Product Specifications

1-Port BNC/RJ11 to 4-Port Gigabit Ethernet Extender

IVC-234GT

Version 1.0

Change History:

Revision:	Date:	Author:	Change List
Version 1.0	2018/6/13	Calvin Chao	Initial Release

Author:	Bryant Wu	Editor:	Calvin Chao
Reviewed By:		Approved By:	Kent Kang

1. PRODUCT DESCRIPTION

High Performance Industrial Gigabit Ethernet Extender

To fulfill the needs of long distance and higher speed required Ethernet over Coaxial or 2-wired UTP applications, PLANET Technology offers a new Industrial Ethernet Extender, IVC-234GT. It features one **BNC** port and one **RJ11** port for long-distance connection with the VDSL2 (Very-high-bit-rate Digital Subscriber Line 2) technology, and 4 **10/100/1000BASE-T** RJ45 Ethernet ports. Its slim-sized metal housing makes the placement of the unit convenient. Working well with a pervasive coaxial or RJ11 network, the IVC-234GT provides an excellent bandwidth of up to a total duplex data rate of **300Mbps** which can extend a maximum distance up to **1.2km.**

If the IP network that consists of HD IP camera, wireless access point, NVR and digital signage display requires an extension of beyond the 100-meter distance, the IVC-234GT will be the best option as it can transmit data over the coaxial cable or telephone wire. A 100-meter distance can only be extended on an UTP cable.

Superior Upstream and Downstream Transmission

The design of the IVC-234GT is based on the two-core networking technology, **Gigabit Ethernet** and **VDSL2**. The IVC-234GT offers a stable yet high-speed point-to-point network access up to a duplex data transmission of 300Mbps. It provides 2 selective transmission modes -- **asymmetric** mode or **symmetric** mode -- for the transmission of upstream and downstream signals.

- ■ **Asymmetric mode** – downstream up to **200Mbps** and upstream up to **100Mbps**
- ■ **Symmetric mode** – downstream up to **150Mbps** and upstream up to **150Mbps**

The symmetric mode provides the similar transmission rate on both downstream and upstream while the asymmetric mode performs higher transmission quality in short range. In all, when the IVC-234GT is in the symmetric mode, it provides a better upstream performance, and when it is in the asymmetric mode, it gives a better downstream performance.

Ethernet over Long Distance Existing Coaxial or RJ11 Cable

The IVC-234GT is also a **Long Reach Ethernet (LRE)** solution which provides a quick replacement and smooth migration solution from the existing analog system to full digital system. It features two types of transmission, the coaxial or RJ11. A normal UTP cable can only be extended up to 100 meters, but with the IVC-234GT, the distance for Ethernet networking can be extended up to **1,200 meters** (**3,937ft**.), which is ideal for the following network applications:

- Long-distance IP network devices
- IP digital signage
- Cable TV to IPTV
- Distance video education
- Electronic billboards
- Other applications

If you have coaxial or RJ11 cable in your existing environment, you can install a pair of the IVC-234GT very simply without the need to build additional network wires, thus saving costs for network construction.

Easy and Flexible Installation

The IVC-234GT offers two operation modes, the client-side CPE and central-side CO, making any network applications easy and flexible. The CPE or CO mode can be adjusted by using the built-in DIP switch. For point-to-point connection, one IVC-234GT in CPE mode and the other one in CO mode must be set up as a pair of converters to perform the connection. This enables the administrator to efficiently manage the network over coaxial cable, making long-distance transmission better.

ADSL2+ Fallback

For ISPs providing ADSL broadband services, the IVC-234GT can support a downstream rate of up to 24Mbps and an upstream rate of 1Mbps with the ADSL2+ technology. The IVC-234GT can also be directly switched over to VDSL2 after the network upgrade.

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2. PRODUCT FEATURES

■ **Long Reach Ethernet**
  - ➢ ITU-T G.993.5 G.Vectoring and G.INP
  - ➢ Upstream/Downstream bandwidth up to 200/100Mbps
  - ➢ CO/CPE mode selectable via DIP switch
  - ➢ Selectable target band plan and SNR margin
  - ➢ One BNC/RJ11 connector for VDSL connection
  - ➢ Uses existing RG59/RG6 coaxial cable
  - ➢ Used in pairs to extend Point-to-Point connection up to 1.2km
  - ➢ Supports IEEE 802.1Q VLAN tag transparency

■ **Industrial Case and Installation**
  - ➢ Slim-type IP30 metal case
  - ➢ DIN rail and wall-mount design
  - ➢ 12 to 48V DC, redundant power with polarity reverse protect function
  - ➢ AC 24V power adapter acceptable
  - ➢ Supports 6000 VDC Ethernet ESD protection
  - ➢ -40 to 75 degrees C operating temperature
  - ➢ Minimum installation time (Simply by Plug and Play)
  - ➢ Supports extensive LED indicators for network diagnosis

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3. PRODUCT SPECIFICATIONS

3.1 MAIN COMPONENTS

VDSL IC	MT5311GB-A1
Switch IC	QCA8337N-AL3C
FLASH	8Mb,MX25L8006EM1I-12G

3.2 FUNCTION SPECIFICATIONS

Product		IVC-234GT	
Hardware Specifications			
TP interface		4 10/100/1000BASE-T RJ45 auto-MDI/MDI-X ports	
VDSL	**BNC**	1 BNC female Ethernet over Coaxial port	
		Cabling	Coaxial cable: 75 ohm
			RG-6/U cable, less than12Ω/1000 ft
			RG-59/U cable, less than 30Ω/1000 ft.
		Maximum Distance	Max. 1.2km with data transmission (3,937ft.)
	RJ11	1 VDSL2/ADSL2+ RJ11 female phone jack	
		Twisted-pair telephone wires (AWG-24 or better) up to 1.2km (3,937ft.)	
DIP Switch & Functionality		**DIP-1**	Select CO or CPE mode
		DIP-2	Select G.INP or Interleaved mode
		DIP-3	Select Band Profile (Asymmetric or Symmetric)
		DIP-4	Select SNR of 12dB or 8dB
LED Indicators		System: Power 1/Power 2: **Green** FAULT: **Red** Ethernet Port: 1000BASE-T LNK/ACT: **Green** 10/100BASE-TX LNK/ACK: **Green** VDSL Port: VDSL: **Green** CO: **Green** CPE: **Green**	
ESD Protection		6KV DC	
Enclosure		IP30 slim metal case	
Installation		DIN-rail kit or wall-mount ear	
Dimensions (W x D x H)		32 x 135 x 87.8mm	
Weight		185g	
Power		DC input: Dual 12~48V DC, 0.4A max.	

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Requirement	24V AC
Power Consumption	5.7 watts

Performance					

Upstream/ Downstream Performance Table with RJ11 Cable

CO DIP Switch / Distance (meter)	Interleave (Upstream/Downstream)			
	Asymmetric		Symmetric	
	8dB	12dB	8dB	12dB
200	93/190	85/174	143/148	132/136
400	67/164	59/146	118/119	103/104
600	38/116	28/94	71/75	59/60
800	24/59	22/49	49/36	38/27
1000	9/45	7/40	21/25	15/24
1200	6/30	3/28	16/24	6/20

CO DIP Switch / Distance (meter)	G.INP (Upstream /Downstream)			
	Asymmetric		Symmetric	
	8dB	12dB	8dB	12dB
200	92/190	85/174	143/148	129/136
400	68/165	57/144	116/115	99/96
600	37/112	28/94	71/69	61/55
800	27/56	22/49	49/32	39/24
1000	9/46	7/40	19/27	15/26
1200	5/31	3/28	16/23	12/20

Upstream/ Downstream Performance Table with Coaxial Cable

CO DIP Switch / Distance (meter)	Interleave (Upstream/Downstream)			
	Asymmetric		Symmetric	
	8dB	12dB	8dB	12dB
200	84/184	75/169	131/144	125/128
400	49/148	54/128	93/118	89/99
600	36/100	26/80	77/66	64/53
800	21/50	17/39	44/30	37/26
1000	7/42	5/29	20/25	19/28
1200	5/27	3/28	13/27	15/20

CO DIP Switch	G.INP

Distance (meter)	(Upstream /Downstream)			
	Asymmetric		Symmetric	
	8dB	12dB	8dB	12dB
200	89/185	79/166	140/144	117/123
400	57/155	47/137	104/113	89/96
600	33/75	31/73	62/73	52/43
800	17/66	13/45	40/29	39/24
1000	13/59	6/38	20/27	15/26
1200	4/32	3/22	14/20	12/20

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
Jumbo Packet Size	9K bytes

System Specifications

VDSL Compliance	**VDSL**-DMT 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 ITU G.992.3 G.dmt.bis ITU G.992.5 G.dmt.bisplus Data Rate: Up to 24Mbps

Standards Conformance

Standards Compliance	IEEE 802.3 Ethernet IEEE 802.3u Fast Ethernet IEEE 802.3ab Gigabit Ethernet 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 and G.INP
	ITU-T G.998
Regulatory Compliance	FCC Part 15 Class A, CE
Environment	
Temperature	Operating: -40~75 degrees C Storage: -40~75 degrees C
Humidity	Operating: 5~95% (non-condensing) Storage: 5~95% (non-condensing)

3.3 PHYSICAL SPECIFICATIONS:

Dimensions:

32 x 135 x 87.8mm
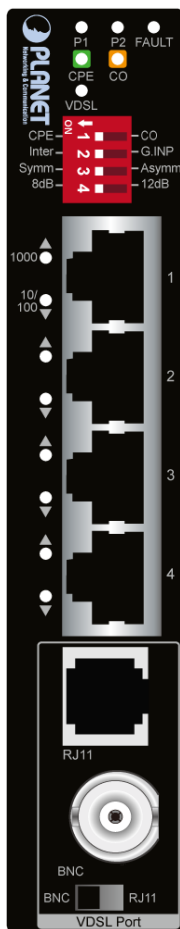
Weight:

185g

Physical Dimensions:
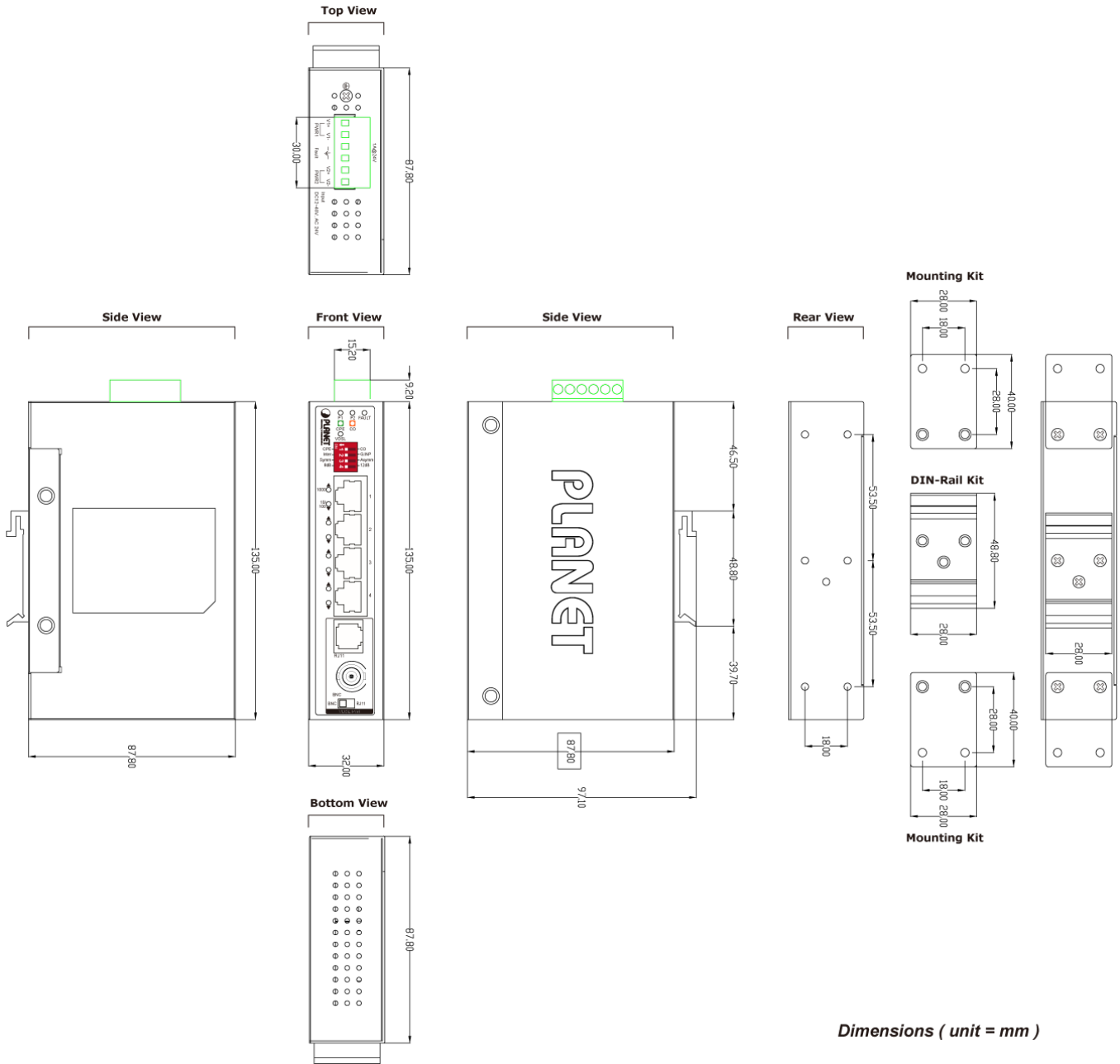
Dimensions (unit = mm)

Front panel:

◆ **System**

LED	Color	Function
P1	**Green**	Lights to indicate DC power input 1 has power.
P2	**Green**	Lights to indicate DC power input 2 has power.
Fault	**Red**	Lights to indicate that DC power has failed.

◆ **VDSL**

LED	Color		Function
VDSL	**Green**	**Lit**	Indicates that the VDSL connection is established.
		Fast Blink	Indicates that the VDSL connection is in training status (about 15 seconds).
		Slow Blink	Indicates that the VDSL connection is in idle status.
CO	**Green**	**Lit**	Indicates the Industrial Ethernet Extender is running in **CO** mode.
CPE	**Green**	**Lit**	Indicates the Industrial Ethernet Extender is running in **CPE** mode.

◆ **100/1000BASE-T Port**

LED	Color		Function
1000	**Green**	**Lit**	Indicates that the port is operating at **1000Mbps**.
		Blink	Indicates that the Industrial Ethernet Extender is actively sending or receiving data over that port at 1000Mbps.
		Off	Indicates that the port is **link down** or **10/100Mbps**.
10/100	**Green**	**Lit**	Indicates that the port is operating at **100Mbps or 10Mbps**.
		Blink	Indicates that the Industrial Ethernet Extender is actively sending or receiving data over that port at 100Mbps or 10Mbps.
		Off	Indicates that the port is **link down** or **10Mbps**.

3.4 ENVIRONMENTAL SPECIFICATION

Operating:

    Temperature: -40 degrees C ~ 75 degrees C

    Relative Humidity: 5% ~ 90% (non-condensing)

Storage:

    Temperature: -40 degrees C ~ 85 degrees C

    Relative Humidity: 5% ~ 90% (non-condensing)

3.5 ELECTRICAL SPECIFICATION

Input Voltage:

  AC 24V

  DC 12 to 48V

➢ **Power Consumption with VDSL connection by RJ11**

| DC input	System On	Full loading
12V	2.4 watts/8.23 BTU	4.32 watts/14.82 BTU
24V	2.4 watts/8.23 BTU	4.8 watts/16.46 BTU
36V	2.88 watts/9.88 BTU	5 watts/17.15 BTU
48V	3.36 watts/11.52 BTU	5.3 watts/18.18 BTU

➢ **Power Consumption with VDSL connection by Coaxial**

DC input	System On	Full loading
12V	2.88 watts/9.88 BTU	4.8 watts/16.46 BTU
24V	3.36 watts/11.52 BTU	5.04 watts/17.29 BTU
36V	3.96 watts/13.58 BTU	5.04 watts/17.29 BTU
48V	4.32 watts/14.82 BTU	5.76 watts/19.76 BTU

Power Input PIN Definition:
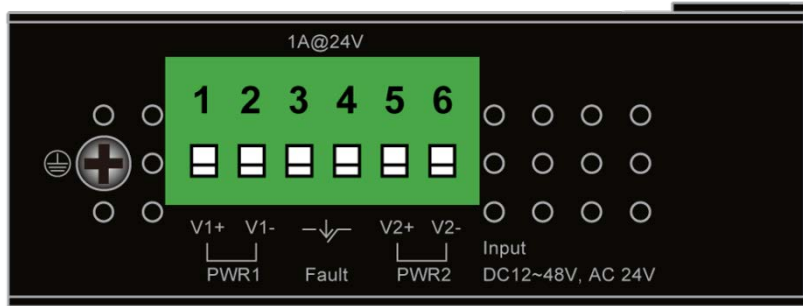
Terminal Block Pin Definition:
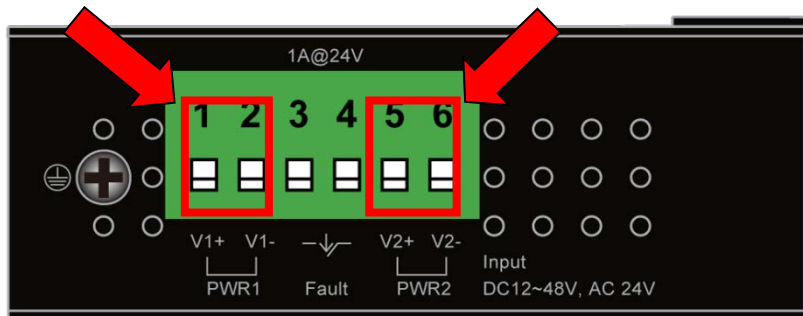
1	2	3	4	5	6
Power 1		Fault		Power 2	
+	-			+	-

3.6 REGULATORY COMPLIANCE

FCC Part 15 Class A, CE

Stability Test:

IEC 60068-2-32(Free fall)

IEC 60068-2-27(Shock)

IEC 60068-2-6(Vibration)

3.7 RELIABILITY

MTBF > 100,000 hrs @ 25 degrees C

3.8 BASIC PACKAGING

- The Industrial Ethernet Extender x 1
- User's Manual x 1
- DIN-rail Kit x 1
- Wall-mount Kit x 1
- RJ45 dust cap x 4
- BNC dust cap x 1
- RJ11 dust cap x 1

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3.9 PACKING INFORMATION

Box Dimensions (W x D x H):	205 x 144 x 46 mm
Gross Weight:	660g
Carton Dimensions (W x D x H):	435 x 325 x 280 mm
Total Weight:	13.2kg
Quantity:	20pcs per carton