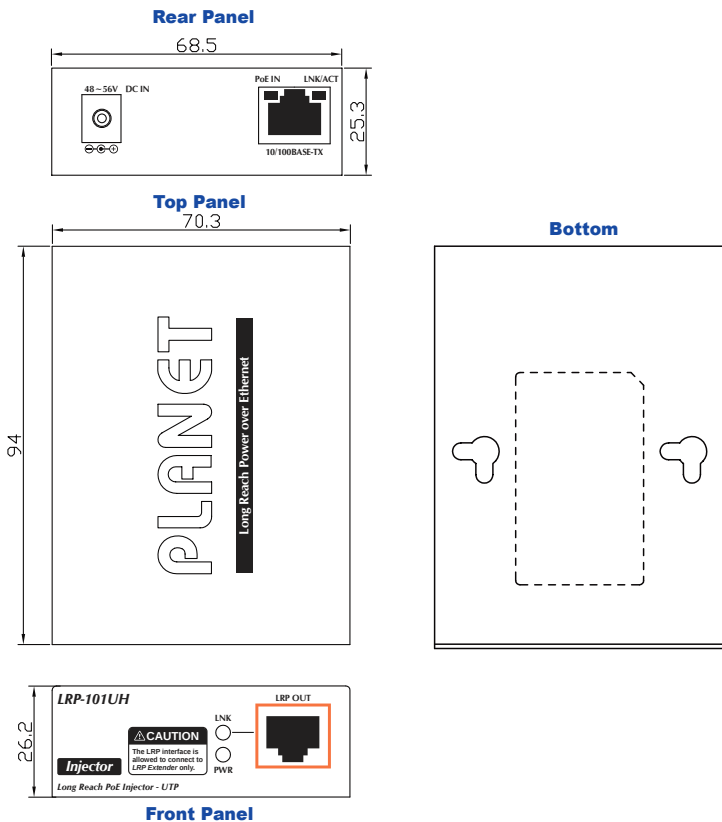
➤ RJ45 10/100BASE-TX Interface

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.

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.

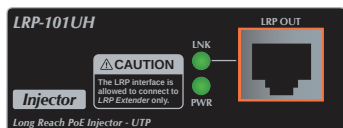


Figure 2-5: LRP-101UH Front Panel

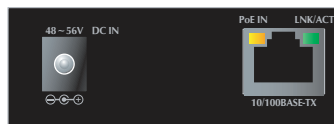


Figure 2-6: LRP-101UH Rear Panel

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 Power ON: 48~56V DC power input from DC jack
		Off	Power Off

➤ LRP UTP Interface

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

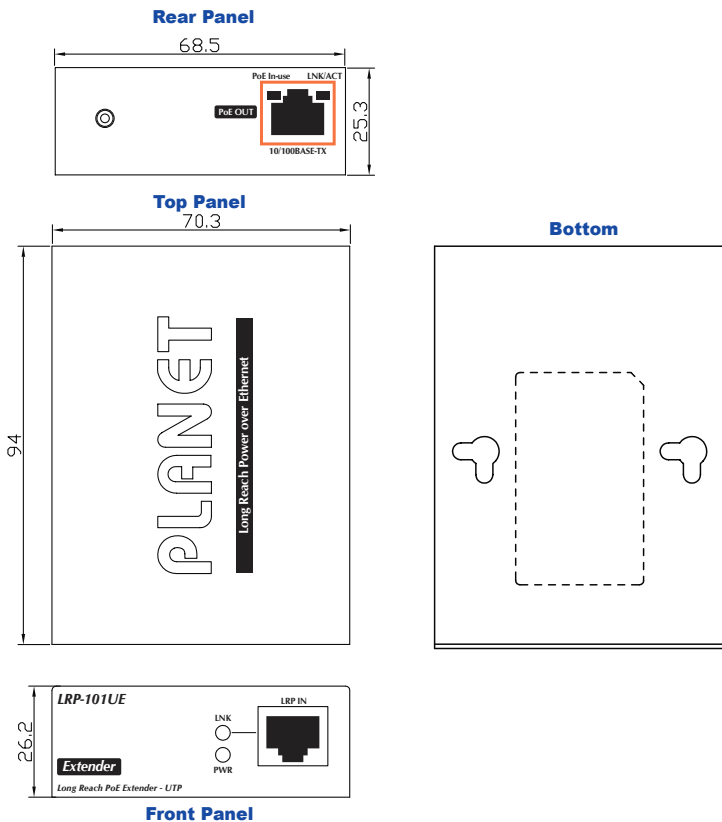
➤ RJ45 10/100BASE-TX Interface

LED	Color	Function
PoE IN	Amber	Lit: indicates the RJ45 port is receiving the PoE Power.
LNK/ACT	Green	Blink: 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.

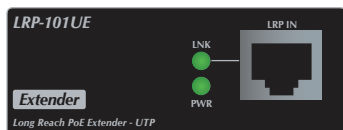


Figure 2-7: LRP-101UE Front Panel



Figure 2-8: LRP-101UE Rear Panel

2.4.3 LRP-101UE LED Indicators

➤ System

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

➤ LRP UTP Interface

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

 Warning: This side of connector contains electric power. Please be careful before plugging into the device.		 Warning: 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



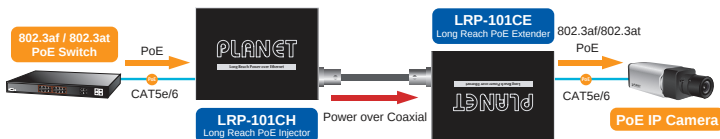
Caution

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	RJ45 with 802.3at/af PoE input	BNC with DC power over coaxial input
Power Output	BNC with DC power over coaxial output	RJ45 with 802.3at/af PoE output

Installation Instructions

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

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

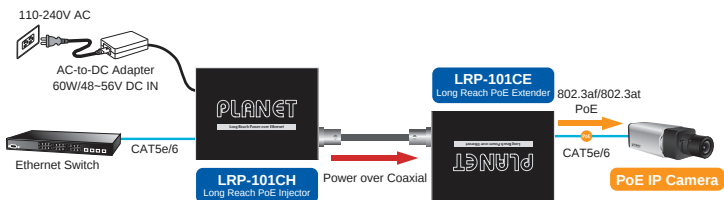
Step 3	Connect Cat5/6 UTP cable to LRP-101CE and IEEE 802.3at/af complied PoE IP camera or PoE Wireless AP.
---------------	--

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

 Note	- 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. - 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.
--	--

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

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

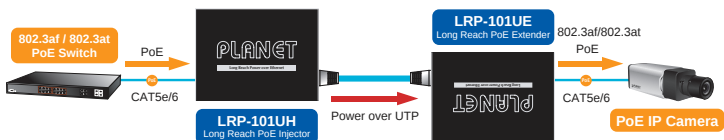


Note

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
Power Input	RJ45 with 802.3at/af PoE input	UTP with DC power over UTP input
Power Output	UTP with DC power over UTP output	RJ45 with 802.3at/af PoE output

Installation Instructions

Step 1

Remove the **"Danger – No Ethernet"** 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



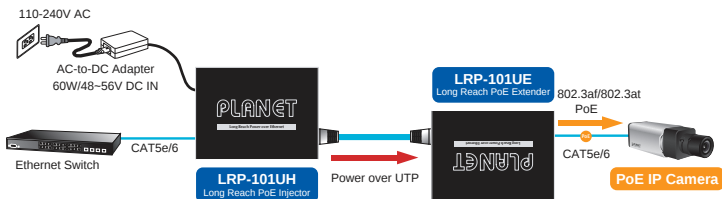
The LRP-101UH accepts IEEE 802.3at equipment for optimal power injection. The other non-standard PoE Power devices may cause the LRP-101UH to malfunction.

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
Power Input	Power adapter with 48~56V DC in	UTP with DC power over UTP input
Power Output	UTP with DC power over UTP output	RJ45 with 802.3at/af PoE output

Installation Instructions

Step 1	Remove the “ Danger – No Ethernet ” labels stuck on the RJ45 LRP ports 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.



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 non-PoE switch or workstation.

Step 4

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

Step 5

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

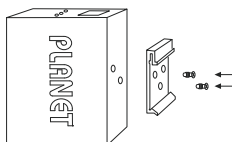
**Note**

1. Before installation, please consider the distance and watts value demand for PD devices. The LRP-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.
3. PoE Output Capacity is based on different DC Power Input / PoE Input.
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.

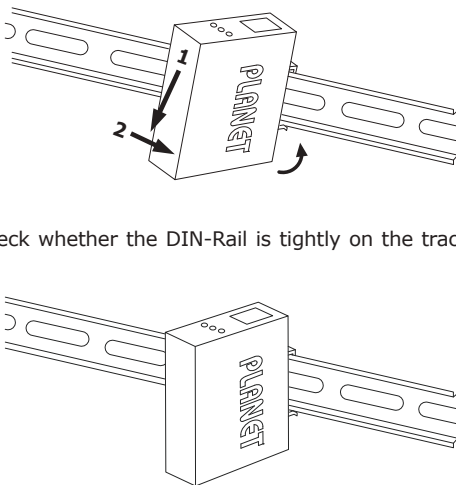
3.6. Optional - DIN-Rail Mounting

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:

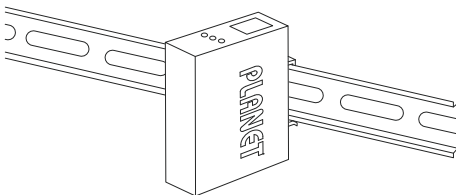
Step 1: Screw the DIN-Rail on the Long Reach PoE over Coaxial / UTP Extender Kit.



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.

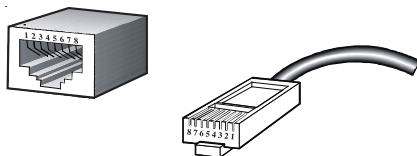
APPENDIX A: NETWORKING CONNECTION

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:

<u>Straight Cable</u>		<u>SIDE 1</u>	<u>SIDE 2</u>
1 2 3 4 5 6 7 8	<u>SIDE 1</u>	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		4 = Blue	4 = Blue
1 2 3 4 5 6 7 8	<u>SIDE 2</u>	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
<u>Crossover Cable</u>		<u>SIDE 1</u>	<u>SIDE 2</u>
1 2 3 4 5 6 7 8	<u>SIDE 1</u>	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	<u>SIDE 2</u>	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

31st 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