

Product Specifications

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

VC-231GP

Version 1.0

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Change History:

Revision:	Date:	Author:	Change List
1.0	2018/10/1	Marc Liao	Initial release

Author:	Marc Liao	Editor:	Marc Liao
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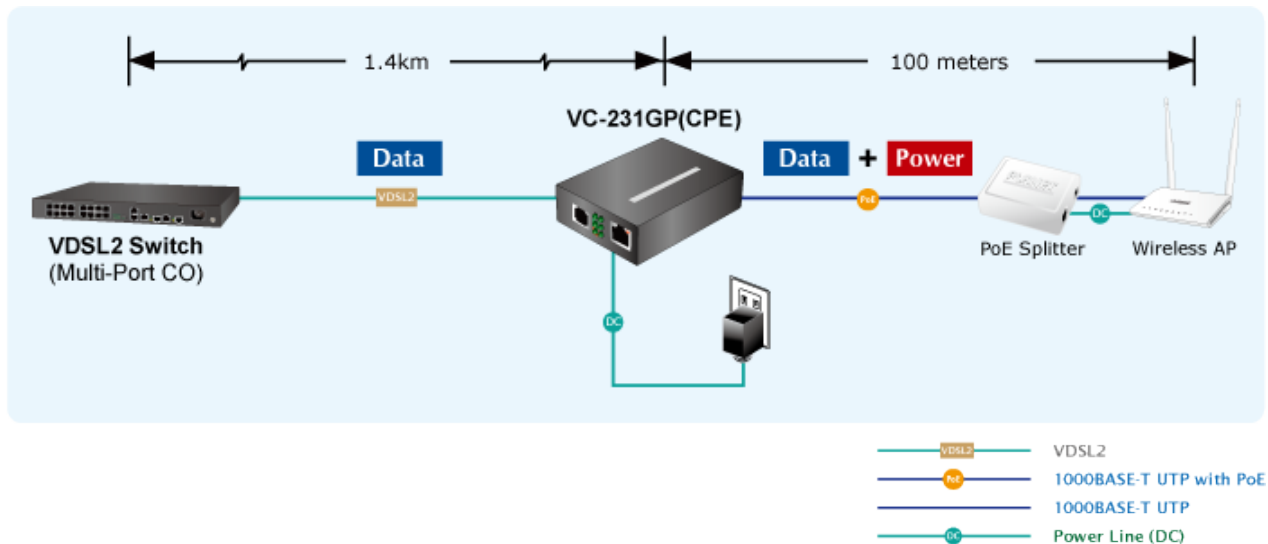
1. PRODUCT DESCRIPTION

PoE Plus High Performance Gigabit Ethernet over Phone Wire Solution

The VC-231GP, a PLANET **Long Reach Ethernet (LRE)** solution, is a **Single-port Gigabit Ethernet-over-VDSL2 Converter with PoE injector** function that is installed at a remote location connecting and injecting power to a PoE IP camera, PoE wireless AP, or PoE IP VoIP phone/door phone. It is integrated with three advanced technologies:

- **VDSL2/ADSL2+ Digital Subscriber Line technologies**
- **Gigabit Ethernet**
- **IEEE 802.3at Power over Ethernet Plus**

The VC-231GP works with PLANET VDSL2 converters or multiple-channel VDSL2 switches to be able to simultaneously transmit Ethernet data over a distance of up to **1.4km (4,593ft)** over phone wire. The VC-231GP forwards the Ethernet data and provides a maximum of **30-watt** power output over an additional 100m UTP cable to a remote IP device complied with **802.3af/at PoE PD** (powered device) for network deployment. Users have the ability to grow the structure of the current networks simply with even more flexibility.



IEEE 802.3at Power over Ethernet Plus

The PoE in-line power following the **IEEE 802.3at Power over Ethernet Plus** standard makes the VC-231GP able to deliver Gigabit speed Ethernet data and up to 30 watts of power to remote PoE PDs over one Cat.5E/6 Ethernet cable. The VC-231GP provides more flexibility in power requirements for all kinds of PDs at affordable installation costs.

150/150Mbps Downstream/Upstream High Performance Gigabit Ethernet over Phone Wire

Via the latest VDSL2 technology, the VC-231GP offers selectable asymmetric/symmetric band profile capability. It works well with a pervasive telephone line network with a symmetric data rate of up to **150/150Mbps (G.INP, Sym, 8dB)** over a distance of 300m and 21/11Mbps over a long distance of 1.4km. PLANET Gigabit Ethernet over VDSL2 series offers absolutely the fastest data transmission speed over the existing copper telephone lines without the need of rewiring.

Versatile, Flexible and Easy Installation

PLANET Gigabit Ethernet-over-VDSL2 converters come with a plug-and-play design. The VC-231GP offers two operation modes, **CPE** and **CO**, for application -- CPE mode is used at client side and CO mode is at central side. The CPE or CO mode can be adjusted by using a built-in DIP switch. For point-to-point connection, the VC-231GP in the CPE mode and the VC-231G or VC-234G in the CO mode must be set up as one pair of converters to perform the connection. It gives administrators the ability to reply a fresh local Intranet in various locations by utilizing the original network structure without additional costs.

Stable and Reliable DSL Data Connection

With the integrated support for the ITU-T's new **G.993.5 Vectoring technology**, the VC-231GP works in conjunction with vectoring-enabled DSLAMs to remove crosstalk interference and improve maximum line bandwidth across the existing copper infrastructure.

Implementing with Existing Telephone System

Use the additional splitter from the package of the VC-231GP to share the existing phone line with POTS, thus replacing the existing copper wiring is not necessary. Just plug the VC-231GP with the additional splitter into the existing RJ11 telephone jack and a high-performance VDSL2 network can be connected. It is ideal for use as an Ethernet extender to an existing Ethernet network.

ADSL2+ Fallback

For those ISPs that still provide ADSL broadband service, the VC-231GP can support transmission rates up to 24Mbps downstream and 1Mbps upstream with the ADSL2+ technology. The VC-231GP establishes a connection with ISP and can be also directly switched over to VDSL2 after the ISP network upgrade.

2. PRODUCT FEATURES

➤ **Physical Ports**

- 1-port 10/100/1000BASE-T RJ45 with IEEE 802.3af /802.3at PoE Injector
- 1 RJ11, connector for xDSL port with VDSL2 or ADSL2+ 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 52V 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**

- VDSL2 stand-alone transceiver for simple bridge modem application
- Cost-effective bridge function to connect two Ethernet LANs
- Point-to-multipoint application: Compatible with PLANET and third-party VDSL2 IP DSLAM for last-mile solution
- Point-to-point application: LAN to LAN extension over phone wire
- Up to 150/150Mbps bandwidth (in G.INP, Sym, 8dB mode)
- Voice and data communication can be shared simultaneously based on the existing telephone wire with distance up to 1.4km
- ITU-T G.993.2 VDSL2 standard
- ITU-T G.993.5 G.Vectoring and G.INP
- DMT-based coding technology
- CO/CPE mode selectable via DIP switch
- Selectable target band plan (symmetric and asymmetric) and SNR margin
- Supports IEEE 802.1Q VLAN tag transparency

➤ **Hardware and Installation**

- 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. PRODUCT SPECIFICATIONS

3.1 MAIN COMPONENTS

PoE PSE Controller	Microsemi PD69101	x 1
VDSL Analog Chip	Metanoia MT5311GB	x 1
Gigabit Ethernet Chip	Qualcomm QCA8337N	x 1

3.2 FUNCTIONAL SPECIFICATIONS

Product	VC-231GP
Hardware Specifications	
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 (AWG-24 or better) up to 1.4km
Phone Port	Additional splitter for POTS connection
DIP Switch & Functionality	4-position DIP switch <ul style="list-style-type: none"> ● CO or CPE mode selectable ● Selectable G.INP and interleaved mode ● Selectable target Band plan ● Selectable target SNR mode
LED Indicators	1 Power: Green 1 1000BASE-T LNK/ACT: Green 1 100BASE-TX LNK/ACK: Green 1 VDSL: Green 1 CO: Green 1 CPE: Green 1 PoE-in-use: Amber
ESD Protection	6KV DC
Enclosure	Metal
Installation	Wall mount or DIN rail with optional kit
Power Requirements	DC 54V, 0.74A external power
Power Consumption (VDSL2 + Ethernet + PoE)	CO Mode: 32.4 watts/110BTU CPE Mode : 32 watts/109BTU
Power Over Ethernet	
PoE Standard	IEEE 802.3at PoE+ PSE
PoE Power Output Budget	DC 52V, 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	2K entries

Flow Control	Back pressure for half duplex IEEE 802.3x pause frame for full duplex	
Maximum Packet Size	1522 bytes	
System Specifications		
VDSL Compliance	VDSL-DMT <ul style="list-style-type: none"> ■ ITU-T G.993.1 VDSL ■ ITU-T G.997.1 ■ ITU-T G.993.2 VDSL2 (Profile 17a/30a support) ■ ITU-T G.993.5 G.Vectoring ■ ITU-T G.998 ■ G.INP 	
ADSL Compliance	Capable of ADSL2/2+ standard <ul style="list-style-type: none"> ■ ITU G.992.3 G.dmt.bis ■ ITU G.992.5 G.dmt.bisplus Data Rate: Up to 24Mbps	
Performance* (Downstream/Upstream)	Interleave, Asym, 8dB 200M ----> 190Mbps/90Mbps 400M ----> 163Mbps/64Mbps 600M ----> 110Mbps/34Mbps 800M ----> 73Mbps/18Mbps 1000M --> 49Mbps/10Mbps 1200M --> 39Mbps/8Mbps 1400M --> 25Mbps/6Mbps	Interleave, Asym, 12dB 200M ----> 177Mbps/83Mbps 400M ----> 145Mbps/57Mbps 600M ----> 92Mbps/31Mbps 800M ----> 59Mbps/15Mbps 1000M --> 44Mbps/10Mbps 1200M --> 32Mbps/6Mbps 1400M --> 22Mbps/3Mbps
	Interleave, Sym, 8dB 200M ----> 149Mbps/141Mbps 400M ----> 116Mbps/115Mbps 600M ----> 72Mbps/70Mbps 800M ----> 45Mbps/44Mbps 1000M --> 26Mbps/16Mbps 1200M --> 26Mbps/12Mbps 1400M --> 29Mbps/12Mbps	Interleave, Sym, 12dB 200M ----> 136Mbps/129Mbps 400M ----> 100Mbps/101Mbps 600M ----> 58Mbps/57Mbps 800M ----> 42Mbps/36Mbps 1000M --> 23Mbps/12Mbps 1200M --> 23Mbps/10Mbps 1400M --> 17Mbps/11Mbps
	G.INP, Asym, 8dB 200M ----> 192Mbps/93Mbps 400M ----> 159Mbps/64Mbps 600M ----> 106Mbps/37Mbps 800M ----> 68Mbps/19Mbps 1000M --> 49Mbps/8Mbps 1200M --> 29Mbps/8Mbps 1400M --> 26Mbps/6Mbps	G.INP, Asym, 12dB 200M ----> 177Mbps/85Mbps 400M ----> 144Mbps/51Mbps 600M ----> 87Mbps/29Mbps 800M ----> 55Mbps/15Mbps 1000M --> 40Mbps/8Mbps 1200M --> 38Mbps/8Mbps 1400M --> 26Mbps/4Mbps
	G.INP, Sym, 8dB 200M ----> 150Mbps/150Mbps 400M ----> 114Mbps/113Mbps 600M ----> 69Mbps/69Mbps 800M ----> 49Mbps/39Mbps 1000M --> 27Mbps/24Mbps 1200M --> 26Mbps/12Mbps 1400M --> 21Mbps/11Mbps	G.INP, Sym, 12dB 200M ----> 136Mbps/133Mbps 400M ----> 97Mbps/102Mbps 600M ----> 54Mbps/56Mbps 800M ----> 40Mbps/35Mbps 1000M --> 24Mbps/22Mbps 1200M --> 24Mbps/9Mbps 1400M --> 18Mbps/12Mbps
Standards Conformance		
Standards Compliance	IEEE 802.3 Ethernet IEEE 802.3u Fast Ethernet IEEE 802.3ab Gigabit Ethernet	

	IEEE 802.3x Full-duplex flow control 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 support) ITU-T G.993.5 G.Vectoring & G.INP ITU-T G.998
xDSL Compatibility	
VDSL2	VC-231G VC-234G VC-231 VC-234 VC-820M VDR-301N

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

3.3 PHYSICAL SPECIFICATIONS

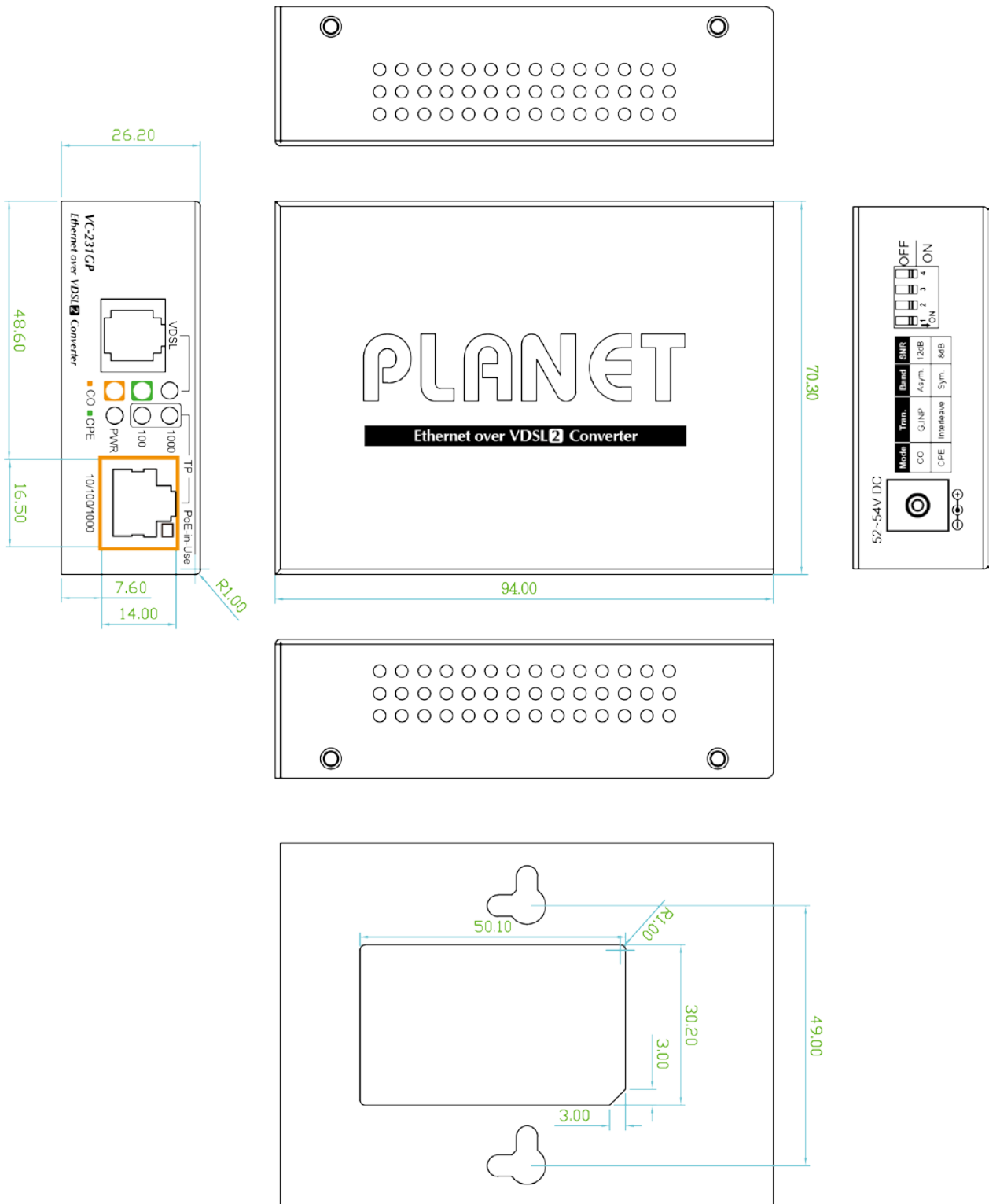
■ **Dimensions**

97 x 70 x 26 mm (W x D x H)

■ **Weight:**

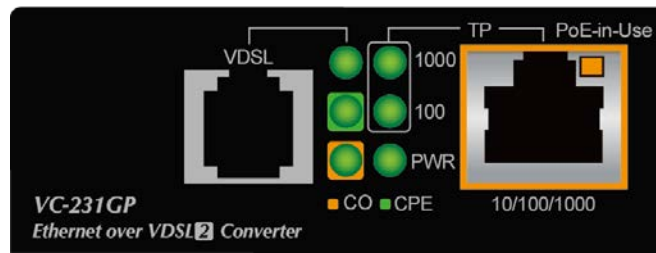
206g

■ **Diagram**



Dimensions (unit = mm)

■ **Front View**



■ **LED Indicators**

▶ **System**

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

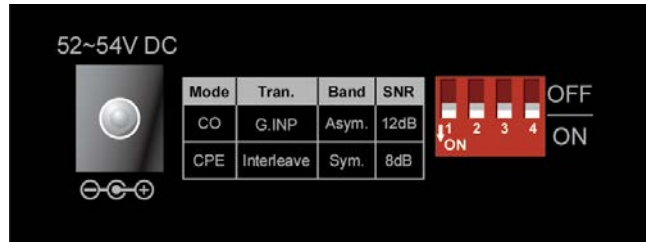
▶ **VDSL**

LED	Color	Function	
VDSL	Green	Lit	Indicates that the VDSL link is established.
		Fast Blink	Indicates that the VDSL link is at training status (about 10 seconds).
		Slow Blink	Indicates that the VDSL link is at idle status.
CO	Green	Lit	Indicates the VC-231GP is running in CO mode.
CPE	Green	Lit	Indicates the VC-231GP is running in CPE mode.

▶ **10/100/1000BASE-T 802.3at PoE Port**

LED	Color	Function	
1000	Green	Lit	Indicates that the port is operating at 1000Mbps .
		Blink	Indicates that the VC-231GP actively sending or receiving data over that port at 1000Mbps .
		Off	Indicates that the port is link down or operating at 10/100Mbps .
100	Green	Lit	Indicates that the port is operating at 100Mbps or 10Mbps .
		Blink	Indicates that the VC-231GP is actively sending or receiving data over that port at 100Mbps or 10Mbps .
		Off	Indicates that the port is link down or operating at 1000Mbps .
PoE-in-Use	Amber	Lit	Indicates that the port is providing DC 52V to remote powered device.
		Off	Indicates that the port is not providing DC 52V to remote powered device.

■ **Rear View**



■ **DIP Switch Setting**

	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

3.4 ENVIRONMENTAL SPECIFICATIONS

Operating:

Temperature: 0°C ~ 50 degrees C

Relative Humidity: 5% ~ 95% (non-condensing)

Storage:

Temperature: -10°C ~ 70 degrees C

Relative Humidity: 5% ~ 95% (non-condensing)

3.5 ELECTRICAL SPECIFICATION

Power Requirement:		DC 54V, 0.74A external power adapter	
Input Voltage:		110V	220V
Power Consumption (System on):	CO	3.6 watts/12BTU	3.7 watts/12BTU
	CPE	3.8 watts/12BTU	3.9 watts/13BTU
Power Consumption (Ethernet Full Loading):	CO	4.5 watts/15BTU	4.7 watts//16BTU
	CPE	4.7 watts/16BTU	4.7 watts/16BTU
Power Consumption (Ethernet PoE Full Loading):	CO	32.4 watts/110BTU	32.2 watts/109BTU
	CPE	32 watts/109BTU	32.1 watts/109BTU






3.6 REGULATORY COMPLIANCE

FCC Part 15B Class A, CE

3.7 RELIABILITY

MTBF > 50,000Hrs @25 degrees C

3.8 BASIC PACKAGING

VC-231GP x1	User's Manual x 1
	
AC-DC Power Adapter (Input: 54V DC, 0.74A max) x 1	Splitter x 1
	
RJ11 Telephone Wire x 1	
	

3.9 PACKING INFORMATION

Box Dimensions (W x D x H):	200 x 172 x 77mm
Gross Weight:	621g
Carton Dimensions (W x D x H):	640 x 375 x 353mm
Total Weight:	14.9kg
Quantity:	24pcs in one carton