Gigabit Ethernet over Coaxial Converter

VC-232G

User's Manual

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.

Energy Saving Note of the Device

This power required device does not support Standby mode operation. For energy saving, please remove the power cable to disconnect the device from the power circuit. Without removing power cable, the device will still consume power from the power source. In view of Saving the Energy and reducing the unnecessary power consumption, it is strongly suggested to remove the power connection for the device if this device is not intended to be active.

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 Gigabit Ethernet over Coaxial Converter User's Manual

For Model: VC-232G

Revision: 3.0 (DECEMBER 2024)
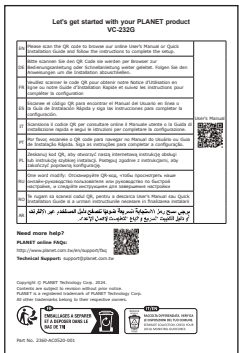
Table of Contents

1. Package Contents

Thank you for purchasing PLANET VC-232G **1-Port 10/100/1000T Ethernet over Coaxial Converter**. In the following sections, the term **"EoC Converter"** means the VC-232G.

Open the box of the EoC Converter and carefully unpack it. The box should contain the following items:

VC-232G x1	QR Code Sheet x 1	DC 5V/2A Power Adapter

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.

2. Hardware Introduction

2.1 Dimensions

26.20

VC-232G
Ethernet over VDSL2 Converter

VDSL

CO ■CPE
LNK/
ACT
PWR

TP

10/100/1000

PLANET

Ethernet over VDSL2 Converter

70.30

94.00

OFF
ON

SNR
1 2 3 4
ON

Mode	Tran.	Band	SNR
CO	G.INP	Asym.	12dB
CPE	Interleave	Sym.	8dB

5V DC

Ø7.00

4.00

46.70
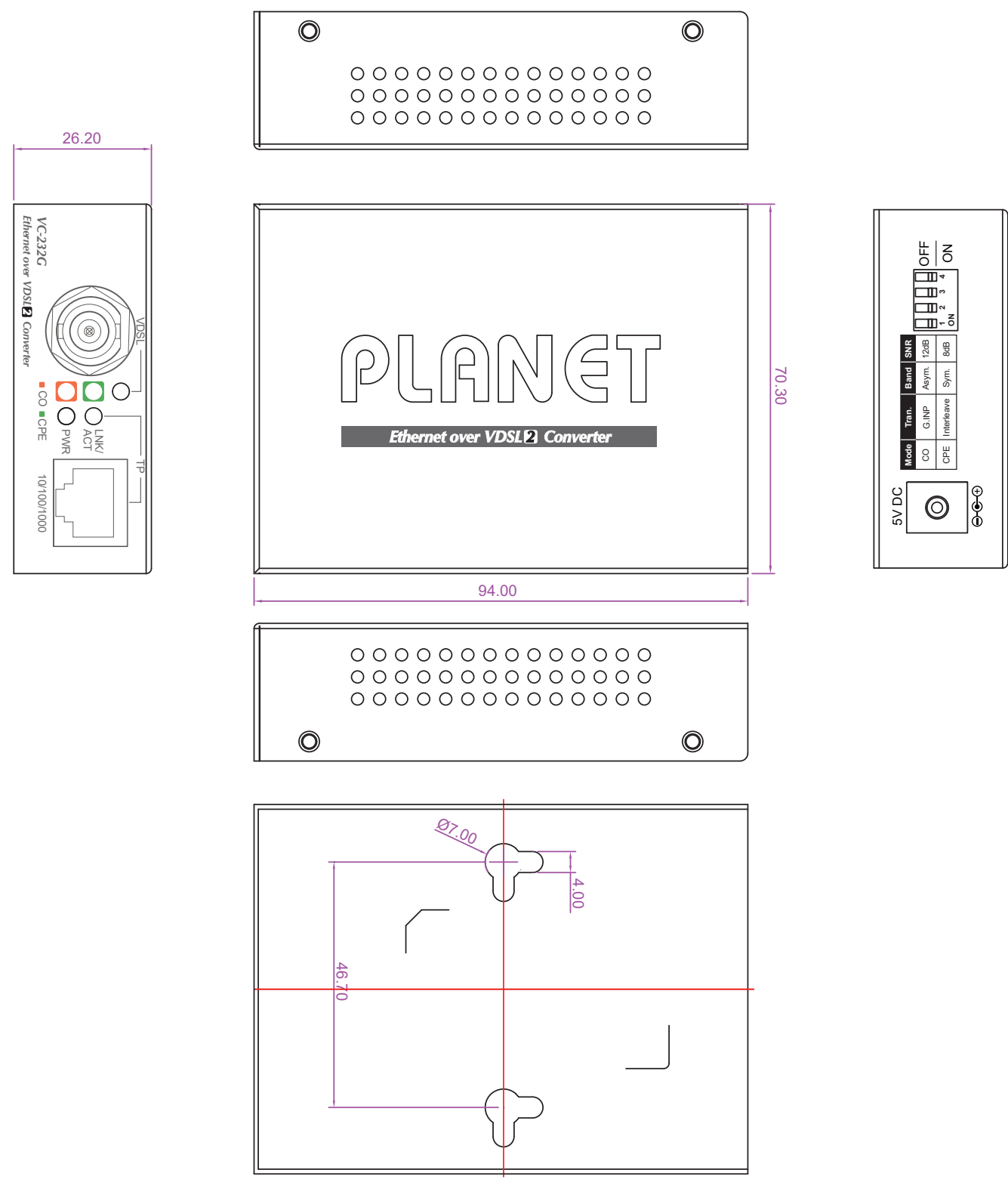
Dimensions (W x D x H): 94x70.3x26.2mm

2.2 Front View

■ VC-232G Front Panel
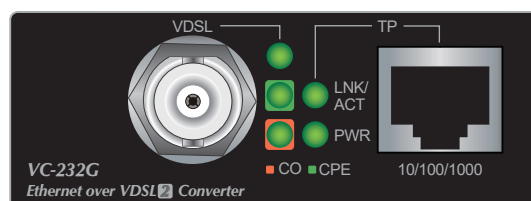
> ➢ 10/100/1000BASE-T RJ45 connector

> ➢ BNC female connector for VDSL2

> ➢ LEDs for power, Ethernet and VDSL

> ➢ CO/CPE mode selectable via DIP switch

■ VC-232G LED Indicators

The rich diagnostic LEDs on the front panel can provide the operating status of individual port and whole system.

◆ System

LED	Color	Function	
PWR	Green	Lit	Indicates that the EoC Converter has power.
		Off	Indicates that the EoC Converter has no power.

◆ VDSL

LED	Color	Function	
VDSL	Green	Lit	Indicates that the VDSL connection is established.
		Fast Blink	Indicates that the VDSL connection is in training status.
		Slow Blink	Indicates that the VDSL connection is in idle status.
CO	Green	Lit	Indicates the EoC Converter is running in CO mode.
CPE	Green	Lit	Indicates the EoC Converter is running in CPE mode.

◆ 1000BASE-T Port

LED	Color		Function
LNK/ ACT	Green	Lit	To indicate that the port is operating at 10/100/1000Mbps.
		Blink	To indicate that the VDSL Converter is actively sending or receiving data over that port at 10/100/1000Mbps.
		Off	To indicate that the port link is down or up at 10/100/1000Mbps.

2.3 Rear View

■ VC-232G Front Panel
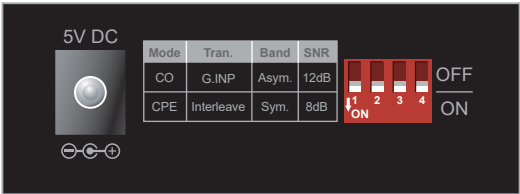
> ➢ DIP switch
>
> ➢ DC jack (DC input) for power adapter

■ DIP Switch

The EoC Converter provides a selectable 4-position DIP switch. Switch them on or off to obtain the best coaxial cable connection over a distance.

DIP	DIP-1	DIP-2	DIP-3	DIP-4
	Mode	Transmission	Band Profile	SNR Margin
OFF	CO	G.INP	Asymmetric	12dB
ON (default)	CPE	Interleave	Symmetric	8dB

Note	By default, the 4-mode DIP switch is set at the **"ON"** position operated as **"CPE"**. For operating as **"CO"**, please switch DIP 1 to the **"OFF"** position. Adjust other DIP switches accordingly to fulfill different network application demands.

◆ DIP-1: Mode (CO and CPE)

CO (Central Office)	The Master device, usually the CO device, is located in the data center of ISP or enterprise to link to the backbone.
CPE (Customer Premises Equipment)	The Slave device, usually the CPE, is located in branch office, home or remote site. The CPE includes IP camera, wireless access point and other network devices.

> **Note**
>
> When the EoC Converter operates in **CPE mode**, DIP switches 2, 3, and 4 are **without function**.

◆ DIP-2: Transmission (G. INP and Interleave mode)

G. INP	A method to protect against bursts from other devices or lines that can impact your xDSL connection.
Interleave	An error correction method used on xDSL connection. Interleave requires additional latency to improve resilience to burst of error.

◆ DIP-3: Band Profile (Asymmetric and Symmetric)

Asymmetric	Asymmetric mode provides more bandwidth than the other side. This mode provides the highest bandwidth in short range.
Symmetric	With G.997 band plan supported, symmetric mode can provide almost the same rate of downstream and upstream.

◆ DIP-4: SNR (Signal Noise Ratio) Margin

When the SNR margin is selected, the system provides 12dB/8dB SNR margin for all usable loop lengths. Better channel noise protection is made with the higher SNR margin.

> **Note**
>
> Please **power off** the VDSL2 Bridge before making any transmission mode adjustment.

◆ DC Power Jack

The VC-232G requires 5V DC, 2A power input, which conforms to the bundled AC adapter. Should you have the issue of power connection, please contact your local sales representative.

2.5mm

DC Receptacle 2.5mm
+5V for each slot
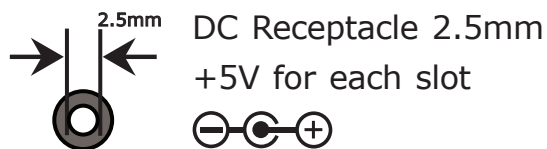
DC receptacle is 2.5mm wide that conforms to the EoC Converter 2.5mm DC jack's central post. Do not install any improper unit.

	In some areas, installing a surge suppression device may also help to protect your EoC Converter from being damaged by unregulated surge or current to the EoC Converter or the power adapter.
Note	

3. Product Specifications

Product	VC-232G	
Hardware Specifications		
Hardware Version	3	
LAN Interface	1 10/100/1000BASE-T RJ45 auto-MDI/MDI-X port	
VDSL Interface	1 BNC female Ethernet over Coaxial	
	Cabling	Coaxial cable: 75 ohm RG-6/U cable, less than12Ω/1000 ft RG-59/U cable, less than 30Ω/1000 ft.
	Maximum Distance	Max. 1400m with data transmission (4,593ft.)
DIP Switch & Functionality	DIP-1	Select CO or CPE mode
	DIP-2	Select G.INP or Interleaved mode
	DIP-3	Select Band Profile (Asymmetric or Symmetric)
	DIP-4	Select SNR of 12dB or 8dB
Dimensions (W x D x H)	94 x 70.3 x 26.2 mm	
Weight	205g	
Power Requirement	DC 5V, 2A external power	
LED Indicators	1 x power: Green 1 x 10/100/1000BASE-T LNK/ACT: Green 1 x VDSL: Green 1 x CO: Green 1 x CPE: Green	
Housing	Metal	

Switch Specifications	
Switch Processing Scheme	Store-and-Forward
Address Table	1K entries
Maximum Packet Size	1522bytes
Standards Conformance	

VDSL Compliance	■ VDSL-DMT
	  ➢ ITU-T G.993.1 VDSL
	  ➢ ITU-T G.997.1
	  ➢ ITU-T G.993.2 VDSL2 (Profile 17a/30a/35b support)
	  ➢ ITU-T G.993.5 **G. Vectoring**
	  ➢ ITU-T G.998
	  ➢ G.INP

Standards Compliance	IEEE 802.3 Ethernet IEEE 802.3u Fast Ethernet IEEE 802.3ab Gigabit Ethernet IEEE 802.1p Class of Service ITU-T G.993.1 VDSL ITU-T G.997.1 ITU-T G.993.2 VDSL2 (Profile 17a/30a/35b Support) ITU-T G.993.5 G.Vectoring and G.INP ITU-T G.998
Regulatory Compliance	FCC Part 15 Class A, CE
Environment	
Temperature	Operating: 0~50 degrees C Storage: -10~70 degrees C
Humidity	Operating: 5~95% (non-condensing) Storage: 5~95% (non-condensing)

Performance					
Coaxial Performance*	Distance (meter)	Interleave (Upstream/Downstream: Mbps)			
		Asymmetric		Symmetric	
		8dB	12dB	8dB	12dB
	200m	57/246	54/218	169/150	156/137
	400m	57/209	54/181	147/132	132/120
	600m	53/155	49/128	120/100	103/87
	800m	50/118	47/97	98/79	87/67
	Distance (meter)	G.INP (Upstream/Downstream: Mbps)			
		Asymmetric		Symmetric	
		8dB	12dB	8dB	12dB
	200m	60/265	56/212	178/152	163/137
	400m	56/221	51/190	153/135	140/121
	600m	55/132	50/130	125/102	106/87
	800m	53/119	49/96	90/88	86/66

| Remark	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.

4. Applications

The EoC Converter does not require any software configuration. Users can immediately use any feature of this product simply by attaching the cables and turning the power on. There are some key limitations on the EoC Converter. Please check the following items.

4.1 Point-to-Point Application -- LAN to LAN Connection

One set of the EoC Converter could be used to link two local area networks that are located in different places. Through the coaxial cable, it could set up a 200/100Mbps asymmetric backbone, but one EoC Converter must be **Master** (**CO** mode) and the other one is **Slave** (**CPE** mode).

Point to Point Application
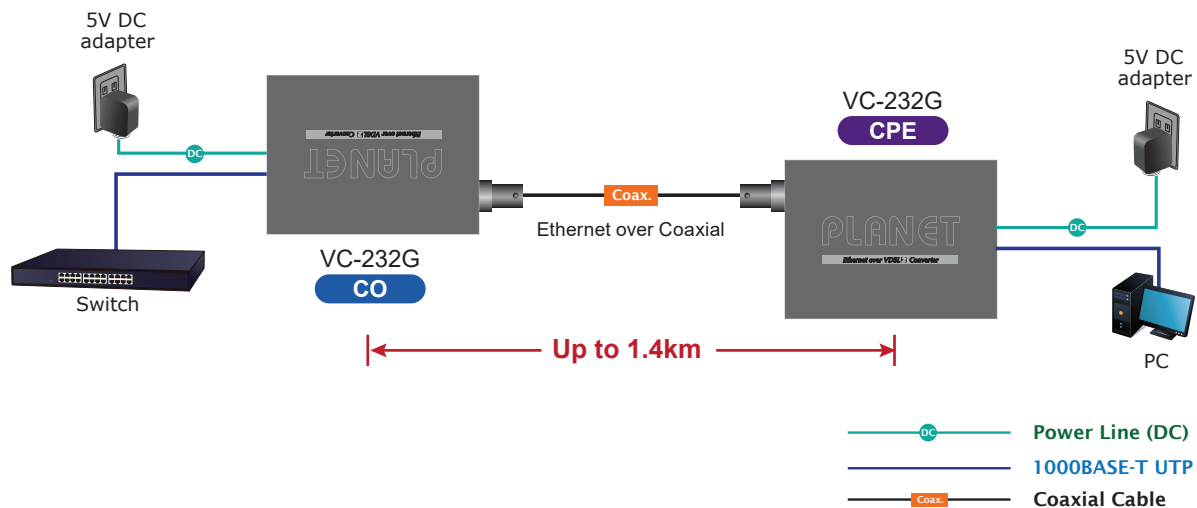
Connecting Standalone PC

Refer to the following procedure to set up the VC-232G LAN to LAN connection.

1. **[LAN1]** Set the VC-232G at LAN 1 in the **CO** mode from the DIP switch

2. **[LAN2]** Set the VC-232G at LAN 2 in the **CPE** mode from the DIP switch

3. Power on the VC-232G CO and CPE at both sides by connecting its power source.

4. Power, CO and CPE LED will illuminate correspondingly.

5. Connect coaxial cable from LAN1 VC-232G to **VDSL BNC port** of the LAN2 VC-232G.

6. **VDSL LNK LED** will blink to illuminate at both VDSL2 bridges.

7. Connect the VC-232G Ethernet **LAN port** to the other network device via regular Cat.5 UTP cable.

4.2 VC-232G Point to Multi-point Application (IP surveillance)
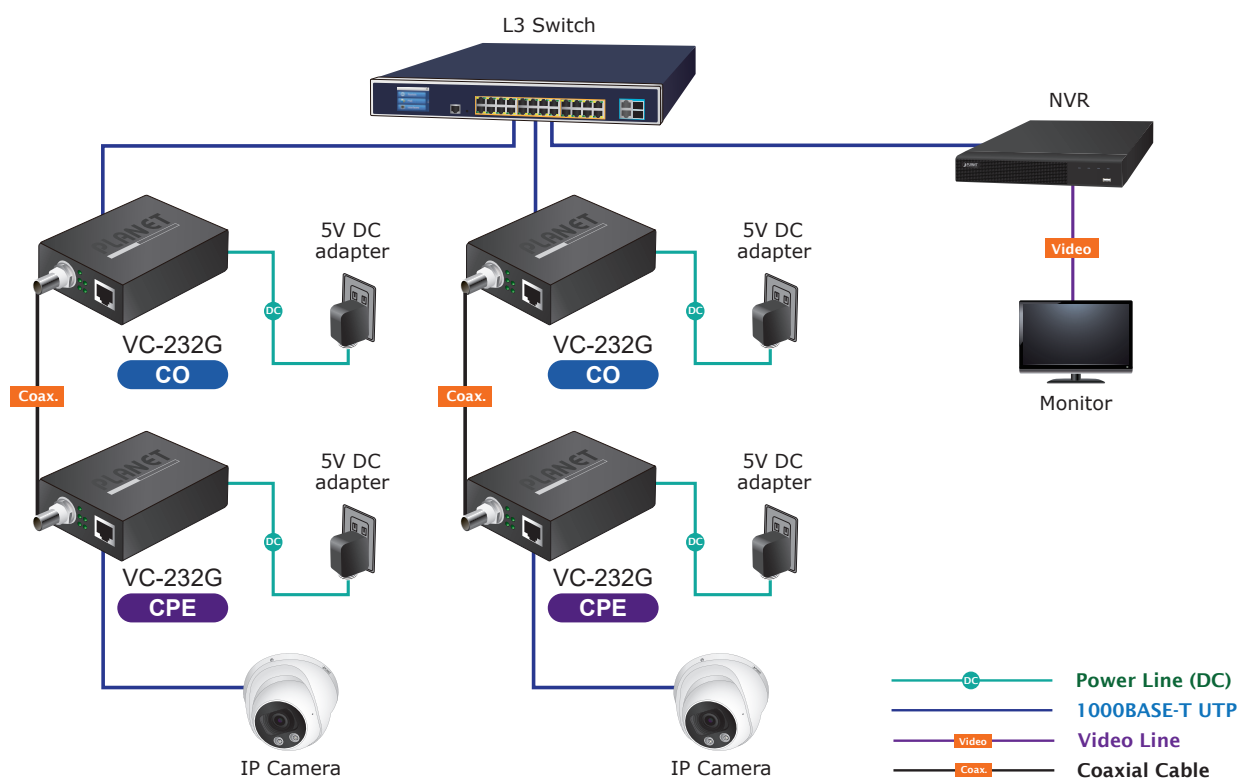
Building a IP Surveillance System

Refer to the following procedure to set up an IP Surveillance System with many pairs of VC-232G.

1. Set the VC-232G in the CO and CPE mode from the DIP switch on the rear panel.

2. Power on the VC-232G by connecting its power source.

3. Power LED will illuminate.

4. Connect Coaxial cable from VDSL port of two VC-232G units.

5. VDSL LED will blink to illuminate.

6. Connect Ethernet port to IP cameras via regular Cat. 5, 5e or 6 cable.

7. Install the NVR and monitor and connect to one Ethernet switch

8. You can get data transmissions from all IP cameras.

5. Installations

Installing Ethernet over Coaxial Converter

5.1 Wall-mount Installation

Step 1: Please find the wall that can mount the VC-232G.
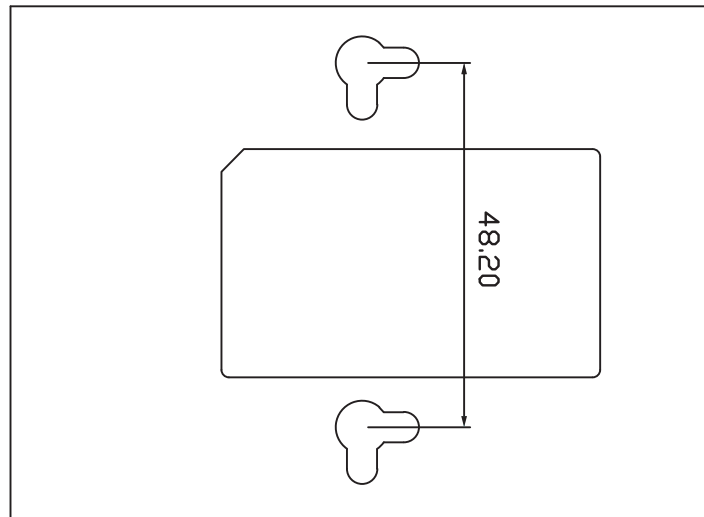
Step 2: Screw two screws on the wall.

Step 3: Hang the VC-232G on the screws from the wall.

Step 4: Power to the VC-232G with DC 5V 2A adapter of package.

Note	Before mounting the device to the wall, please check the location of the electrical outlet and the length of the Ethernet cable.

5.2 Chassis Installation and Rack Mounting

To install the EoC Converter in a **10-inch** or **19-inch** Converter Chassis with standard rack, follow the instructions described below.

Step 1: Place your VC-232G on a hard flat surface, with the front panel positioned towards your front side.

Step 2: Carefully slide in the module until it is fully and firmly fitted into the slot of the converter chassis.
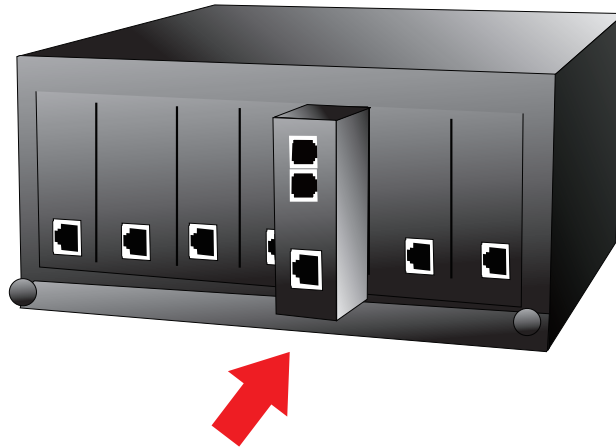
Step 3: Attach a rack-mount bracket to each side of the Converter Chassis with supplied screws attached to the package.

Step 4: After the brackets are attached to the Converter Chassis, use suitable screws to securely attach the brackets to the rack.

Step 5: To connect the network cabling and supply power to your Converter Chassis.

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

6. Troubleshooting

SYMPTOM:

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

CHECKPOINTS:

1. Verify the length of the coaxial cable (not more than 1.4km) connected between the two VC-232G units. Please also try to adjust the DIP switch of the VC-232G to the other SNR mode.

2. Please note you must use one VC-232G in CO mode and the other VC-232G in CPE mode to make connection to each other work.

SYMPTOM:

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

CHECKPOINTS:

1. Verify you are using the Cat.5e or better cable with RJ45 connector to connect to the port.

2. If your device (like LAN card) supports auto-negotiation, please try to manually set at a fixed speed of your device to solve this issue.

3. The VC-232G and the connected device's power are on or not.

4. The port's cable is firmly seated in its connectors in the switch and in the associated device.

5. The connecting cable is good and with the correct type.

6. The connecting device, including any network adapter, is functional.

7. FAQs

Q1: What is VDSL2?

A1: VDSL2 (Very High-Bit-Rate Digital Subscriber Line 2), G.993.2 is the newest and most advanced standard of xDSL broadband wire line communications.

Designed to support the wide deployment of Triple Play services such as voice, data, high definition television (HDTV) and interactive gaming, VDSL2 enables operators and carrier to gradually, flexibly, and cost efficiently upgrade the existing xDSL-infrastructure.

Q2: What is SNR and what's the effect?

A2: In analog and digital communications, Signal-to-Noise Ratio, often written as SNR, is a measure of signal strength relative to background noise. The ratio is usually measured in decibels (dB).

In digital communications, the SNR will probably cause a reduction in data speed because of frequent errors that require the source (transmitting) computer or terminal to resend some packets of data. SNR measures the quality of a transmission channel over a network channel. The greater the ratio, the easier it is to identify and subsequently isolate and eliminate the source of noise.

Generally speaking, the higher SNR value gets, the better the line quality gets, but performance is lower.

Q3: What is the best distance for VC-232G?

A3: In order to guarantee the stability and better quality of network, we suggest the distance should not exceed 1.4 kilometers.

8. Customer Support

Thank you for purchasing PLANET products. You can browse our online FAQ resource and User's Manual on PLANET Web site first to check if it could solve your issue. If you need more support information, please contact PLANET switch support team.

PLANET online FAQs:
https://www.planet.com.tw/en/support/faq

Switch support team mail address:
support@planet.com.tw