

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



High Performance VDSL2 Data Rate over Existing Phone Lines

PLANET VC-2400MR Series is a 24-Port VDSL2 Managed CO Switch (Central Office) perfectly for the networking applications of Telecom, ISP (Internet Service Provider), SI (System Integration), IP Surveillance provider and etc. It is based on two core networking technologies, 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, which provides the ideal solution in the last mile.

Each VDSL2 interface of the VC-2400MR Series 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-2400MR Series has built-in POTS splitter that helps the voice over telephone and network data to transmit at the same wire without being interrupted.

High Speed Connectivity for ISP / Triple Play Devices

As the demand of home broadband connections increases for home-communication and entertainment needs, VDSL2 technology is the next step media to support the integration of home services and provide significant faster transmission speed than current cable modems and ADSL technology. The VC-2400MR Series applies the EoVDSL (Ethernet over VDSL) to provide up to 100Mbps download capability and brings many Multi-Media services come true on local network:

- » IPTV / HDTV
- » Video Conference / Video Phone
- » Internet Radio / On-Line Music
- » VOD (Video on Demand)
- » On-Line Game
- » Long distance education
- » Voice over IP

The VC-2400MR Series gives the excellent bandwidth to satisfy the triple play devices for home entertainment and communication.

Traffic Flow QoS Ensuring for Application Services

The VDSL2 Switch contains robust QoS features such as Port-Based, 802.1p priority and also IP TOS/DSCP. It guarantees the best performance at VoIP and Video stream transmission and empowers the enterprises to take full advantages 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 by different demands.

Efficient Management

Afford the current network to grow and expand, the PLANET VC-2400MR series provides **console** and **telnet** command line interface, advanced **WEB** and **SNMP** management interface to fill this kind of demand. 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-2400MR Series 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 comprises of **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.

Extremely Reliable Design to Ensure Continuous Operation

Power Redundant

The VC-2400MR Series supports the optional hot-swappable **Redundant Power System (RPS)** to ensure continuous operation. The VC-2400MR equips with one 100~240V AC power supply unit and the VC-2400MR48 equips with one DC -48V power supply unit on their standard package. To enhance the reliability, both the VC-2400MR and VC-2400MR48 provide one spare power supply unit slot for optional 100~240V AC or DC -48V redundant power supply installation. The continuous power systems are specifically designed to handle high tech facilities requiring the highest power integrity available. Also, the -48V DC power supply implemented makes the VC-2400MR Series VDSL2 Switch as a telecom level device that can be located at the electronic room.



VC-2400MR – One 100~240V AC



VC-2400MR48 – One -48V DC

Temperature and FAN Status Monitoring

The Managed VDSL2 Switch is equipped with temperature sensor and cooling fans to ensure reliable operation. Whenever there is abnormal temperature detected or cooling fan service stops, the Managed VDSL2 Switch would display related information on the Web management interface. Therefore, it helps the administrator to efficiently manage the Managed VDSL2 Switch operation.



Power / FAN Status Monitoring

KEY FEATURES

VDSL INTERFACE

- **24** Full-Duplex VDSL links via **RJ-21(Telco-50)** connector
- **24** corresponding POTS lines via **RJ-21(Telco-50)** connector
- Built-in **POTS splitter** for each VDSL port
- Link to VC-231 / VC-234 / VC-230N CPE Bridge
- 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 to 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
- Support **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 (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
- 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

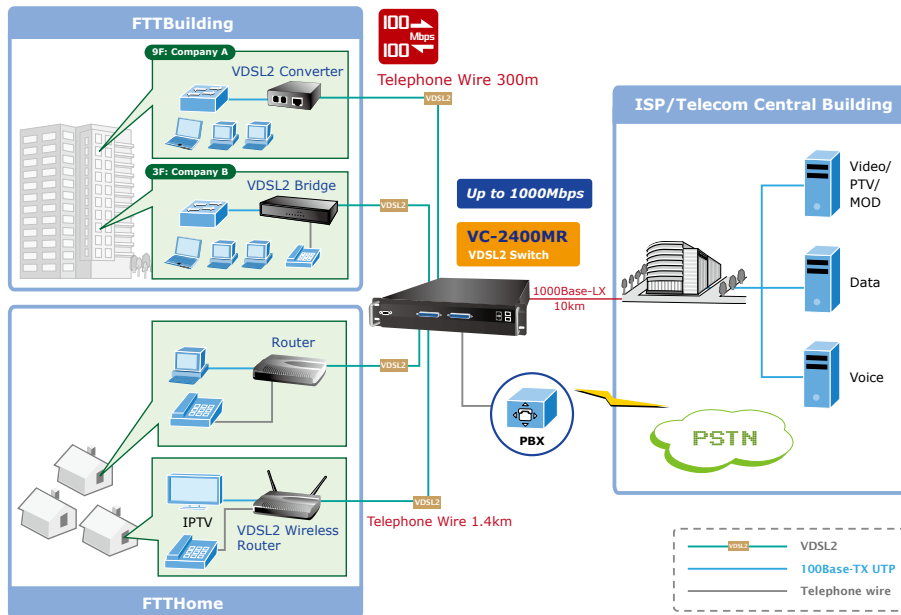
REDUNDANT POWER SYSTEM

- 100~240V AC / 48V DC Dual power redundant
- Active-active redundant power failure protection
- Backup of catastrophic power failure on one supply

APPLICATIONS

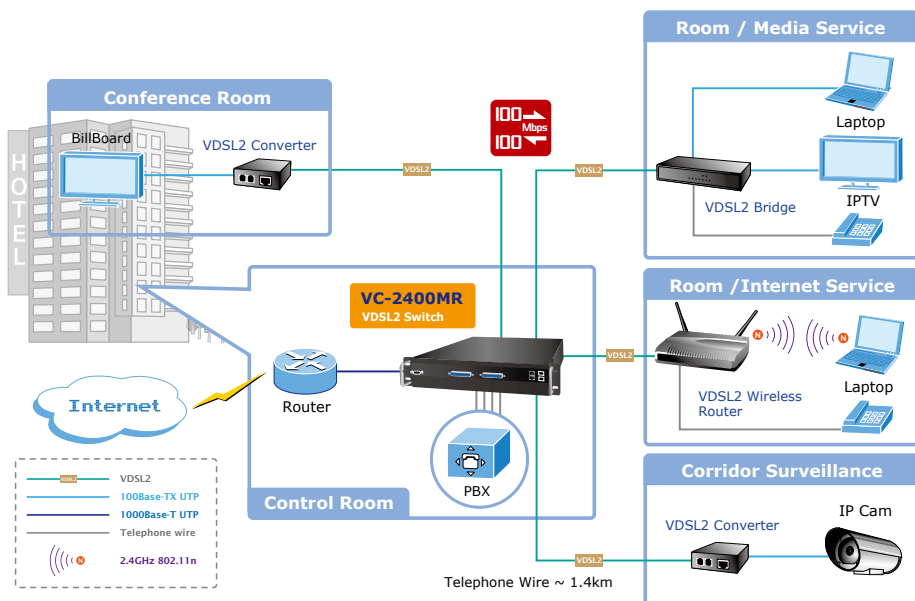
Last Mile of FTTx Deployment

The VC-2400MR Series 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 Factor Pluggable) interfaces, the VC-2400MR Series can be deployed from within 550 meters (Multi-mode fiber) up to above 10/50/70/120 kilometers (Single-mode fiber). The various distances of SFP (small-form factor) and Bidi (WDM) transceivers are optional for customers. The long distance support feature makes the VC-2400MR Series 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' home.



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. The PLANET VC-2400MR Series VDSL2 CO Switch and VC-23x VDSL2 CPEs are the best solution to quickly provide 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 100/100Mbps symmetric capability of VC-2400MR Series enables many Multi-Media services on local Internet to come true, such as VOD (Video on Demand), Voice over IP, Video phone, IPTV, distance education, and so on. The VC-2400MR Series provides excellent bandwidth to satisfy the triple play devices for entertainment and communication. Meanwhile, this kind of infrastructure will minimize the burden on the Internet.



SPECIFICATION

Product	24-Port VDSL2 + 2-Port Gigabit TP/SFP Combo Managed Switch		
Model	VC-2400MR	VC-2400MR48	
Hardware Specification			
VDSL Interface	24-Port VDSL2 Line via 1 RJ-21 (Telco-50) connector 24-Port POTS/Telephone via 1 RJ-21 (Telco-50) 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-25~Port-26		
Console	1 x RS-232 Serial Port (DB9, 57600, N, 8, 1)		
Surge Protect	3KV		
Switch Architecture	Store-and-Forward		
Switch Fabric	8.8Gbps / non-blocking		
Switch Throughput	6.547Mpps @64Bytes		
Address Table	8K entries		
Share Data Buffer	512Kbytes		
Maximum Frame Size	9K Bytes		
Flow Control	Back pressure for Half-Duplex IEEE 802.3x Pause Frame for Full-Duplex		
LED	System: Power, SYS Status Alert: FAN 1, FAN 2, Power 1, Power 2 VDSL: VDSL Link/Sync. Gigabit Port: 1000 Link/Active, 100 Link/Active		
Reset Button	< 5 sec: System reboot > 10 sec: Factory Default		
Dimension (W x D x H)	440 x 300 x 44 mm, 2U height		
Weight	6.4kg		
Power Requirement	AC Input	100~240V AC, 50-60 Hz	Optional AC Power module
	DC Input	Optional DC Power module	-48V DC; Range: 30V~60V
Power Consumption / Dissipation	130Watts maximum / 404 BTU/hr maximum		
Temperature	0~40 Degree C		
Humidity	5~95% (non-condensing)		
Other	Reset Button for system reset and Reset to factory default		
VDSL2			
VDSL2 Standard	Comply 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: <ul style="list-style-type: none"> Profile 998, Annex A of G.993.1; Optimized for symmetric services Band plan B: <ul style="list-style-type: none"> 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		
Layer 2 Function			
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: <ul style="list-style-type: none"> Allow to configure per 128Kbps VDSL2 Port: <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> • 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) RFC-2737 Entity MIB	
Standards Conformance		
Regulation Compliance	FCC Part 15 Class A, CE	
Standards Compliance	IEEE 802.3 IEEE 802.3u IEEE 802.3z IEEE 802.3ab IEEE 802.3x IEEE 802.3ad IEEE 802.1D IEEE 802.1s IEEE 802.1p IEEE 802.1Q IEEE 802.1x ITU-T RFC 768 RFC 793 RFC 791 RFC 792 RFC 2068 RFC 1112 RFC 2236	10Base-T 100Base-TX 1000Base-SX/LX 1000Base-T Flow Control and Back pressure Port trunk with LACP Spanning tree protocol Multiple Spanning tree protocol Class of service VLAN tagging Port authentication network control G.993.1 (VDSL) G.997.1 G.993.2 VDSL2 (Profile 30a Support), Annex A UDP TFTP IP ICMP HTTP IGMP version 1 IGMP version 2
Cables	<ul style="list-style-type: none"> • VDSL2: twisted-pair telephone wires (AWG24 or better) up to 1.4km • 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		
Temperature	0~40 Degree C	
Humidity	5~95% (non-condensing)	

ORDERING INFORMATION

VC-2400MR	24-Port VDSL2 + 2-Port Gigabit TP/SFP Combo Managed Switch
VC-2400MR48	24-Port VDSL2 + 2-Port Gigabit TP/SFP Combo Managed Switch with 48V DC Power

RELATIVE PRODUCT

VC-231	Ethernet over VDSL 2 Converter (30a, 1 x RJ-11, 1 x RJ-45)
VC-234	Ethernet over VDSL 2 Bridge (30a, 2 x RJ-11, 4 x RJ-45)
VC-230	Ethernet over VDSL2 Router (4*RJ45, 1*VDSL2, 1*Phone -30a)
VC-230N	802.11n wireless VDSL2 Router (4*RJ45, 1*VDSL2, 1*Phone -30a)

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