

Power over Coaxial Extender Kit

VC-205PT and VC-205PR

User's Manual

Trademarks

Copyright © PLANET Technology Corp. 2013.

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 Industrial Power over Coaxial Extender Kit User's Manual

For Model: VC-205-KIT

Revision: 1.1 (OCT, 2013)

Part No: EM-VC-205-KIT_v1.1 (2350-AC0340-001)

Table of Contents

| | |
|---|----|
| 1. Introduction | 5 |
| 1.1 Package Contents | 5 |
| 1.2 Product Features..... | 5 |
| 1.3 Product Specifications | 7 |
| 1.4 Physical Dimensions | 10 |
| 2. Installation | 12 |
| 2.1 Product Description | 12 |
| 2.1.1 Power over Coaxial Extender Front Panel | 13 |
| 2.1.2 LED Indicators | 13 |
| 2.1.3 Power over Coaxial Extender Rear Panel | 14 |
| 2.2 Optional - DIN-Rail Mounting | 15 |
| 2.3 Applications of VC-205-KIT | 16 |
| 3. Troubleshooting | 19 |
| Appendix A: Networking Connection | 21 |
| A.1 Switch's RJ-45 Pin Assignments | 21 |
| A.2 RJ-45 Cable Pin Assignments..... | 21 |

1. Introduction

Thank you for purchasing PLANET Industrial Power over Coaxial Extender Kit, the VC-205-KIT, consisting of the VC-205PT and VC-205PR. The descriptions of the two models are as follows:

| | |
|----------|--|
| VC-205PT | PoE over Coaxial Extender - Transmitter (1-Port 10/100TX 802.3at PoE PD + 1-Port BNC PoE) |
| VC-205PR | PoE over Coaxial Extender - Receiver (1-Port 10/100TX 802.3at PoE PSE) |

“**Industrial Power over Coaxial Extender Kit**” mentioned in this Manual represents the above two models.

1.1 Package Contents

Open the box of the Industrial Power over Coaxial Extender Kit and carefully unpack it. The box should contain the following items:

| For VC-205-KIT |
|--|
| <ul style="list-style-type: none">● Industrial Power over Coaxial Extender – Transmitter x 1● Industrial Power over Coaxial Extender – Receiver x 1● User's Manual x 1● Warning Sticker x 1 |

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

1.2 Product Features

Physical Port

| Model Name | Ports | |
|------------|-----------------------------|-------------------|
| | Copper | BNC |
| VC-205PT | 1 x 10/100Base-TX (PoE IN) | Power Transmitter |
| VC-205PR | 1 x 10/100Base-TX (PoE OUT) | Power Receiver |

Power over Ethernet

- Eliminates Power cabling with PoE over Coaxial
- Ethernet over coaxial up to 1km with 5C2V/RG6 75Ω cable
- Complies with IEEE 802.3af / IEEE 802.3at Power over Ethernet on RJ-45 ports
- Supports PoE Power up to 30.8 watts (Vary on Power Source and Coaxial Distance)
- Auto detect powered device (PD) (VC-205PR)

Layer 2 Features

- Supports Auto-negotiation and 10/100Mbps half / full duplex mode
- Prevents packet loss with back pressure (Half-Duplex) and IEEE 802.3x PAUSE frame flow control (Full-Duplex)

VDSL2 Features

- Defines Symmetric Band Plans for the transmission of Upstream and Downstream signals

Industrial Case / Installation

- Supports extensive LED indicators for network diagnostics
- IP30 metal case protection
- Compact size, DIN Rail and Wall Mount Design
- Power Input: External DC or PoE power input (VC-205PT)
- Power Output: PoE power output (VC-205PR)
- Supports EFT protection 2000 VDC for power line
- Supports 2000 VDC Ethernet ESD protection
- -10 to 60 degrees C operating temperature

1.3 Product Specifications

| Model | | VC-205PT | VC-205PR | | |
|--|----------------------|--|---|---------------------|--------------------|
| Hardware Specifications | | | | | |
| Interface | Copper | 10/100Base-TX RJ-45 Auto-negotiation/ Auto-MDI/MDI-X 802.3at/af PoE Input | 10/100Base-TX RJ-45 Auto-negotiation/ Auto-MDI/MDI-X 802.3at/af PoE Output | | |
| | Coaxial | BNC, female Power over Coaxial Output | BNC, female Power over Coaxial Input | | |
| | DC Socket (Optional) | 52~56V DC Input | ---- | | |
| LED Indicators | | System ● PWR VDSL2 ● LNK POE ● PoE IN Ethernet ● LNK/ACT ● 100 | System ● PWR VDSL2 ● LNK POE ● PoE IN ● PoE Out Ethernet ● LNK/ACT ● 100 | | |
| ESD Protection | | 2KV DC | | | |
| EFT Protection | | 2KV DC | | | |
| Enclosure | | IP30 metal case | | | |
| Installation | | Wall mount or DIN rail with optional kit | | | |
| Dimensions (WxDxH) | | 94 x 70.3 x 39.2 mm | | | |
| Weight | | 283g | 284g | | |
| Power Requirements | | ● RJ-45 PoE Input: 802.3at/af 44~57V DC ● DC Input: 52~56V DC | ● BNC Power over Coaxial Input: 44~57V DC | | |
| Data Performance* (PT → PR / PR → PT) | | Distance | Data Rate | VC-205PR PoE Output | |
| | | | Symmetric Mode | VC-205PT W/DC IN | VC-205PT W/PoE+ IN |
| | | 200m | 90/100Mbps | 20W | 13W |
| | | 400m | 88/100Mbps | 16W | 11W |
| | | 600m | 73/84Mbps | 12W | 10W |
| | | 800m | 67/72Mbps | 7W | 6W |
| 1000m | 56/57Mbps | 5W | 4W | | |

| Power over Ethernet/Coaxial | | | |
|-----------------------------|--------------------|---|---|
| PoE Standard | | IEEE 802.3at Type 2 IEEE 802.3af | |
| PSE Interface | | BNC 44~57V DC (depending on what the DC/PoE Power Input is) | RJ-45 48~56V DC, 600mA max. End-Span, Pin 1/2(+), 3/6(-) |
| PD Interface | | RJ-45, both Mid-Span and End-Span Input Range: 44~57V DC | BNC Input Range: 44~57V DC |
| Max. PoE Budget | Power Input by PoE | BNC : 25 watts | RJ-45 : 20 watts |
| | Power Input by DC | BNC : 30 watts | RJ-45 : 30 watts |
| 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 Plus (802.3at Type 2) | |
| Regulation Compliance | | FCC Part 15 Class A, CE | |
| Environment | | | |
| Temperature | | Operating: -10~60 degrees C Storage: -20~70 degrees C | |
| Humidity | | Operating: 5~95% (Non-condensing) Storage: 5~95% (Non-condensing) | |
| Cable | | | |
| Coaxial | | RG-6/U cable (Recommended) max. 500 m with PoE+ (1,640 ft.) max. 800 m with PoE (2,624 ft.) max. 1200 m without PoE (3,937 ft.) | |

* The actual data rate will vary on the quality of the copper wire and environment factors.

The package contains one Warning Sticker, which should be stuck on the coaxial cable connector before using PLANET Power over Coaxial Extender Kit. As the VC-205PT is power over coaxial, it only can work with PLANET VC-205PR or VC-203PR. If connected with Non-PoE coax-LAN equipment, it might cause damage to the equipment.



Caution

Please stick the sticker on the connector going to the Receiver



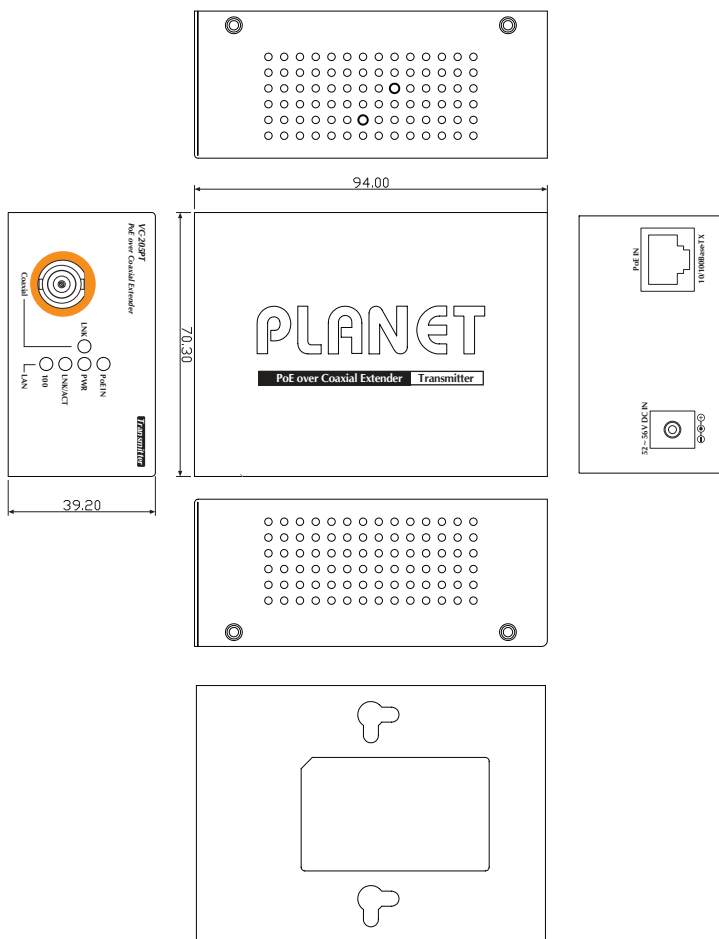
Please take care of the conditions of the resistance value of cables as follows.

| Coaxial Cable Type | |
|--------------------|------------------------|
| RG-59/U | Less than 30Ω/1000 ft. |
| RG-6/U | Less than 12Ω/1000 ft |

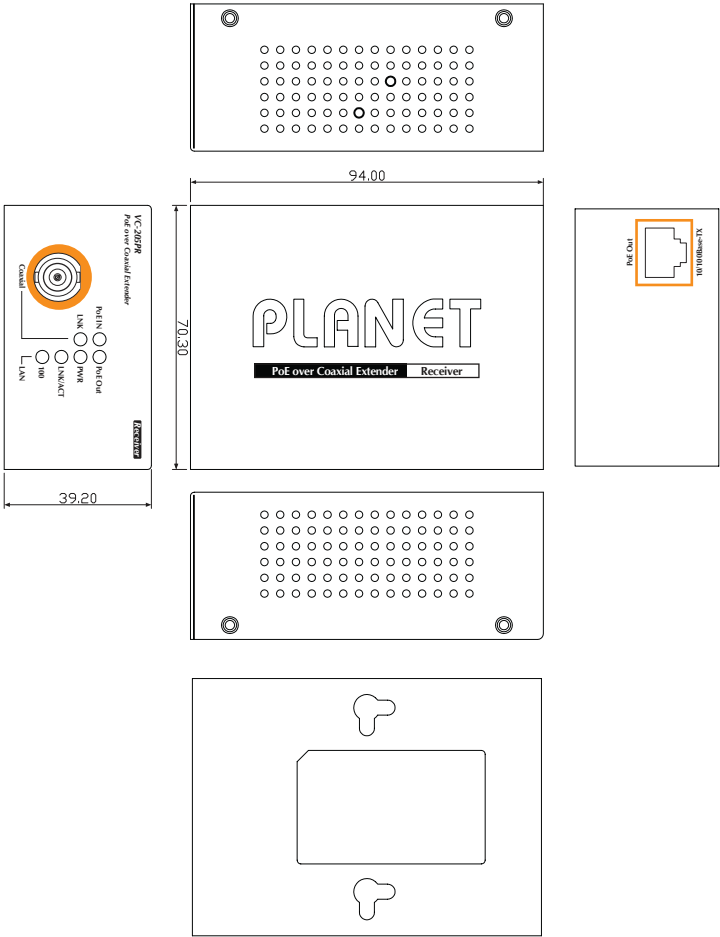
Because there are various resistance values in the category of RG-59/U or RG-6/U cable.

1.4 Physical Dimensions

VC-205PT dimensions (W x D x H): 94 x 70.3 x 39.2 mm



VC-205PR dimensions (W x D x H): 94 x 70.3 x 39.2 mm



2. Installation

This section describes the functionalities of the Industrial Power over Coaxial 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.

2.1 Product Description

Power over Coaxial

Based on IEEE 802.3at high power over Ethernet and up to 25 watts of power output, PLANET PoE over coaxial extender Kit 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 transceivers and the camera at long range. This feature eliminates the need for local and remote site power supplies.

IEEE 802.3at/af PoE Injector in one box design

The VC-205PR is a Single-Port, 802.3at High Power over Ethernet Injector providing maximum up to 30 watts of power output over Ethernet cable which allows data and power to transmit simultaneously through the cable to PoE PD (Powered Device).

Stable Operating Performance under Difficult Environments

The VC-205-KIT 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 -10 to 60 degrees C which enables the users to conveniently apply the device in almost any location of the network.

2.1.1 Power over Coaxial Extender Front Panel

Figure 2-1 and Figure 2-2 show the front panels of the VC-205PT and VC-205PR Industrial Power over Coaxial Extenders.

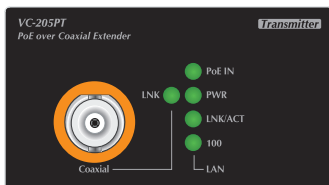


Figure 2-1: VC-205PT front panel

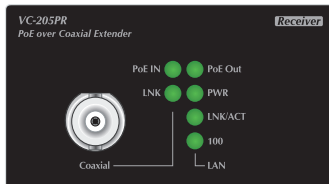


Figure 2-2: VC-205PR front panel

2.1.2 LED Indicators

System

| LED | Color | Function |
|-----|-------|--|
| PWR | Green | Light: indicates the power is on. |

Coaxial / VDSL2 Interfaces

| LED | Color | Function |
|-----|-------|--|
| LNK | Green | Light: indicates that the coaxial link is established. |
| | | Fast Blink: indicates that the coaxial link is at training status (about 10 seconds). |
| | | Slow Blink: indicates that the coaxial link is at idle status. |

RJ-45 10/100Base-TX Interfaces

| LED | Color | Function |
|---------|-------|--|
| 100 | Green | Light: indicates the extender is successfully connecting to the network at 100Mbps. |
| | | OFF: indicates the extender is successfully connecting to the network at 10Mbps. |
| LNK/ACT | Green | Blink: indicates the extender is actively sending or receiving data over that port. |

RJ-45 PoE Indicators

| LED | Color | Model | Function |
|---------|-------|----------|---|
| PoE IN | Green | VC-205PT | Light: indicates the RJ-45 port is receiving the PoE Power. |
| | | VC-205PR | Light: indicates the BNC connector is receiving the PoE Power. |
| PoE Out | Green | VC-205PR | Light: indicates the RJ-45 Port is providing PoE power |

2.1.3 Power over Coaxial Extender Rear Panel

Figure 2-3 and Figure 2-4 show the rear panels of the VC-205PT and VC-205PR Industrial Power over Coaxial Extenders.



Figure 2-3: VC-205PT rear panel

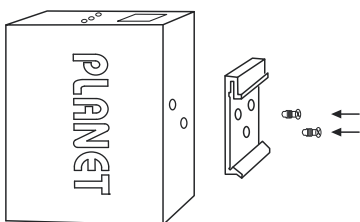


Figure 2-4: VC-205PR rear panel

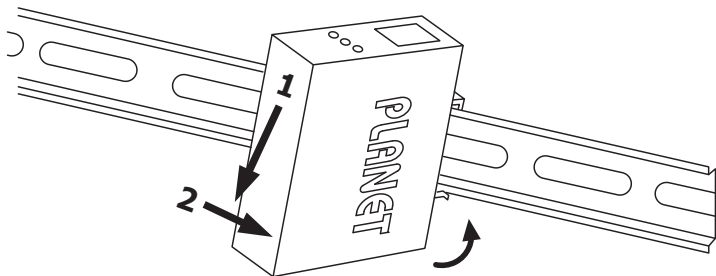
2.2 Optional - DIN-Rail Mounting

There are two DIN-Rail holes on the left side of the VC-205PT and VC-205PR that allow the converter can be easily installed with DIN-Rail mounting. The PLANET optional DIN-Rail mounting Kit – RKE-DIN can be order separately. When need to replace the wall mount application with DIN-Rail application on the VC-205PT and VC-205PR, please refer to following figures to screw the DIN-Rail on the converter. To hang the VC-205PT and VC-205PR, follow the below steps:

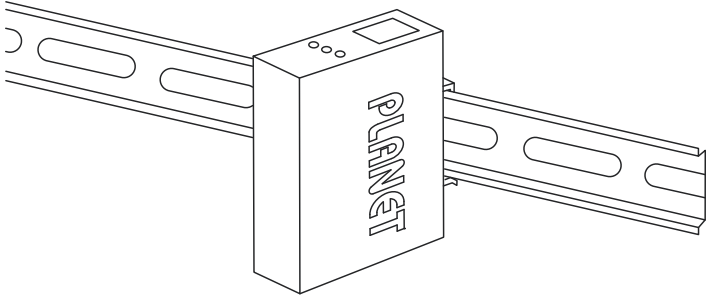
Step 1: screw the DIN-Rail on the VC-205PT or VC-205PR.




Step 2: Lightly press the button of DIN-Rail into the track.



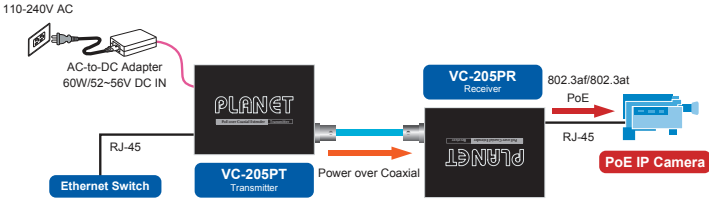
Step 3: Check the DIN-Rail is tightly on the track.




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

2.3 Applications of VC-205-KIT

Type 1 – VC-205PT with 52~56V power adapter and VC-205PR with PoE power output



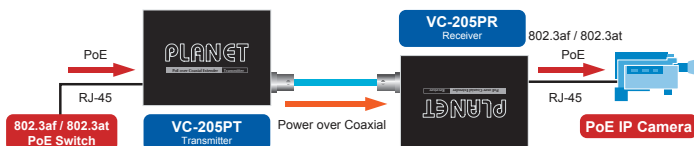
| Model Power System | VC-205PT | VC-205PR |
|-----------------------|---------------------------------------|--------------------------------------|
| Power Input | Power adapter with 52~56V DC in | BNC with DC power over coaxial input |
| Power Output | BNC with DC power over coaxial output | RJ-45 with 802.3at/af PoE output |



Caution

1. PoE Output Capacity is based on different DC Power Input / PoE Input.
2. VC-205PT has two power input options; only one mode is available at one time. It cannot use PoE power input if power input of DC 52V or 56V is selected.

Type 2 – VC-205PT with PoE power input and VC-205PR with PoE power output



| Model Power System | VC-205PT | VC-205PR |
|-----------------------|---------------------------------------|--------------------------------------|
| Power Input | RJ-45 with 802.3at/af PoE input | BNC with DC power over coaxial input |
| Power Output | BNC with DC power over coaxial output | RJ-45 with 802.3at/af PoE output |



Warning

The VC-205PT accepts IEEE 802.3at equipment for optimal power injection. The other non-standard PoE Power devices may cause the VC-205PT to malfunction.



Caution

As the VC-205PT is power over coaxial, it only can work with PLANET VC-205PR or VC-203PR. If connected with non-PoE coax-LAN equipment, it might cause damage to the equipment.



3. Troubleshooting

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

VDSL LNK LED does not light after wire is connected to the VDSL port.

CHECKPOINT:

1. Verify the length of the wire connected between VC-205PT and VC-205PR. It should not be more than 2km.

TP LED does not light after cable is connected to the port.

CHECKPOINT:

1. Verify you are using the Cat.5, 5e or 6 cables with RJ-45 connector to connect to the port.
2. If your device (like LAN card) supports Auto-Negotiation, please try to manually modify at a fixed speed of your device.
3. Check whether the power of the converter and the connected device is ON or OFF.
4. Check the port's cable is firmly seated in its connectors in the switch and in the associated device.
5. Check whether the connecting cable is good.
6. Check whether the power adapters are functional, including the connecting device.

Performance is bad

CHECKPOINT:

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

Why can't power be on when my PoE PD device is connected to VC-205PR ?

CHECKPOINT:

1. Please check the cable type of the connection from VC-205PR to the other end. The cable should be an 8-wire UTP, Category 5 or above, and EIA568 cable within 100 meters. A cable with only 4-wire, short loop or over 100 meters will affect the power supply.
2. Please check and assure the device is fully complied with IEEE 802.3af / IEEE 802.3at standard.

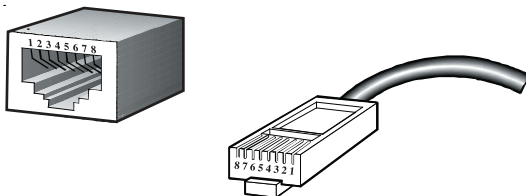
Appendix A: Networking Connection

A.1 Switch's RJ-45 Pin Assignments

10/100Mbps, 10/100Base-TX

| RJ-45 Connector pin assignment | | |
|--------------------------------|----------------------------------|--|
| Contact | MDI Media Dependant Interface | MDI-X Media Dependant Interface -Cross |
| 1 | Tx + (transmit) | Rx + (receive) |
| 2 | Tx - (transmit) | Rx - (receive) |
| 3 | Rx + (receive) | Tx + (transmit) |
| 4, 5 | Not used | |
| 6 | Rx - (receive) | Tx - (transmit) |
| 7, 8 | Not used | |

A.2 RJ-45 Cable Pin Assignments



The standard RJ-45 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:

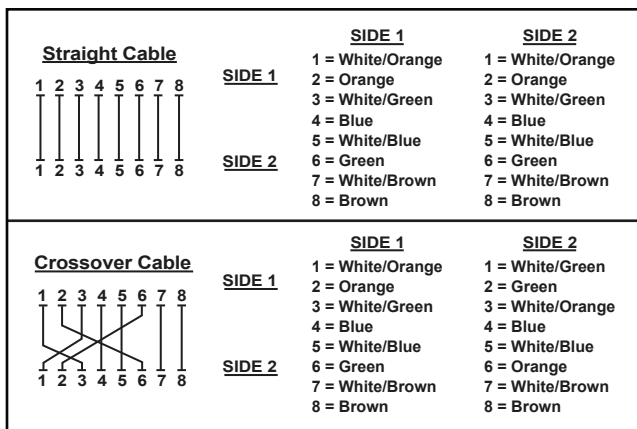


Figure A-1: Straight-through and Crossover Cable

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: Power over Coaxial Extender Kit

*Model Number: VC-205PT & VC-205PR

* 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, CLASS A) |
| 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 61000-4-6 | (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 July, 2013
Date


Legal Signature

PLANET TECHNOLOGY CORPORATION

This page is intentionally left blank