Product Specifications

8-Port VDSL2 + 2-Port Gigabit TP/SFP Combo Managed Switch

VC-820M

Version 2.0

Change History:

Revision:	Date:	Author	Change List
Version 1.0	2010/01/18	Kent Kang	Initial Release
Version 2.0	2015/10/1	Jos Li	1. Moved the AC power socket from rear side to front side 2. Changed console interface type from DB9 to RJ45 3. Added alarm port

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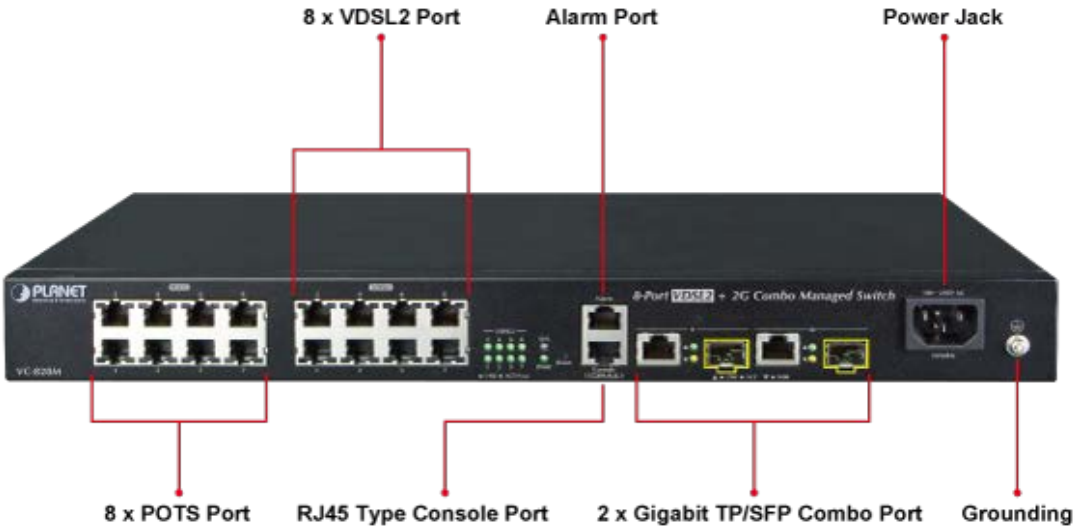
1. PRODUCT DESCRIPTION

High Performance VDSL2 Data Rate over Existing Phone Lines

PLANET VC-820M is an **8-port VDSL2 Managed CO** (Central Office) **Switch** with **2 Gigabit TP/SFP combo** interfaces. The VDSL2 CO Switch is perfectly designed for the networking applications of communities, network service providers, SIs, IP surveillance providers, etc. It is based on two core networking technologies, Ethernet and VDSL2 (Very-high-data-rate Digital Subscriber Line 2). Worked with PLANET VC-23x series of VDSL2 CPE (customer premises equipment), the VC-820M offers the absolutely fastest data transmission speeds over the existing copper telephone lines providing an ideal solution to the last-mile connectivity.

Each VDSL2 interface of the VC-820M provides two copper phone ports, one for VDSL2 connection and the other one for POTS (Plain Old Telephone Service) connection. To share the existing phone line with POTS, the VC-820M has a built-in POTS splitter that helps the voice over telephone and network data to transmit over the same wire without being interrupted.



Delivering Highly-demanding Connectivity for ISPs/Triple Play Devices

As the demand for home broadband connections increases, the VDSL2 technology is the next media to support the integration of home services and provides a significant transmission speed faster than that of the current cable modem and ADSL technology. The VC-820M applies the EoVDSL (Ethernet over VDSL) to providing up to 100Mbps download capability and makes the following multi-media services more efficient on the local network:

- IPTV/HDTV
- VoD (Video on Demand)
- Voice over IP
- Video Conferencing/Video Phone
- On-line Gaming
- Internet Radio/On-line Music
- Long-distance Education

The VC-820M offers an excellent bandwidth to meet the requirements of the triple play devices for home entertainment and communications.

QoS Features to Ensure Best Performance

The VDSL2 Switch contains robust QoS features such as port-based, 802.1p priority and IP ToS/DSCP to ensure the best performance of its VoIP and video stream transmission, thus empowering the enterprises to take full advantage of the limited network resources.

Selectable VDSL2 Data Rate for Service Differentiation

Through the management interface, the administrator can control the data transmission speed of each VDSL2 interface. Telecoms and ISPs can immediately and remotely upgrade/downgrade bandwidth service upon different demands.

Efficient Management

To further expand the current network, PLANET VC-820M provides **console** and **Telnet** command line interfaces, and advanced **Web** and **SNMP** management interfaces. With its built-in Web-based management interface, the VDSL2 switch offers an easy-to-use, platform-independent management and configuration facility. The VDSL2 switch supports standard Simple Network Management Protocol (SNMP) and can be monitored via any standard-based management software. For text-based management, the VDSL2 switch can also be accessed via Telnet and the console port. Moreover, the VDSL2 switch offers secure, remote management by supporting Secure Socket Layer (**SSL**) connection, which encrypts the packet content at each session. The features above provide an efficient way to manage the devices from the internet environment with no need to add extra secure system either by means of hardware or software.

Robust Layer 2 Features

For efficient management, via Web interface, the VC-820M can be programmed for basic switch management functions, such as port speed configuration, port **link aggregation**, IEEE **802.1Q** VLAN and Q-in-Q VLAN, port mirroring, **Rapid Spanning Tree**, and ACL security. Additionally, the firmware includes advanced features such as **IGMP snooping**, QoS (Quality of Service), broadcast storm and **bandwidth control** to enhance bandwidth utilization.

Advanced Security

The VDSL2 switch offers comprehensive Layer 2, Layer 3 and Layer 4 Access Control List (**ACL**) to filter out unwanted traffic. Its protection mechanisms comprise **RADIUS** and port-based **802.1X** user and device authentication. Moreover, the VDSL2 switch provides MAC filter, static MAC, IP/MAC binding and **Port Security** for enforcing security policies to the edge. The administrators can now construct highly-secured corporate networks with considerably less time and effort than before.

2. PRODUCT FEATURES

VDSL Interface

- 8 x **RJ11** connectors for **VDSL2** connection
- 8 x **RJ11** connectors for **POTS** connection
- Built-in **POTS splitter** for each VDSL port
- Auto-speed function for VDSL2 link (by distance and cable quality)

Ethernet Interface

- 2 Gigabit TP and SFP shared combo interfaces
- Auto-MDI/MDI-X detection on Gigabit RJ45 port

VDSL2 Features

- Cost-effective VDSL2 link and central management solution
- ITU-T G.993.2 VDSL2 standard
- **DMT** (Discrete Multi-Tone) line coding VDSL
- Up to **100/100Mbps** symmetric data rate
- Copper wiring distance up to 1km
- Selectable target data rate and target SNR margin
- Built-in surge protection against surge damage from high energy spike
- Voice and data communication can be shared on the existing telephone wire simultaneously
- Supports downstream/upstream rate control on each port

➢ Layer 2 Features

- High performance of Store-and-Forward architecture and runt/CRC filtering eliminate erroneous packets to optimize the network bandwidth
- Broadcast/multicast/unicast storm control
- Supports **VLAN**
  - IEEE 802.1Q tag-based VLAN
  - Port-based VLAN
  - Q-in-Q tunneling (VLAN stacking)
  - GVRP for dynamic VLAN management
  - Private VLAN edge (PVE/protected port)
- Link Aggregation
  - IEEE 802.3ad LACP (Link Aggregation Control Protocol)
  - Cisco ether-channel (static trunk)
- Spanning Tree Protocol
  - STP, IEEE 802.1D
  - MSTP, IEEE 802.1s
- Port mirroring to monitor the incoming or outgoing traffic on a particular port

➢ Quality of Service

- 4 priority queues on all switch ports
- Traffic classification:
  - IEEE 802.1p CoS
  - IP ToS/DSCP

- Port-based priority

- Strict priority and Weighted Round Robin (WRR) CoS policies

➢ **Multicast**

- Supports IGMP snooping v1 and v2
- IGMP querier mode support

➢ **Security**

- IEEE 802.1X port-based network access control protocol
- RADIUS users access authentication
- L2/L3/L4 Access Control List (ACL)
- MAC filtering and source IP-MAC/port-binding
- Port security for source MAC address entries filtering

➢ **Management**

- Switch Management Interface
  - Telnet command line interface
  - Web switch management
  - SNMP v1, v2c, v3 switch management
  - SSL switch management
- DHCP client for IP address assignment
- Link Layer Discovery Protocol (LLDP) for easy network management
- DHCP option82 and DHCP relay
- Built-in Trivial File Transfer Protocol (TFTP) client
- Firmware upgrade via TFTP or HTTP
- Configuration upload/download via TFTP or HTTP
- Four RMON groups 1, 2, 3, 9 (history, statistics, alarms and events)
- SNMP trap for interface Link Up and Link Down notification
- Reset button for system management
- RJ45 console interface for switch basic management and setup

3. PRODUCT SPECIFICATIONS

3.1 MAIN COMPONENTS

Ethernet Switch		
Switch ASIC:	VIA VT6512	x 1
Giga PHY	Marvell 88E1111-RCJ1	x 2
VDSL		
VDSL DMT/AFE	Metanoia Dual port VDSL2 MT5302	x 4
System		
CPU:	SAMSUNG ARM9 S3C2510A	x 1
FLASH:	Spansion S29GL032N90TFI04	x 1
DRAM:	ESMT-M12L128168A	x 2
Power Supply	UP0361H-12	x 1

3.2 FUNCTION SPECIFICATIONS

Product	**VC-820M**
Hardware Specifications	
Hardware Version	2.0
VDSL Interface	8 VDSL2 RJ11 interfaces
	8 POTS RJ11 interfaces
Copper Ports	2 10/100/1000BASE-T RJ45 auto-MDI/MDI-X ports
SFP/mini-GBIC Slots	2 1000BASE-X SFP interfaces, shared with Port-9 and Port-10
Console	1 RS232-to-RJ45 serial port (115200, 8, N, 1)
Transient Voltage Suppressor	IEC 61000-4-2 (ESD): ±15kV (air), ±8kV (contact) IEC 61000-4-4 (EFT): 40A (5/50ns) IEC 61000-4-5 (Lightning): 24A (8/20μs)
Switch Architecture	Store-and-Forward
Switch Fabric	5.6Gbps / non-blocking
Switch Throughput	4.16Mpps @64 bytes
Address Table	8K entries
Shared Data Buffer	256K bytes
Maximum Frame Size	9K bytes
Flow Control	Back pressure for half-duplex IEEE 802.3x pause frame for full-duplex
LED	VDSL2, PWR, SYS, LNK/ACT, 1000
Reset Button	< 5 sec: System reboot > 10 sec: Factory default
Dimensions (W x D x H)	404 x 174 x 44.5 mm, 1U height
Weight	2.4 kg

Power Requirements	100~240V AC, 50-60 Hz
Power Consumption/ Dissipation	36 watts (max.)/112.8 BTU/hr
VDSL2	
VDSL2 Standard	Complies with ITU-T G.993.1 and G.993.2. Supports provisioning the VDSL optional band (25K to 138K Hz) usage
Band Plan	Selectable band plan for each VDSL line on a per port basis Band Plan A: - Profile 998, Annex A of G.993.1; optimized for symmetric services Band Plan B: - Profile 997, Annex B of G.993.1; optimized for asymmetric services
Profile	Selectable spectrum profile of 8a/b/c/d, 12a/b, 17a, and 30a for frequency bands (Annex A, B and C) defined in G.993.2
Encoding	VDSL-DMT
VDSL2 Features	Selectable rate limit control Selectable target SNR (Signal to Noise Ratio) mode POTS voices passthrough
Layer 2 Functions	
Management Interface	Console; Telnet; Web browser; SSL; SNMP v1, v2c, v3
Gigabit Port Configuration	Port disable/enable Auto-negotiation 10/100/1000Mbps full and half duplex mode selection Flow control disable/enable
Gigabit Port Status	Display each port's speed duplex mode, link status and flow control status Auto-negotiation status, trunk status
Port Mirroring	TX/RX/both 1 to 1 monitor
Bandwidth Control	Ingress/Egress rate limit control Gigabit Port: • Allow to configure per 128Kbps VDSL2 Port: • Allow to configure per 5Mbps
VLAN	IEEE 802.1Q tag-based VLAN, up to 256 VLANs groups, out of 4094 VLAN IDs Port-based VLAN GVRP, up to 128 dynamic VLAN groups Q-in-Q tunneling Private VLAN Edge (PVE/Protected port) with two protected port groups
Link Aggregation	Static port trunk IEEE 802.3ad LACP (Link Aggregation Control Protocol) Supports 13 groups with 8 ports per trunk
QoS	4 priority queue Traffic classification based on - Port priority - 802.1p priority - DSCP/TOS field in IP Packet VoIP QoS by application protocol no.

IGMP Snooping	IGMP (v1, v2) Snooping, up to 256 multicast groups
Access Control List	IP-based Layer 3/Layer 4 ACL Up to 220 ACL rule entries
Security	Port Security (Disable per port of MAC address learning) Static MAC, MAC filter, IP/MAC binding
SNMP MIBs	RFC 1213 MIB-II RFC 2863 Interface MIB RFC 2665 EtherLike MIB RFC 1493 Bridge MIB RFC 2819 RMON MIB (Group 1, 2, 3,9)
Standards Conformance	
Regulatory Compliance	FCC Part 15 Class A, CE
Standards Compliance	IEEE 802.3 10BASE-T IEEE 802.3u 100BASE-TX IEEE 802.3z 1000BASE- SX/LX IEEE 802.3ab 1000BASE-T IEEE 802.3x Flow control and back pressure IEEE 802.3ad Port trunk with LACP IEEE 802.1D Spanning Tree Protocol IEEE 802.1w Rapid Spanning Tree Protocol IEEE 802.1p Class of Service IEEE 802.1Q VLAN Tagging IEEE 802.1x Port Authentication Network Control ITU-T G.993.1 (VDSL) G.997.1 G.993.2 VDSL2 RFC 768 UDP RFC 793 TFTP RFC 791 IP RFC 792 ICMP RFC 2068 HTTP RFC 1112 IGMP v1 RFC 2236 IGMP v2
Cables	• VDSL2: twisted-pair telephone wires (AWG24 or better) up to 1km • 10/100BASE-TX: 2-pair UTP Cat.5, up to 100m (328ft) • 1000BASE-T: 4-pair UTP Cat.5E, up to 100m • 1000BASE-SX: 50/125μm and 62.5/125μm fiber-optic cable, up to 550m • 1000BASE-LX: 9/125μm fiber optic cable, up to 10km 50/125μm and 62.5/125μm fiber-optic cable, up to 550m
Environment	
Operating	Temperature: -10 ~ 50 degrees C Relative Humidity: 10~ 90% (non-condensing)
Storage	Temperature: -20 ~ 70 degrees C Relative Humidity: 10~ 90% (non-condensing)

3.3 PHYSICAL SPECIFICATIONS:

■ **Dimensions:**

404 x 174 x 44.5mm (W x D x H), 1U height

■ **Weight:**

2.4 kg

■ **Front Panel:**

LED definition:

■ **System/Alert**

LED	Color	Function
PWR	**Green**	**Lights** to indicate that the Switch has power.
SYS	**Green**	**Lights** to indicate the system is working. **Off** to indicate the system is booting.
	Red	**Lights** to indicate that the FAN is down or the pin of RJ45 Alarm port is triggered.

■ **VDSL2 Interfaces (Port-1 to Port-8)**

LED	Color	Function	
VDSL2	**Green**	**Lights**:	To indicate the link through that port is successfully established.
		Blinks:	To indicate that the switch is actively sending/receiving data or VDSL sync over that port.
		Off:	To indicate the port is link down.

■ **TP/SFP Combo Interfaces (Port-9 to Port-10)**

LED	Color	Function	
LNK/ACT	**Green**	**Lights**:	To indicate the link through that port is successfully established.
		Blinks:	To indicate that the switch is actively sending or receiving data over that port.
1000	**Orange**	**Lights**:	To indicate that the port is operating at **1000Mbps**.
		Off:	If LNK/ACT LED is lit, it indicates that the port is operating at **10/100Mbps**. If LNK/ACT LED is off, it indicates that the port is link down.

3.4 ENVIRONMENTAL SPECIFICATIONS

Operating:

Temperature: -10°C ~ 50 degree C

Relative Humidity: 20% ~ 85% (non-condensing)

Storage:

Temperature: -20°C ~ 70 degree C

Relative Humidity: 20% ~ 95% (non-condensing)

3.5 ELECTRICAL SPECIFICATIONS

AC Power Input Voltage:	100 ~ 240VAC, 50 / 60Hz, auto-sensing.
Power Consumption (System on):	110V: 23 watts
	220V: 23 watts
Power Consumption (Full Load):	110V: 36 watts (max.)
	220V: 36 watts (max.)

3.6 REGULATORY COMPLIANCE

FCC Class B, CE

3.7 RELIABILITY

MTBF > 50,000 hrs @ 25 degrees C

3.8 BASIC PACKAGING

- The VDSL2 Switch x 1
- Quick Installation Guide x 1
- Power Cord x 1
- Rubber feet x 4
- Two rack-mounting brackets with attachment screws x 1
- RS232 to RJ45 Cable x 1
- SFP Dust Cap x 2

3.9 PACKING DIMENSIONS

Dimensions:	TBD
Weight:	TBD KG (gross weight)
Quantity:	2 pcs in one carton