

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



## 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 technology, Ethernet and VDSL2 (Very-high-data-rate Digital Subscriber Line 2). By co-working with PLANET developed VDSL2 CPE (Customer Premises Equipment) – the VC-23x series CPE, it offers the absolutely fastest data transmission speeds over existing copper telephone lines providing the ideal solution in the last mile.

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 built-in POTS splitter that helps the voice over telephone and network data to transmit over the same wire without being interrupted.

## Delivering High-Demand Services Connectivity for ISP / 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 the significant faster transmission speed than the current cable modems and the ADSL technology. The VC-820M applies the EoVDSL (Ethernet over VDSL) to providing up to 100Mbps download capability and makes many multi-media services come true on the local network:

- IPTV / HDTV
- VOD (Video on Demand)
- Voice over IP
- Video Conferencing / Video Phone
- On-Line Game
- Internet Radio / On-line Music
- Long Distance Education

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

## VDSL Interface

- 8 x RJ-11 connectors for VDSL2 connection
- 8 x RJ-11 connectors for telephone/POTS connection
- Built-in POTS splitter for each VDSL port
- Auto-speed function for VDSL2 link (by distance and cable quality)

## Ethernet Interface

- 2 10/100/1000Mbps TP and SFP shared combo interfaces
- Auto-MDI/MDI-X detection on Gigabit RJ-45 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 1.4km
- 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, 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

### Traffic Flow QoS Ensuring Application Services

The VDSL2 Switch contains robust QoS features such as port-based, 802.1p priority and IP TOS/DSCP. It guarantees the best performance of VoIP and video stream transmission, and empowers 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 transmit speed of each VDSL2 interface. Telecom and ISP 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 to meet. 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.

- STP, IEEE 802.1D (Classic Spanning Tree Protocol)
- MSTP, IEEE 802.1s (Multiple Spanning Tree Protocol, Spanning Tree by VLAN)
- 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 to 802.1p priority mapping
  - Port-based priority
- Strict priority and Weighted Round Robin (WRR) CoS policies
- Voice QoS by application source / destination protocol no.

### Multicast

- Supports IGMP Snooping v1 and v2
- IGMP Snooping v2 fast leave
- 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

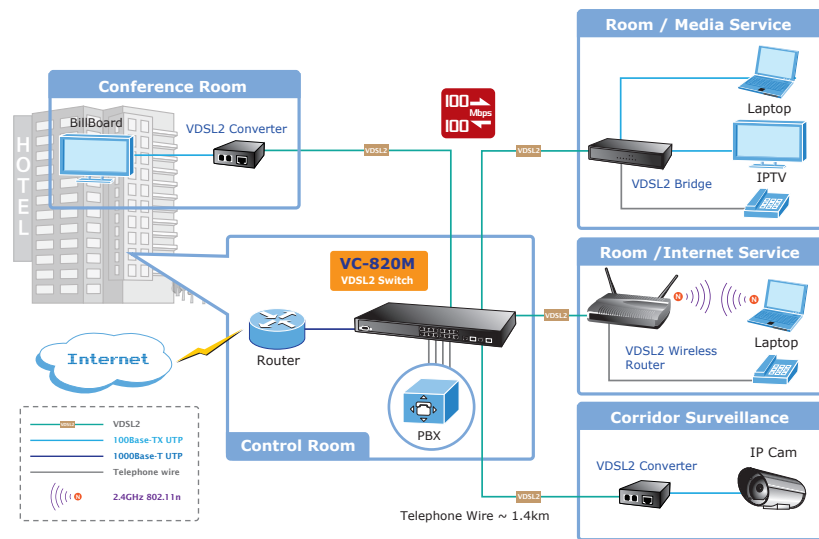
### Management

- 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
- Supports Ping function
- Reset button for system management
- 1 RS-232 male DB9 console interface for Switch basic management and setup

## Applications

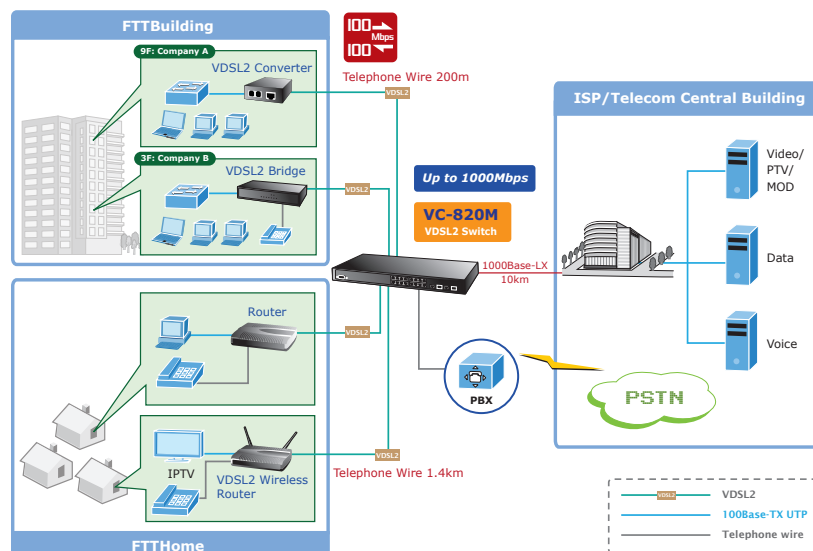
### MTU / MDU / Hospitality Solution

IPTV, VOD and digital message broadcasting services are the worldwide hot trends, and more and more service providers have gradually upgraded the client side devices from analog system to digital system gradually. PLANET VC-820M VDSL2 CO Switch and VC-23x VDSL2 CPEs are the best solutions to quickly providing cost-effective and high speed network services by utilizing the existing telephone wire infrastructure. IP network installation is straightforward and requires no new wiring. With enough bandwidth, the up to 100/100Mbps symmetric capability of the VC-820M enables to make many multi-media services on the local Internet to come true, such as VOD (Video on Demand), Voice over IP, video phone, IPTV, distance education, and so on. The VC-820M provides excellent bandwidth to meet the requirements for the triple play devices for entertainment and communication. This kind of infrastructure will minimize the burden on the Internet.



### Last Mile of FTTx Deployment

The VC-820M provides up to 100/100Mbps symmetric data rate within 300m and in long range connections, it provides ultra high performance to the pervasive telephone line network. With the two built-in mini-GBIC 1000Base-SX/LX SFP (Small Form-Factor Pluggable) interfaces, the deployed distance of the VC-820M can be extended from 550 meters (multi-mode fiber) up to above 10/50/70/120 kilometers (single-mode fiber). The various distances of SFP and Bidi (WDM) transceivers are optional for customers. The long distance support feature makes the VC-820M a great and ideal solution for FTTx (Fiber to the Building, Fiber to the Campus or Fiber to the Home) 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' homes.



## Product Specifications

Product	VC-820M
<b>Hardware Specifications</b>	
VDSL Interface	8-Port VDSL2, RJ-11 connectors 8-Port POTS/telephone, RJ-11 connectors
1000Mbps Copper Ports	2 10/100/1000Mbps RJ-45 auto-negotiation, auto MDI/MDI-X
SFP/mini-GBIC Slots	2 1000Base-SX/LX/BX, shared with Port-9 and Port-10
Console	1 x RS-232 Serial Port (DB9, 57600, N, 8, 1)
Surge Protect	3KV
Switch Architecture	Store-and-Forward
Switch Fabric	5.6Gbps / non-blocking
Switch Throughput	4.16Mpps @64Bytes
Address Table	8K entries
Share Data Buffer	256Kbytes
Maximum Frame Size	9K Bytes
Flow Control	Back pressure for half-duplex IEEE 802.3x pause frame for full-duplex
LED	<b>System:</b> Power, Status <b>Alert:</b> FAN 1, FAN 2, FAN 3 alert <b>VDSL:</b> VDSL Link/Sync. <b>Gigabit Port:</b> 1000 Link/Active, 100 Link/Active
Reset Button	< 5 sec: System reboot > 10 sec: Factory Default
Dimensions (W x D x H)	440 x 200 x 44 mm, 1U height
Weight	2.9 kg
Power Requirements	100~240V AC, 50-60 Hz
Power Consumption / Dissipation	58 watts maximum / 184 BTU/hr maximum
<b>VDSL2</b>	
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 pass through
<b>VDSL2 Features</b>	
Management Interface	Console, Telnet, Web Browser, SSL, SNMPv1 / 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 4041 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 of 8-Port trunk support																																						
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)																																						
<b>Standards Compliance</b>																																							
Regulation Compliance	FCC Part 15 Class A, CE																																						
Standards Compliance	<table border="0"> <tr><td>IEEE 802.3</td><td>10Base-T</td></tr> <tr><td>IEEE 802.3u</td><td>100Base-TX</td></tr> <tr><td>IEEE 802.3z</td><td>1000Base- SX/LX</td></tr> <tr><td>IEEE 802.3ab</td><td>1000Base-T</td></tr> <tr><td>IEEE 802.3x</td><td>Flow control and back pressure</td></tr> <tr><td>IEEE 802.3ad</td><td>Port trunk with LACP</td></tr> <tr><td>IEEE 802.1D</td><td>Spanning Tree Protocol</td></tr> <tr><td>IEEE 802.1w</td><td>Rapid Spanning Tree Protocol</td></tr> <tr><td>IEEE 802.1p</td><td>Class of Service</td></tr> <tr><td>IEEE 802.1Q</td><td>VLAN Tagging</td></tr> <tr><td>IEEE 802.1x</td><td>Port Authentication Network Control</td></tr> <tr><td>ITU-T</td><td>G.993.1 (VDSL) G.997.1 G.993.2 VDSL2 (Profile 30a Support),Annex A</td></tr> <tr><td>RFC 768</td><td>UDP</td></tr> <tr><td>RFC 793</td><td>TFTP</td></tr> <tr><td>RFC 791</td><td>IP</td></tr> <tr><td>RFC 792</td><td>ICMP</td></tr> <tr><td>RFC 2068</td><td>HTTP</td></tr> <tr><td>RFC 1112</td><td>IGMP version 1</td></tr> <tr><td>RFC 2236</td><td>IGMP version 2</td></tr> </table>	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 (Profile 30a Support),Annex A	RFC 768	UDP	RFC 793	TFTP	RFC 791	IP	RFC 792	ICMP	RFC 2068	HTTP	RFC 1112	IGMP version 1	RFC 2236	IGMP version 2
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 (Profile 30a Support),Annex A																																						
RFC 768	UDP																																						
RFC 793	TFTP																																						
RFC 791	IP																																						
RFC 792	ICMP																																						
RFC 2068	HTTP																																						
RFC 1112	IGMP version 1																																						
RFC 2236	IGMP version 2																																						
Cables	<ul style="list-style-type: none"> <li>▪ VDSL2: twisted-pair telephone wires (AWG24 or better) up to 1.4km</li> <li>▪ 10/100Base-TX: 2-Pair UTP Cat.5, up to 100m (328ft)</li> <li>▪ 1000Base-T: 4-pair UTP Cat.5E, up to 100m</li> <li>▪ 1000Base-SX: 50/125µm and 62.5/125µm fiber-optic cable, up to 550m</li> <li>▪ 1000Base-LX: 9/125µm fiber optic cable, up to 10km 50/125µm and 62.5/125µm fiber-optic cable, up to 550m</li> </ul>																																						
<b>Environment</b>																																							
Operating	Temperature: 0 ~ 50 degrees C Relative Humidity: 10~ 90% (non-condensing)																																						
Storage	Temperature: -10 ~ 70 degrees C Relative Humidity: 10~ 90% (non-condensing)																																						

## Ordering Information

VC-820M	8-Port VDSL2 + 2-Port Gigabit TP/SFP Combo Managed Switch
---------	---

## Related Products

MGB-Series Transceiver	1000Base-SX/LX SFP Transceiver
VC-230	VDSL2 Router
VC-231	Ethernet over VDSL2 Converter (Profile 30a)
VC-234	4-Port Ethernet over VDSL2 Bridge (Profile 30a)
VDR-300NU	802.11n Dual Band Wireless VDSL2 Router
VC-2400MR / VC-2400MR48	24-Port VDSL2 + 2-Port Gigabit TP/SFP Combo Managed Switch

## Available Modules for Mini-GBIC SFP Slots

MGB-GT	SFP-Port 1000Base-T mini-GBIC module
MGB-SX	SFP-Port 1000Base-SX mini-GBIC module
MGB-LX	SFP-Port 1000Base-LX mini-GBIC module
MGB-L30	SFP-Port 1000Base-LX mini-GBIC module - 30km
MGB-L50	SFP-Port 1000Base-LX mini-GBIC module - 50km
MGB-L70	SFP-Port 1000Base-LX mini-GBIC module - 70km
MGB-L120	SFP-Port 1000Base-LX mini-GBIC module -120km
MGB-LA10	SFP-Port 1000Base-LX mini-GBIC module - LC WDM(TX:1310nm), SM, 10km
MGB-LB10	SFP-Port 1000Base-LX mini-GBIC module - LC WDM(TX:1550nm), SM, 10km
MGB-LA20	SFP-Port 1000Base-LX mini-GBIC module - LC WDM(TX:1310nm), SM, 20km
MGB-LB20	SFP-Port 1000Base-LX mini-GBIC module - LC WDM(TX:1550nm), SM, 20km
MGB-LA40	SFP-Port 1000Base-LX mini-GBIC module - LC WDM(TX:1310nm), SM, 40km
MGB-LB40	SFP-Port 1000Base-LX mini-GBIC module - LC WDM(TX:1550nm), SM, 40km