1-Port 10/100/1000T 802.3at PoE + Ethernet to VDSL2 Converter

VC-231GP

User's Manual

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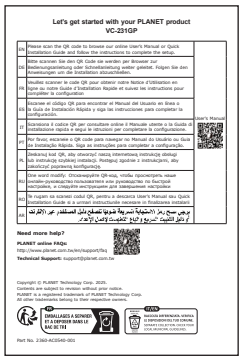
1. Package Contents

Thank you for purchasing PLANET 1-Port 10/100/1000T 802.3at PoE + Ethernet to VDSL2 Converter, VC-231GP. Open the box of the VC-231GP and carefully unpack it. The box should contain the following items:

<table>
<tr><td>VC-231GP x 1</td><td colspan="2">QR Code Sheet x 1</td></tr>
<tr><td>  </td><td colspan="2"> 
</td></tr>
<tr><td>AC-DC Power Adapter
(Input: 54V DC, 0.74A max) x 1</td><td>Splitter x 1</td><td>RJ11 Telephone Wire x 1</td></tr>
<tr><td>  </td><td>  </td><td>  </td></tr>
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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. Product Features

- **Physical**
  - 1-port 10/100/1000BASE-T RJ45 with IEEE 802.3af/802.3at PoE Injector
  - One RJ11 female phone jack for VDSL2 transmission
  - Additional splitter for POTS connection
- **Power over Ethernet**
  - Complies with IEEE 802.3at/af PoE Plus end-span PSE
  - Supports PoE power up to 30.8 watts per PoE port
  - Provides DC 54V power over RJ45 Ethernet cable to PD with Ethernet port
  - Auto-detects IEEE 802.3at/af equipment and protects devices from being damaged by incorrect installation
  - Remote power feeding up to 100m
  - IEEE 802.3at/af splitter devices compatible
- **VDSL2 Features**
  - ITU-T G.993.2 **VDSL2 Profile 17a/30a/35b**
  - ITU-T G.993.5 G.vectoring and G.INP
  - DMT-based coding technology
  - Additional splitter to share voice and data
  - CO/CPE mode selectable via DIP switch
  - Selectable target band plan and SNR margin
  - Up to 200/200Mbps bandwidth (in G.INP, Sym, 8dB mode)
  - Voice and data communication can be shared simultaneously based on the existing telephone wire
  - Used in pairs to extend Point-to-Point connection up to 1.4km
- **Layer 2 Features**
  - Complies with IEEE 802.3, 10BASE-T, IEEE 802.3u, 100BASE-TX, IEEE 802.3ab 1000BASE-T Ethernet standards
  - High-performance Store and Forward architecture, broadcast storm control and runt/CRC filtering eliminate erroneous packets to optimize the network bandwidth
  - Integrated address look-up engine, supporting 1K absolute MAC addresses
  - 1522bytes packet size
  - Automatic address learning and address aging
  - IEEE 802.1Q VLAN transparency

➢ **Hardware Features**

- Compact size, wall-mountable design; ideal solution for space-limited locations
- Advantage of minimum installation time (Simply by Plug and Play)
- Metal case, good for heat sinking
- Supports extensive LED indicators for network diagnosis
- Additional POTS splitter to share voice and data
- Supports 6KV DC Ethernet ESD protection

3. Hardware Introduction

3.1 Front Panel and LED Indicators

■ VC-231GP Front Panel

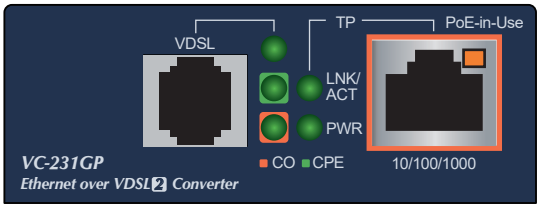


Figure 3-1-1: VC-231GP Front Panel

- 10/100/1000BASE-T RJ45 connector for Ethernet and 802.3at/af PoE injector.
- RJ11 connector for VDSL2; connect to another VDSL2 equipment.
- LEDs for power, Ethernet, PoE and VDSL.

■ VC-231GP LED Indication

- System

LED	Color	Function	
PWR	Green	**Lit**	To indicate that the VC-231GP has power.
		Off	To indicate that the VC-231GP has no power.

- VDSL

LED	Color	Function	
VDSL	Green	**Lit**	To indicate that the VDSL link is established.
		Fast Blink	To indicate that the VDSL link is in the training status.
		Off	To indicate that the VDSL link is in the idle status.
CO	Green	**Lit**	To indicate the VC-231GP is running in the **CO** mode.
CPE	Green	**Lit**	To indicate the VC-231GP is running in the **CPE** mode.

➢ 10/100/1000BASE-T 802.3at PoE Port

LED	Color	Function	
LNK/ACT	Green	**Lit**	To indicate that the port is operating at 1000Mbps, 100Mbps or 10Mbps.
		Blink	To indicate that the VC-231GP is actively sending or receiving data over that port.
		Off	To indicate that the port is link down.
PoE in-Use	Amber	**Lit**	To indicate the port is providing DC in-line power.
		Off	To indicate the connected device is not a PoE powered device (PD).

3.2 Rear Panel

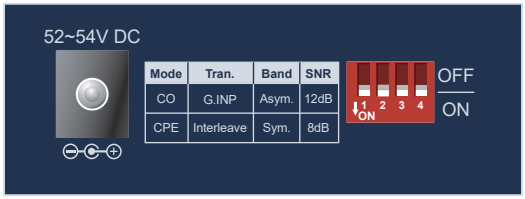


Figure 3-2-1: VC-231GP Rear Panel

➢ DC jack (DC input) for power adapter

➢ DIP switch

■ DC Jack

The VC-231GP requires 54V DC, 0.74A power input, which conforms to the bundled AC-DC adapter. Should you have the issue of power connection, please contact your local sales representative.

Note	The device is a power-required device, meaning it will not work till it is powered. If your networks should be active all the time, please consider using UPS (uninterrupted power supply) for your device. It will prevent you from network data loss or network downtime.
Note	In some areas, installing a surge suppression device may also help to protect your VC-231GP from being damaged by unregulated surge or current to the VC-231GP or the power adapter.

■ DIP Switch

The VC-231GP provides 4 selectable transmission modes. You can select one of the transmission modes that best suit the phone line quality or distance of connectivity. The table below shows the mode, transmission, bandwidth and SNR (Signal-to-Noise Ratio) margin.

	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

➢ DIP-1: Mode (CO/CPE)

CO (Central Office)	The Master device mode, usually the CO device, is located at the data center of ISP or enterprise to link to the backbone.
CPE (Customer Premises Equipment)	The Slave device mode, usually the CPE device, is located at branch office, home or remote site as the long reach data receiver. The CPE can be connected to the PC, IP camera or wireless access point or other network devices.

 Note	When the **VC-231GP** in the **CPE mode**, DIP 2, 3, and 4 cannot function.

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

G. INP	The method of protection against bursts from other devices or lines to impact your xDSL line.
Interleave	The method of error correction used on xDSL line. Interleave requires additional latency to improve resilience to burst of error.

➢ DIP-3: Band Profile (Asymmetric/Symmetric)

Asymmetric	Asymmetric mode provides more bandwidth in one direction (downstream) 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

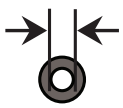
When the SNR margin is selected, the system provides 12dB/8dB SNR margin across all usable loop lengths. A higher SNR margin offers better protection against channel noise.

Note	By default, the four DIP switches are set to the **"ON"** position, configuring the device to operate in **CPE** mode. To switch to CO mode, set DIP switch 1 to the 'OFF' position. Then, adjust the remaining DIP switches as needed to meet specific network application requirements."

Note	Please **power off** the VC-231GP before making any transmission mode adjustment.

3.3 Power Information

The central posts of the VC-231GP's power jacks measure 2.5mm wide that require +54V DC power input. They conform to the bundled AC-DC adapter. Should you have the issue of power connection, please contact your local sales representative.



2.1mm

Width of DC Receptacle: 2.1mm

+54V for DC jack

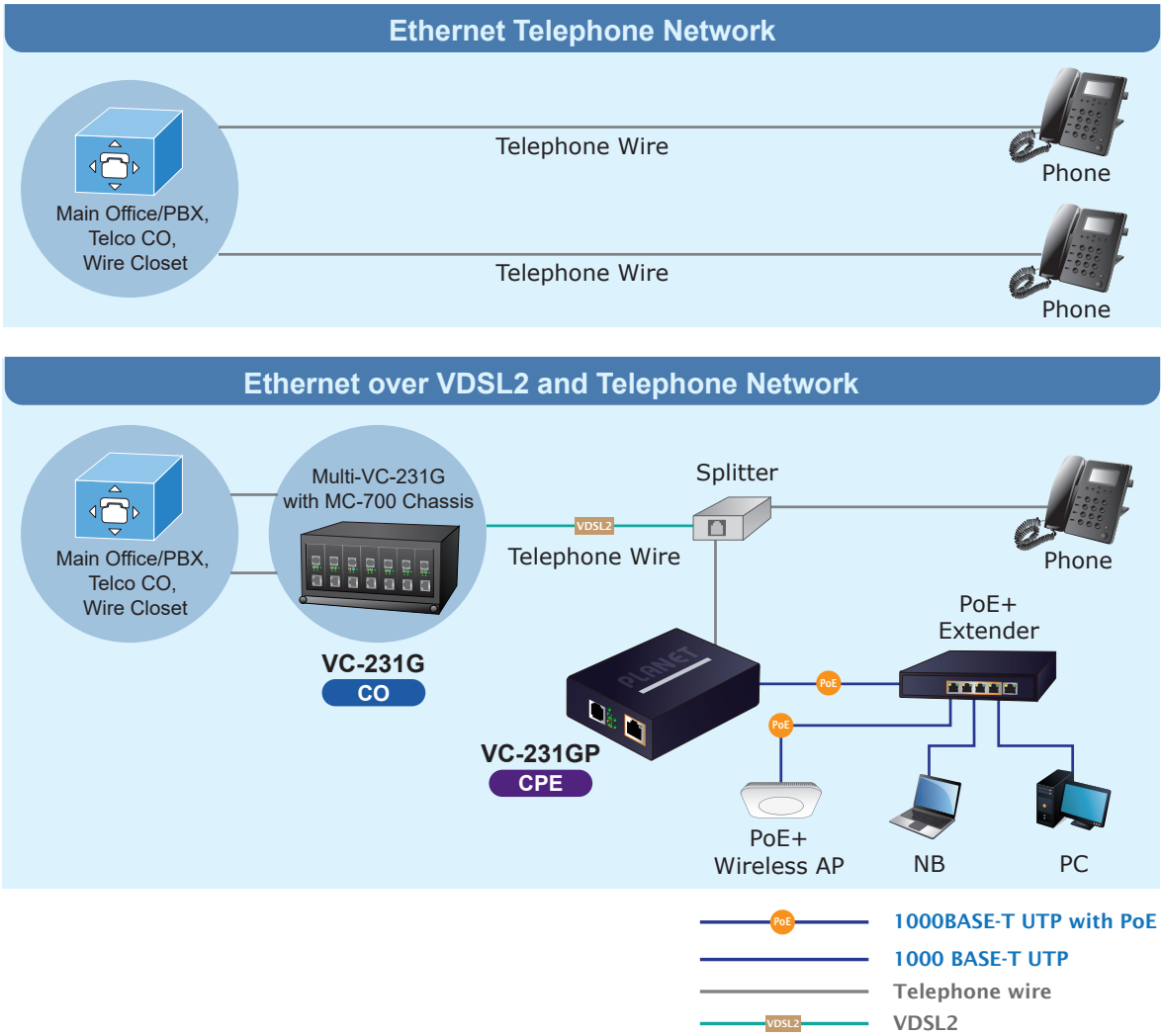
DC receptacle is 2.1mm wide that matches the central post, measuring 2.1mm wide, of the VC-231GP's DC jack. Do not install any improper unit.

4. Connecting and Using The VDSL2 Bridge

The VC-231GP does not require any software configuration. Users can immediately use any feature of this product simply by putting the plug in the receptacle and turning it on. There is some key limitation on the VC-231GP. Please check the following items:

- The device can be used for **Point-to-Point** (one **CO** device to one **CPE** device) connection or **Point-to-Multipoint** (one multi-port **CO** device to multi **CPE** devices) and allows data and voice to work on the same telephone lines.
- The VC-231GP provides only one RJ11 connector for VDSL2 port to build VDSL2 connection. For voice device connection, there is an additional splitter from the package of the VC-231GP, which is an ideal choice.
- Depending on the quality of telephone line, the maximum distance of one VDSL2 segment is 1.4km (4593ft) with AWG 24 telephone wires. The distance could vary on the quality of telephone wires.

Multi-LAN Connection



5. Product Specifications

Product	VC-231GP
Hardware Specifications	
Hardware Version	2
LAN Port	1 10/100/1000BASE-T RJ45 auto-MDI/MDI-X port
VDSL Port	1 VDSL2 RJ11 female phone jack Twisted-pair telephone wires (AWG24 or better) up to 1.4km
DIP Switch & Functionality	4-position DIP switch ● **CO** or **CPE** mode select ● Selectable **G.INP** and **interleaved** mode ● Selectable target **Band plan** ● Selectable target **SNR mode**
Phone Port	Additional splitter for POTS connection
Dimensions (W x D x H)	94 x 70.3 x 26.2 mm
Weight	214g
Power Requirement	DC 54V, 0.74A external power
Power Consumption	34.5 watts/117BTU
LED Indicators	● 1 x power: Green ● 1 x 10/100/1000BASE-T LNK/ACT: Green ● 1 x 10/100/1000BASE-T PoE-in-Use: Amber ● 1 x VDSL: Green ● 1 x CO: Green ● 1 x CPE: Green
Housing	Metal
Power over Ethernet Specifications	
PoE Standard	IEEE 802.3at PoE+ PSE
PoE Power Output Budget	DC 54V, 30 watts
PoE Power Supply Type	End-span
Power PIN Assignment	1/2(+), 3/6(-)

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
ADSL Compliance	● Capable of **ADSL2/2+** standard ■ ITU G.992.3 G.dmt.bis ■ ITU G.992.5 G.dmt.bisplus ● Data Rate: Up to 24Mbps
Standards Compliance	IEEE 802.3 Ethernet IEEE 802.3u Fast Ethernet IEEE 802.3ab Gigabit Ethernet IEEE 802.1p Class Of Service IEEE 802.3af Power over Ethernet IEEE 802.3at Power over Ethernet Plus 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 & 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)

6. Performance Table

■ VC-231GP (CO) and VC-231GP (CPE) Performance (unit: Mbps)

RJ11 Performance*				
Distance (meter)	Interleave (Downstream & Upstream: Mbps)			
	Asymmetric		Symmetric	
	8dB	12dB	8dB	12dB
200m	254/56	234/53	178/160	163/144
400m	197/51	174/46	145/122	104/104
600m	112/40	88/36	81/72	67/58
800m	77/29	56/24	48/47	36/36
1000m	32/7	28/6	18/17	16/15
1200m	27/2	23/5	14/14	13/12
1400m	18/1	15/1	12/6	9/4
Distance (meter)	G.INP (Downstream & Upstream: Mbps)			
	Asymmetric		Symmetric	
	8dB	12dB	8dB	12dB
200m	281/59	246/56	192/168	169/144
400m	208/53	180/47	153/127	133/104
600m	112/42	84/36	87/72	69/56
800m	76/30	56/22	51/48	40/34
1000m	32/9	27/6	18/17	16/14
1200m	27/4	23/3	14/14	12/12
1400m	24/2	21/2	11/9	9/6

* The performance data above is for reference only. The actual data rate will vary on the quality of the copper wire and environmental factors.

7. Customer Support

Thank you for purchasing PLANET products. You can browse our online FAQ resource on PLANET Website first to check if it could solve your issue. If you need more support information, please contact PLANET converter support team.

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

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

APPENDIX: Wall-mount Installation

This part describes how to install your VC-231GP and make connections to it.

Please follow the steps below for the installation.

■ Wall-mount Installation

Step 1: Please find the wall that can mount the VC-231GP.

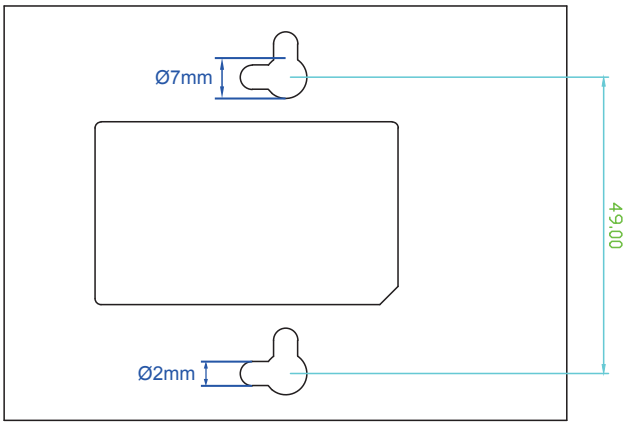
Step 2: Screw two screws on the wall.

Step 3: Hang the VC-231GP on the screws from the wall.

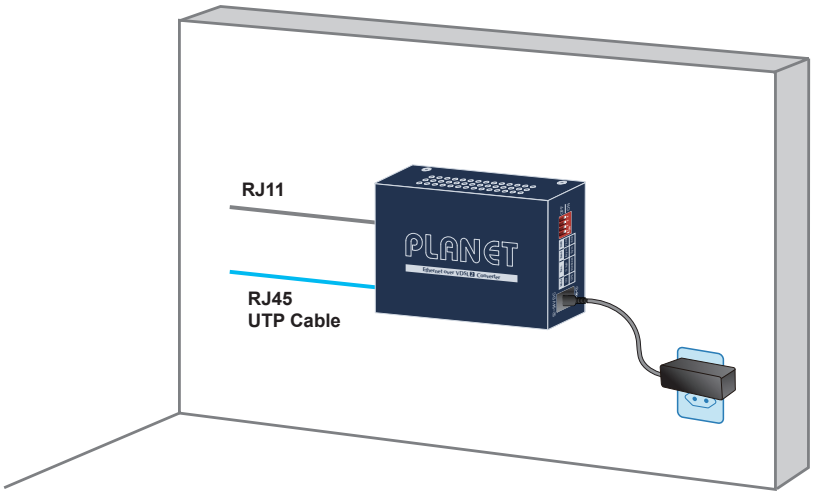
Step 4: Refer to chapter 3.3 Power Information for power supply to the VC-231GP.

Note

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



VC-231GP Switch Bottom Side



FCC Warning

This equipment has been tested and found to comply with the regulations 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 this user's guide, 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.

Avertissement de la FCC

Cet équipement a été testé et jugé conforme à la réglementation pour un appareil numérique de classe A, conformément à la partie 15 des règles de la FCC. Ces limites sont conçues pour fournir une protection raisonnable contre les interférences nuisibles lorsque l'équipement est utilisé dans un environnement commercial. Cet équipement génère, utilise et peut émettre de l'énergie radiofréquence et, s'il n'est pas installé et utilisé conformément au présent guide de l'utilisateur, peut causer des interférences nuisibles aux communications radio. Le fonctionnement de ces équipements dans une zone résidentielle est susceptible de provoquer des interférences préjudiciables, auquel cas l'utilisateur sera tenu de corriger les interférences à ses propres frais.

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.

This equipment is compliant with Class A of CISPR 32. In a residential environment this equipment may cause radio interference.

Avertissement de marquage CE

Il s'agit d'un produit de classe A. Dans un environnement domestique, ce produit peut provoquer des interférences radio, auquel cas l'utilisateur peut être tenu de prendre des mesures adéquates.

Cet équipement est conforme à la classe A du CISPR 32. Dans un environnement résidentiel, cet équipement peut causer des interférences radio.

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.

Avertissement WEEE

Afin d'éviter les effets potentiels sur l'environnement et la santé humaine résultant de la présence de substances dangereuses dans les équipements électriques et électroniques, les utilisateurs finaux d'équipements électriques et électroniques devraient comprendre la signification du symbole du bac à roulettes barré. Ne jetez pas les WEEE en tant que déchets municipaux non triés et devez les collecter séparément.