

# Product Specifications

4-Port 10/100/1000T Ethernet over VDSL2 Converter

## VC-234G

Version 1.0

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### Change History:

Revision:	Date:	Author:	Change List
Version 1.0	8/17/2017	Calvin Chao	Initial release

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Reviewed by:		Approved by:	Kent Kang

## 1. PRODUCT DESCRIPTION

### High-performance Ethernet over VDSL2

PLANET VC-234G 4-Port 10/100/1000T Ethernet over VDSL2 (Very-high-data-rate Digital Subscriber Line 2) Converter performs exceedingly well as it is based on two core networking technologies, **Ethernet** and **VDSL2**. The VDSL2 technology offers the absolutely fastest data transmission speeds over the existing copper telephone lines without the need of rewiring. The VC-234G supports the pervasive telephone line network with a symmetric data rate of up to **150/150Mbps** over a distance of 200m and a data rate of 24/2Mbps over a distance of 1.4km.

Via the latest VDSL2 technology, PLANET VC-234G offers fast access to Internet, up to 150Mbps for both upstream and downstream data transmission. With integrated support for the ITU-T's new **G.993.5 Vectoring technology**, the VC-234G 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 Copper Wires

The VC-234G is also a Long Reach Ethernet (LRE) converter providing four RJ45 Ethernet ports and two RJ11 phone jacks, in which one is for VDSL connection and the other one is for POTS (Plain Old Telephone Service) connection. The VC-234G has a built-in POTS splitter to share the existing phone line with POTS; therefore, there is no need to replace the existing copper wiring. Just plug the VC-234G into the existing RJ11 telephone jack and a high-performance VDSL2 network can be connected. The VC-234G is ideal to be used as an Ethernet extender to an existing Ethernet network.

### Suitable for Triple Play Devices

Designed for triple play devices for home entertainment and communication, the capability of the VC-234G that features an asymmetric data transmission of **200/100Mbps** enables many multi-media services to work on the local Internet, such as VoD (Video on Demand), Voice over IP, video phone, IPTV, Internet caching server, distance education, and so on.

### Easy and Flexible Installation

The VC-234G, with Plug and Play, is 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-234G — one as client side (CPE) while the other one as central side (CO). The CPE or CO mode can be adjusted by using a built-in DIP switch. For point-to-point connection, both CPE and CO modes for the VC-234G must be set up as one pair of converters to perform the connection.

### ADSL2+ Fallback

For those ISPs that still provide the ADSL broadband service, the VC-234G can support a downstream transmission rate of up to 24Mbps and an upstream transmission rate of 1Mbps with the ADSL2+ technology. With the VC-234G, ISPs can directly switch over the old technology to VDSL2 after the ISP network upgrade.

## 2. PRODUCT FEATURES

- ITU-T G.993.5 G.vectoring and G.INP
- DMT-based coding technology
- Built-in POST splitter to share voice and data
- CO/CPE mode selectable via DIP switch
- Selectable target band plan and SNR margin
- Up to 150/150Mbps bandwidth (in **G.INP, Sym, 8dB** mode)
- 4 10/100/1000BASE-TX LAN ports.
- Complies with IEEE 802.3, 10BASE-T, IEEE 802.3u, 100BASE-TX and IEEE 802.3x, flow control Ethernet standards
- Half duplex for back pressure and full duplex for pause frame
- One RJ11 connector for VDSL port
- Voice and data communication can be shared simultaneously based on the existing telephone wire
- Supports a packet size of up to 9K bytes, IEEE 802.1Q VLAN tag transparency
- VDSL2 stand-alone transceiver for simple bridge modem application
- Minimum installation time (Simply by Plug and Play)
- Supports extensive LED indicators for network diagnosis
- Compact in size, easy to install

### 3. PRODUCT SPECIFICATIONS

#### 3.1 MAIN COMPONENTS

VDSL Analog Chip	Metanoia MT5311GB	x 1
Gigabit Ethernet Chip	Qualcomm QCA8337N	x 1

#### 3.2 FUNCTIONAL SPECIFICATIONS

<b>Product</b>	<b>VC-234G</b>
<b>Hardware Specifications</b>	
<b>LAN Ports</b>	4 10/100/1000BASE-T RJ45 auto-MDI/MDI-X ports
<b>VDSL Port</b>	1 VDSL2 RJ11 female phone jack Twisted-pair telephone wires (AWG24 or better) up to 1.4km
<b>Phone Port</b>	1 RJ11, built-in splitters for POTS connection
<b>Dimensions (W x D x H)</b>	154.6 x 86.0 x 26.3 mm
<b>Weight</b>	350g
<b>Power Requirements</b>	5V DC, 2A
<b>LED Indicators</b>	<ul style="list-style-type: none"> <li>● 1 Power: Green</li> <li>● 4 1000BASE-T LNK/ACT: Green</li> <li>● 4 100BASE-T LNK/ACK: Green</li> <li>● 1 VDSL: Green</li> <li>● 1 CO: Green</li> <li>● 1 CPE: Green</li> </ul>
<b>Housing</b>	Metal
<b>DIP Switch &amp; Functionality</b>	4-position DIP switch <ul style="list-style-type: none"> <li>● <b>CO/CPE</b> mode selectable</li> <li>● Selectable <b>G.INP</b> and <b>interleaved</b> mode</li> <li>● Selectable target <b>band plan</b></li> <li>● Selectable target <b>SNR mode</b></li> </ul>
<b>Switch Specifications</b>	
<b>Switch Processing Scheme</b>	Store-and-Forward
<b>Address Table</b>	2K entries
<b>Flow Control</b>	Half duplex for back pressure Full duplex for pause frame
<b>Jumbo Packet Size</b>	9Kbyte
<b>System Specifications</b>	
<b>VDSL Compliance</b>	<ul style="list-style-type: none"> <li>● <b>VDSL-DMT</b> <ul style="list-style-type: none"> <li>■ ITU-T G.993.1 VDSL</li> <li>■ ITU-T G.997.1</li> <li>■ ITU-T G.993.2 VDSL2 (Profile 17a/30a support)</li> <li>■ ITU-T G.993.5 <b>G.vectoring</b></li> <li>■ ITU-T G.998</li> <li>■ G.INP</li> </ul> </li> </ul>

<p><b>ADSL Compliance</b></p>	<ul style="list-style-type: none"> <li>● <b>ADSL2/2+</b> standard <ul style="list-style-type: none"> <li>■ ITU G.992.3 G.dmt.bis</li> <li>■ ITU G.992.5 G.dmt.bisplus</li> </ul> </li> <li>● Data Rate: Up to 24Mbps</li> </ul>				
<p><b>Performance* (Upstream/Downstream)</b></p>		<p>G.INP, Sym, 8dB</p>	<p>G.INP, Sym, 12dB</p>	<p>G.INP, ASym, 8dB</p>	<p>G.INP, ASym, 12dB</p>
	<p><b>200m</b></p>	<p>147/148 Mbps</p>	<p>136/142 Mbps</p>	<p>98/200 Mbps</p>	<p>89/185 Mbps</p>
	<p><b>400m</b></p>	<p>126/120 Mbps</p>	<p>110/103 Mbps</p>	<p>68/170 Mbps</p>	<p>60/152 Mbps</p>
	<p><b>600m</b></p>	<p>78/73 Mbps</p>	<p>65/57 Mbps</p>	<p>37/113 Mbps</p>	<p>36/94 Mbps</p>
	<p><b>800m</b></p>	<p>43/48 Mbps</p>	<p>36/38 Mbps</p>	<p>18/70 Mbps</p>	<p>14/60 Mbps</p>
	<p><b>1000m</b></p>	<p>26/27 Mbps</p>	<p>13/14 Mbps</p>	<p>7/51 Mbps</p>	<p>6/44 Mbps</p>
	<p><b>1200m</b></p>	<p>13/25 Mbps</p>	<p>8/23 Mbps</p>	<p>5/44 Mbps</p>	<p>3/35 Mbps</p>
	<p><b>1400m</b></p>	<p>5/10 Mbps</p>	<p>3/8 Mbps</p>	<p>2/24 Mbps</p>	<p>1/21 Mbps</p>
		<p>Interleave, Sym, 8dB</p>	<p>Interleave, Sym, 12dB</p>	<p>Interleave, ASym, 8dB</p>	<p>Interleave, ASym, 12dB</p>
	<p><b>200m</b></p>	<p>139/142 Mbps</p>	<p>129/137 Mbps</p>	<p>89/193 Mbps</p>	<p>80/180 Mbps</p>
	<p><b>400m</b></p>	<p>118/116 Mbps</p>	<p>102/99 Mbps</p>	<p>69/164 Mbps</p>	<p>57/145 Mbps</p>
	<p><b>600m</b></p>	<p>73/70 Mbps</p>	<p>61/54 Mbps</p>	<p>39/112 Mbps</p>	<p>32/95 Mbps</p>
	<p><b>800m</b></p>	<p>40/50 Mbps</p>	<p>35/41 Mbps</p>	<p>14/70 Mbps</p>	<p>13/60 Mbps</p>
	<p><b>1000m</b></p>	<p>24/24 Mbps</p>	<p>19/22 Mbps</p>	<p>7/46 Mbps</p>	<p>6/39 Mbps</p>
<p><b>1200m</b></p>	<p>13/21 Mbps</p>	<p>8/19 Mbps</p>	<p>4/37 Mbps</p>	<p>3/31 Mbps</p>	
<p><b>1400m</b></p>	<p>6/10 Mbps</p>	<p>3/7 Mbps</p>	<p>2/21 Mbps</p>	<p>2/18 Mbps</p>	
<p><b>CPE mode with ADSL2+ IPDSLAM</b> 200M -&gt; 20/1Mbps</p>					
<p><b>Standards Conformance</b></p>					
<p><b>Standards Compliance</b></p>	<p>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  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 &amp; G.INP  ITU-T G.998</p>				

Environment	
Temperature	Operating: 0~50 degrees C Storage -40~70 degrees C
Humidity	Operating: 10~90% (non-condensing) Storage: 5~90% (non-condensing)

\* 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

154.6 x 86.0 x 26.3 mm (W x D x H)

#### ■ Front view



#### ■ LED definition

##### System

LED	Color	Function	
PWR	Green	Lit	To indicate that the VDSL Converter has power.
		Off	To indicate that the VDSL Converter has no power.

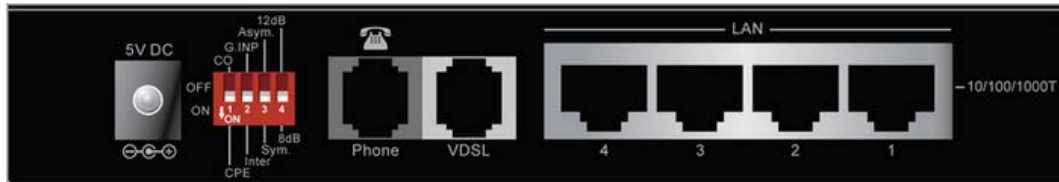
##### VDSL

LED	Color	Function	
VDSL	Green	Lit	To indicate that the VDSL link is established.
		Fast Blink	To indicate that the VDSL link is at training status (about 30 seconds).
		Slow Blink	To indicate that the VDSL link is at idle status.
CO	Green	Lit	To indicate the VDSL Converter is running in <b>CO</b> mode.
CPE	Green	Lit	To indicate the VDSL Converter is running in <b>CPE</b> mode.

**100/1000BASE-T Port**

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

■ **Rear view**



■ **DIP switch setting**

	DIP-1	DIP-2	DIP-3	DIP-4
	Mode	Channel	Band	SNR
OFF	CO	G.INP	Asym.	12dB
ON (default)	<b>CPE</b>	<b>Interface</b>	<b>Sym</b>	<b>8dB</b>

**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: Max. 6.6 watts/22.5 BTU @ Power On

Max. 7.6 watts/25.91 BTU @ Full loading

### **3.6 REGULATORY COMPLIANCE**

FCC Part 15B Class A, CE

### **3.7 RELIABILITY**

MTBF > 50,000Hrs @25 degrees C

### **3.8 BASIC PACKAGING**

- Ethernet over VDSL2 Converter (VC-234G) x 1
- AC-DC Power Adapter (Output: 5V DC, 2A) x 1
- RJ11 Telephone Line x 1
- User's Manual x 1

### **3.9 PACKING INFORMATION**

#### **Dimensions**

154.6 x 86.0 x 26.3 mm (W x D x H)