Ethernet over VDSL2 Converter

High Performance Ethernet over VDSL Solution

The PLANET VC-231 is an Ethernet-over-VDSL2 Converter with high performance. It is designed based on two core networking technology, **Ethernet** and **VDSL2** (Very-high-data-rate Digital Subscriber Line 2). The VDSL2 technology offers absolutely fastest data transmission speed over existing copper telephone lines without the need of rewiring. The VC-231 supports ultra-high performance to the pervasive telephone line network with up to 100/100Mbps symmetric data rate within 300m and 50/2Mbps for 1.4km long range connections.

Implements with Existing Telephone Copper Wires

The VC-231 is also a **Long Reach Ethernet (LRE)** converter providing one RJ-45 Ethernet port and one RJ-11 phone jack that is for VDSL2 connection. By using the additional Splitter from package of VC-231, the splitter can provide POTS splitter to share the existing phone line with POTS; therefore it is no need of replacing the existing copper wiring. Just plug the VC-231 with additional splitter into the existing RJ-11 telephone jack and a high-performance VDSL2 network can be connected. The VC-231 is ideal to be used as an Ethernet extender to an existing Ethernet network.

Delivers High-Demand Service Connectivity for ISP / Triple Play Devices

The VC-231 provides excellent bandwidth to satisfy the triple play devices for home entertainment and communication. With the capability of 100/100Mbps symmetric data transmission, the VC-231 enables many Multi-Media services to work on local Internet, such as **VOD (Video on Demand)**, **Voice over IP**, **Video phone**, **IPTV**, Internet caching server, distance education, and so on.

Easy Installation

The Ethernet-over-VDSL2 Converter is plug-and-play design and fully compatible with all kinds of network protocols. Moreover, the operating status of each individual port and the whole system can be watched via the rich diagnostic LEDs on the front panel. The VC-231 offers two 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, a CPE mode VC-231 and a CO mode VC-231 must be setup as one pair of converters to perform the connection.

Provides Superior Upstream and Downstream Transmission Performance
The VC-231 also defines symmetric band plan for the transmission of upstream and downstream signals, the band plan performs higher transmission quality in short range for central side (CO) in symmetric mode. In all, when the VC-231 is in profile 17a operation mode, it provides long distance transmit with Ultra-high performance to the pervasive telephone line network, and when the VC-231 is in 30a operation mode, it gives short distance transmits with upstream and downstream transmission giving wire speed performance.
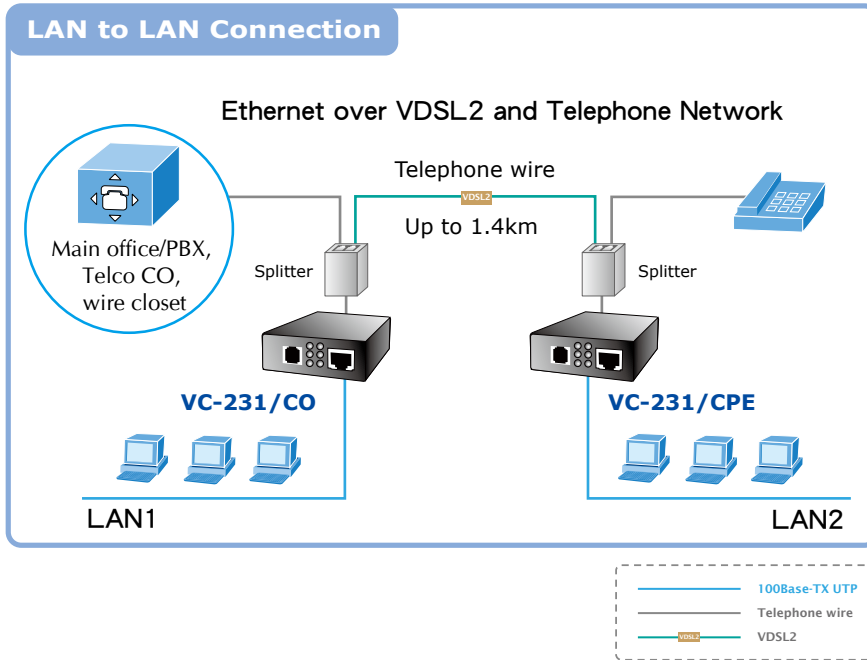
KEY FEATURES

- Cost-Effective VDSL2 Profile 17a/30a CO / CPE bridge solution
- One box design, CO / CPE selectable via DIP Switch
- Defines symmetric band plan for the transmission of upstream and downstream signals
- Complies with IEEE 802.3, 10Base-T, IEEE 802.3u, 100Base-TX and IEEE 802.3x, Flow control Ethernet standards
- DMT (Discrete Multi-Tone) line coding
- Half duplex Back pressure and IEEE 802.3x Full Duplex Pause frame flow control
- One RJ-11 connector for VDSL port with VDSL connection, additional Splitter for POTS connection
- Voice and data communication can be shared simultaneously based on the existing telephone wire
- One 10/100Mbps RJ-45 port, Auto-Negotiation and Auto-MDI/MDI-X
- Supports up to 1536 bytes packet size, IEEE 802.1Q VLAN tag transparent
- VDSL2 stand-alone transceiver for simple bridge modem application
- Advantage of minimum installation time (Simply as Plug-and-Play)
- Selectable target profile and target SNR margin
- Supports extensive LED indicators for network diagnosis
- Co-work with PLANET MC family Media Chassis (MC-700 / MC-1500/ MC-1500R)
- Compact in size, easy installation
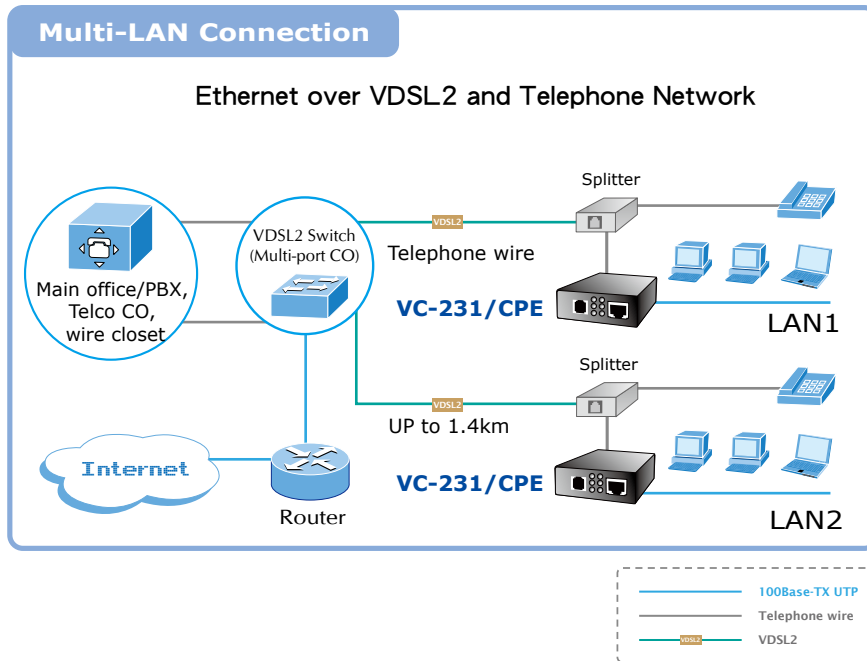
APPLICATIONS

Ethernet Distance Extension

Two VC-231 acting as a standalone pair is good for Ethernet distance extension over existing telephone wires. With just one pair of AWG-24 copper wire, you can easily connect two Ethernet networks together with the data rate of maximum 100/100Mbps. With the additional splitter, the telephone service can still be used while the VC-231 CO/CPE is in operation. The two solutions listed below are typical applications for the Ethernet over VDSL2 Converter.

LAN to LAN Connection

Ethernet over VDSL2 and Telephone Network

Telephone wire

Up to 1.4km

Main office/PBX, Telco CO, wire closet

Splitter

Splitter

VC-231/CO

VC-231/CPE

LAN1

LAN2

100Base-TX UTP
Telephone wire
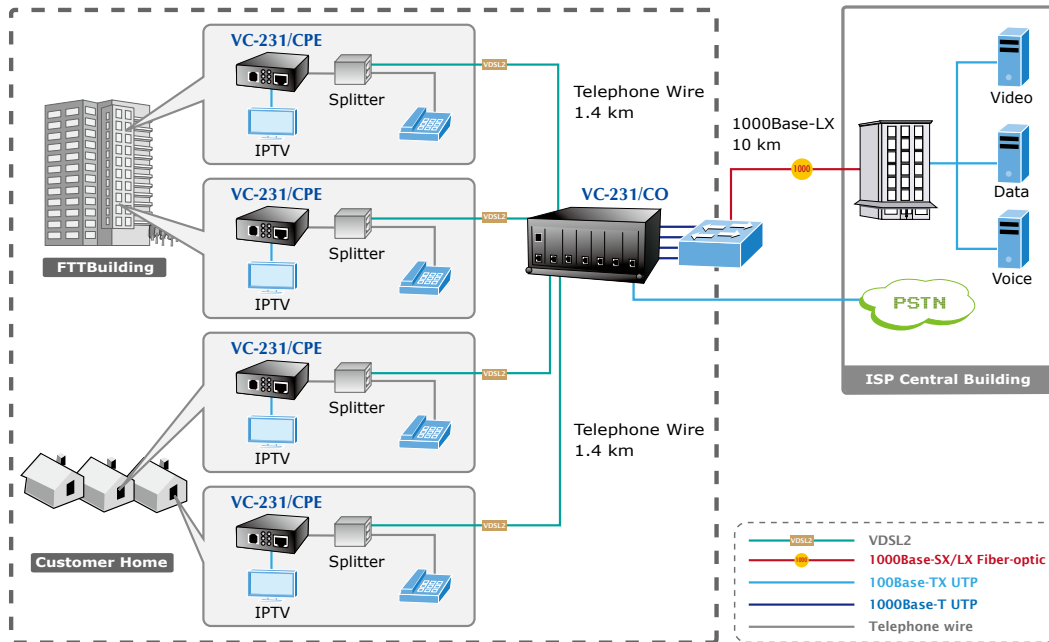VDSL2

MTU / MDU / Hospitality Solution

The VC-231 is a perfect solution to quickly provide cost-effective yet high speed network services to multi-unit buildings such as residential buildings (multi-dwelling units), commercial (multi-tenant units) buildings, hotels or hospitals. By utilizing the existing telephony infrastructure, network installation is straightforward and requires no new wiring. With up to 100/100Mbps transmission, Video on Demand, IP telephony and various broadband services can be easily provided.

Multi-LAN Connection

Ethernet over VDSL2 and Telephone Network

Main office/PBX, Telco CO, wire closet

VDSL2 Switch (Multi-port CO)

Splitter

Telephone wire

VC-231/CPE

LAN1

Splitter

UP to 1.4km

VC-231/CPE

LAN2

Internet

Router

100Base-TX UTP
Telephone wire
VDSL2

APPLICATIONS

Last Mile of FTTx Deployment

The VC-231 is an ideal solution for FTTx (Fiber to the Building, Fiber to the Campus or Fiber to the Node) applications. It supports high bandwidth VDSL2 over existing telephone wires in the "last mile" from the ISP / Telecom / Service provider's fiber node to the buildings and customers' houses. The 10/100Mbps port of VC-231 can be directly connected to a PC or to Ethernet devices such as Ethernet Switches or Broadband Routers. It is excellent for phone line network built under Internet because every room or house could use the existing phone line to transmit data through the Internet and the whole building could share the Internet to the wider area network with minimum cost.

SPECIFICATION

Product	Ethernet over VDSL2 Converter	
Model	VC-231	
Hardware Specification		
Ports	**10/100Base-TX**	1 RJ-45, Auto-Negotiation and Auto-MDI/MDI-X
	VDSL	1 RJ-11, female Phone Jack
	PHONE	Additional Splitter for POTS connection
DIP Switch & Functionality		• 4 position DIP switch • **CO / CPE** mode select • Selectable **fast** and **interleaved** mode • Selectable target **17a / 30a profiles** • Selectable target **SNR mode**

Encoding		• VDSL-DMT
		  - ITU-T G.993.1 VDSL
		  - ITU-T G.997.1
		  - ITU-T G.993.2 VDSL2 (Profile 17a/30a Support)

LED Indicators		• One Power • 3 for RJ-11/VDSL2 • 2 for per RJ-45 10/100Base-TX port
Cabling	**Ethernet**	10Base-T: 2-pair UTP Cat.3,4,5 up to 100m (328ft) 100Base-TX: 2-pair UTP Cat.5, up to 100m (328ft)
	VDSL	Twisted-pair telephone wires (AWG24 or better) up to 1.4km

Data Sheet

Performance* (Downstream / Upstream)	17a profile
	300m -> 86/65Mbps 400m -> 86/52Mbps 600m -> 81/36Mbps 800m -> 72/19Mbps 1000m -> 60/9Mbps 1200m -> 59/6Mbps 1400m -> 50/2Mbps
	30a profile
	300m -> 100/100Mbps 400m -> 90/90Mbps 600m -> 61/40Mbps 800m -> 54/8Mbps
Power Requirement	5V DC, 2A
Power Consumption	6.6 Watts / 22 BTU
Dimension (W x D x H)	97 x 70 x 26 mm
Weight	199g
Environment	
Operating	Temperature: 0 ~ 50 Degree C Relative Humidity: 10 ~ 90% (non-condensing)
Storage	Temperature: -10 ~ 70 Degree C Relative Humidity: 10 ~ 90% (non-condensing)
Switch Specification	
Switch Processing Scheme	Store-and-Forward
Address Table	1K entries
Flow Control	Back pressure for half duplex IEEE 802.3x Pause Frame for full duplex
Switch fabric	0.2Gbps
Throughput (packet per second)	0.14Mpps
Network cables	**10/100Base-TX**: 2-Pair UTP Cat. 3,4, 5 (100 meters, max.) EIA / TIA-568 100-ohm STP (100 meters, max.)
Standard Conformance	
Regulation Compliance	FCC Part 15 Class A, CE
Standards Compliance	IEEE 802.3 10Base-T IEEE 802.3u 100Base-TX ITU-T • G.993.1 (VDSL) • G.997.1 • G.993.2 VDSL2 (Profile 17a/30a)

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

ORDERING INFORMATION

| VC-231 | Ethernet over VDSL2 Converter (1*RJ45, 1*VDSL2/RJ11,17a/30a) |