PLANET
Networking & Communication

Product Specification

Ethernet Over VDSL 2 Bridge

VC-234

Version 1.0

Change History:

Revision:	Date:	Author:	Change List
Version 1.0	2009/10/29	Marc Liao	Initial Release

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Reviewed By:	Kent Kang	**Approved By:**	Tom Shih

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1. PRODUCT DESCRIPTION

The PLANET VC-234 is an Ethernet-over-VDSL2 Bridge with high performance; it is based on two core networking technology, Ethernet and VDSL2 (Very-high-data-rate Digital Subscriber Line 2), the VDSL2 technology offers the absolutely fastest data transmission speeds over existing copper telephone lines without the need of rewiring. The VC-234 supports ultra-high performance to the pervasive telephone line network with up to 100/100Mbps asymmetric data rate within 300m and 20/4Mbps for 1.4km long range connections.

The VC-234 is also a Long Reach Ethernet (LRE) Bridge provides four RJ-45 Ethernet ports and two RJ-11 phone jacks, in which one is for VDSL connection and the other one is for POTS (Plain Old Telephone Service) connection. The VC-234 has built-in 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-234 into the existing RJ-11 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. With excellent bandwidth to satisfy the triple play devices for home entertainment and communication, the 100/100Mbps symmetric data transmission capability help VC-234 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.

The VC-234 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-234 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-234 is in 30a operation mode, it gives short distance transmits with upstream and downstream transmission giving wire speed performance.

The VC-234 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. There are two selectable models of the VC-234, one is used at client side (CPE) and the other one is at central side (CO). The CPE or CO mode can be adjusted by using a built-in DIP switch. For point-to-point connection, a CPE mode VC-234 and a CO mode VC-234 must be setup as one pair of converters to perform the connection.
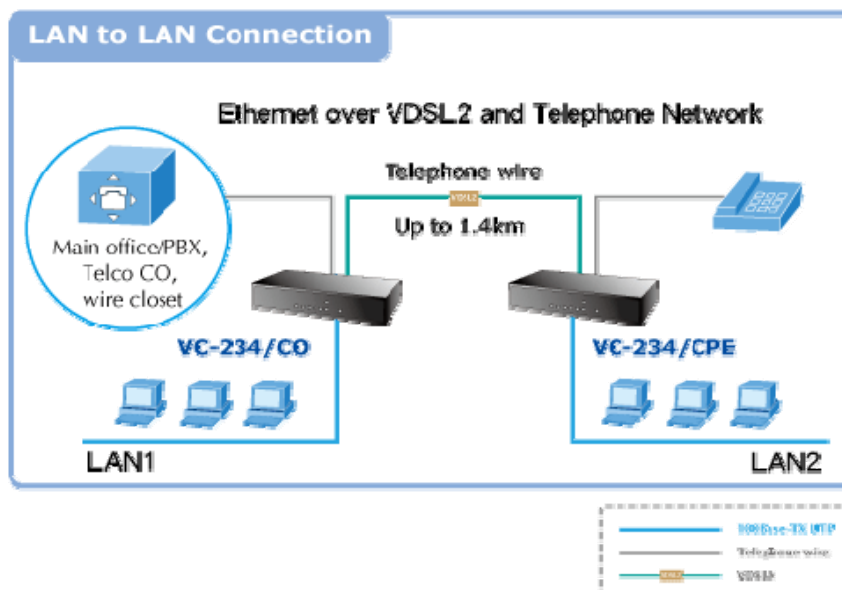
2. PRODUCT FEATURES

☐ 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

☐ Built-in POTS splitter to share voice and data

☐ Two RJ-11 connectors for each VDSL port, one for VDSL connection and one for POTS connection

☐ Voice and data communication can be shared simultaneously based on the existing telephone wire

☐ Four 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

☐ Hardware IGMP Snooping for Multimedia service

☐ 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 diagnostics

3. PRODUCT SPECIFICATION

3.1 MAIN COMPONENT

VDSL Analog Chip	Metanoia MT3301	x1
VDSL Digital Chip	Metanoia MT2301	x1
10/100 Fast Ethernet Chip	IC Plus IP175D	x1

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3.2 FUNCTIONAL SPECIFICATIONS

Product	VC-234
Hardware Specification	

Ports	10/100Base-TX	4 RJ-45, Auto-negotiation and Auto-MDI/MDI-X
	VDSL	1 RJ-11, female Phone Jack
	PHONE	1 RJ-11, Built-in splitters 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: • 1 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
Performance ∗* (Down Stream / Up Stream)		17a profile 300m -> 99/70Mbps 400m -> 99/60Mbps 600m -> 90/45Mbps 800m -> 50/28Mbps 1000m -> 40/12Mbps 1200m -> 20/7Mbps 1400m -> 20/4Mbps 30a profile 300m -> 100/100Mbps 400m -> 90/90Mbps 600m -> 69/55Mbps 800m -> 48/9Mbps
Switch Specification		
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
Switch fabric		0.8Gbps
Throughput (packet per second)		0.59Mpps
Network cables		**10/100Base-TX:** 2-Pair UTP Cat. 3,4, 5 (100meters, max.) EIA / TIA-568 100-ohm STP (100meters, max.)
Standard Conformance		

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.
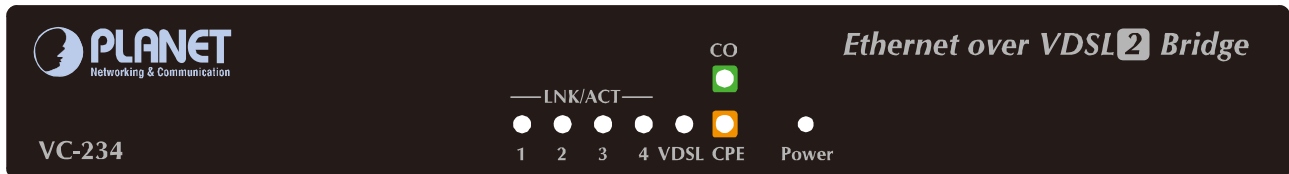
3.3 PHYSICAL SPECIFICATION
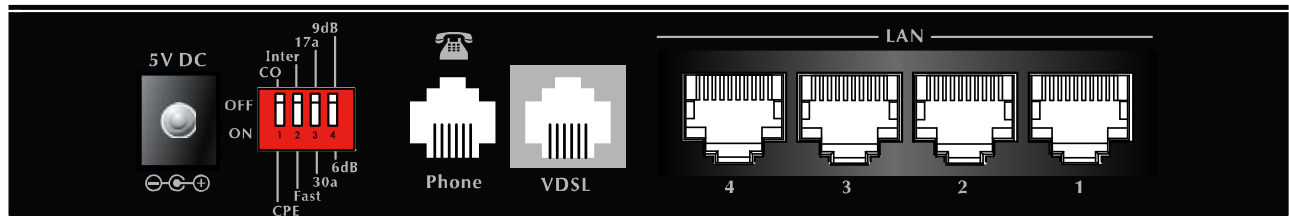
■   **Dimensions**

155 x 86 x 26mm (W x D x H)

■   **Weight:**

368g

■   **Front view**

■   **Rear view**

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■ **LED definition**

System

LED	Color		Function
PWR	Green	Lit	Lights to indicate that the VDSL Bridge has power.
		Off	Indicate that the VDSL Bridge has no power.

VDSL

LED	Color		Function
VDSL	Green	Lit	Indicate that the VDSL link is established.
		Fast Blink	Indicate that the VDSL link is at training status (about 10 seconds).
		Slow Blink	Indicate that the VDSL link is at idle status.
CO	Green	Lit	Indicate the VDSL Bridge is running at **CO** mode.
CPE	Green	Lit	Indicate the VDSL Bridge is running at **CPE** mode.

10/100Base-TX Port

LED	Color		Function
LNK/ACT	Green	Lit	Indicate that the port is link up at 10/100Mbps.
		Blink	Indicate that the VDSL Bridge is actively sending or receiving data over that port.
		Off	Indicate that the port is **link down.**

DIP Switch Setting

	DIP-1	DIP-2	DIP-3	DIP-4
	Mode	Channel	Profile	SNR
OFF	CO	Interleave	17A	9dB
ON (default)	CPE	Fast	30A	6dB

3.4 ENVIRONMENTAL SPECIFICATION

Operating

Temperature: 0~50°C

Relative Humidity: 10~90 %(non-condensing)

Storage

Temperature: -10~70°C

Relative Humidity: 10~90 %(non-condensing)

3.5 ELECTRICAL SPECIFICATION

Power Requirement: 5V DC, 2A

Power Consumption: 7.2 Watts/ 24 BTU (maximum)

3.6 REGULATORY COMPLIANCE

FCC Part 15 Class A, CE

3.7 RELIABILITY

MTBF > 50,000 hours @25 Degree C

3.8 BASIC PACKAGING

- Ethernet over VDSL2 Converter (VC-234) x1
- AC-DC Power Adapter (Output: 5VDC, 2A) x1
- RJ-11 Telephone line x1
- User's Manual x1

3.9 PACKING INFORMATION

Dimension

410mm x 310mm x 265mm (W x D x H)

Weight

0.68kg (Gross Weight)

8pcs in one carton