

GPON Products

■ Datasheet



ubiQuoss

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GPON Solution >> U9264H



Overview

The ubiQuoss U9264H is a high density, high capacity, and multi-functional GPON FTTH Optical Line Terminal. U9264H, built on a high capacity Layer 3 switch platform, is an efficient and cost effective solution optimized for service providers to offer reliable TPS services over GPON.

U9264H has total 14 slots that can accommodate 2 SCUs (Switch & Control units), 2 PSUs (Power Supply Units), 2 LIUs (Line Interface Units), and 8 PIUs (PON Interface Units). The LIU slots of U9264H can accept 8-port 1G card, 2-port 10G card, or 4-port 10G card up to 2, meanwhile the PIU slots can accept 8-port 2.5G GPON up to 8.

U9264H adapts full redundancy design of SCU and PSU to improve availability and reliability of system. On top of that, U9264H offers Layer 2 switching, Layer 3 routing, QoS, OAM, and Security features as well.

U9264H can accommodate maximum 4096 subscribers in a typical GPON deployment with 1:64 splits, since it can support total 64 PON ports.

- Future broadband capable platform of multi slot chassis
- Easy and flexible deployment
- Non-blocking architecture
- All Front Access
- Packet processing functionalities for IP-based "Triple Play Service" delivery
- 19 inch Chassis with 8 RU Height, 14 slots
- 960Gbps switching capacity,
- 64 GPON ports
- 2 x SCU (Switch & Control Unit), 8 x PIU (PON Interface Unit), 2 x LIU (Line Interface Unit), 2 x PSU (Power Supply Unit)
- GPON Optic : Support of Laser Class B+/C+
- PON Ranging : typical 20Km / Max 60Km

Features

- System Architecture
 - Medium sized Chassis : 14 slots, 8RU, 19 inch mounting
 - 3 FAN Module
 - AC / DC Power Module(Redundancy)
- Slot configuration
 - Total 14 slots: 2 PSU slots / 10 data slots / 2 Switch & CONTROL slot
- PON interface
 - Max. 8 slots: up to 64 PONs
 - All Cards and Modules Hot-swapping
- Network interface
 - Max. 2 slots: 8-port 1GE / card or 2/4-port 10GE / card
- Subscriber Capacity
 - GPON: 64 GPON Max. 4096 subscribers(1:64 split)
- Switching capacity: 960Gbps/310Mpps
- Switching Fabric: 800Gbps(80G per slot)
- Fully Redundant System
 - Fabric and Control card
 - Power Module (AC/DC)
- Support Various SFP/XFP transceiver
- Management :1 port 100Base-Tx & RS-232
- Module based High Capacity L3 switching GPON Common Platform
 - 2 slots Power Supply Unit (PSU)
 - 8 slots PON Interface Unit (PIU)
 - 2 slots Line Interface Unit (LIU)
 - 2 slots Switch & Control Unit (SCU)
- Various Line Interface Unit (LIU)
 - 2/4 port 10GE module (Up to 8 X 10GE ports, 2 slots)
 - 8-port 1G module (Up to 16 X 1GE ports, 2 slots)
- PON Interface Unit(PIU)
 - 8-port GPON module (Up to 64 GPON ports, 8 slots): Max. 4096 TPS Subscriber per chassis (1:64 split)

Specifications

Hardware

Product Specification	
Slot capacity	14 slots
Full-duplex Switching Capacity	960G
System Throughput	310Mpps (With LIU 2X)
Full-duplex Capacity per slot	80G per slot
Physical	437mm(W) x 354.4mm(H) x 295mm(D) : 19inch Rack Mount, 8RU height
Chassis per rack	4 chassis(2200mm : 45RU)
Electrical specifications for the AC/DC power	
Total power Consumption	Max. 800W
Rated input voltage	210~240VAC(47~63Hz), -48VDC
Environmental conditions	
Temperature	0 ~ 50°C
Humidity	90%
Management Interfaces	RS-232C, 10/100 Base-T

Software	
Features	Description
PON Features	Full ITU-T G.984.x GPON OLT functionality. 4K port-ID and 1K alloc-ID Support ITU-T G.984.4 ONT OMCI Multiple T-CONTs per ONU (ONT) Wire speed processing On-chip embedded reassembly buffer per GPON channel 2.5 Gbps downstream rate on each PON channel 1.25 Gbps upstream rate on each PON channel Supports up to 512 Alloc-IDs per GPON channel Internal GPON SERDES and Burst CDR 128-bit Advanced Encryption Standard (AES) encryption engine for PON security and privacy with up to 128 unique keys. Flexible optical transceiver interface for multiple vendor support. ITU-T G.984 compliant Forward Error Correction (FEC) encoding and decoding for an improved link budget. Hardware-based configurable Dynamic Bandwidth Allocation (DBA) IEEE 802.1D bridging: 8K MAC Address learning and aging on local interface IEEE 802.1p with four priority queues IEEE 802.1Q VLAN mapping
L2 Features	TR-156 Compliant Max 32K Mac Address Table Max 4K VLANs, 802.1Q Support Private VLAN 802.3ad Link Aggregation Load-balancing based on source and destination MAC/IP 802.1d Spanning Tree Protocol(STP) 802.1w Rapid STP(RSTP) 802.1s Multiple STP(MSTP) Rapid Per VLAN Spanning Tree Plus(RPVST+) IGMP v1/v2/v3, snooping Max 4K Group Support Static Mac Address Port Mirroring
L3 Features	Static Routing RIPv2(IPv4) OSPFv2(IPv4) BGP4(IPv4) VRRPv2(IPv4) PBR(Policy Based Routing) ECMP Max 8 Routes Max 12K Routing Entries PIM-SM PIM-SSM IGMP v2/v3 IGMP Proxy Max 1K Group Support PIM-ECMP Support IGMP Join Filter/Count Limit

	<p>DHCP Server/Relay</p> <p>Blocks illegal IP users</p> <p>DHCP Snooping</p> <p>DAI(Dynamic ARP Inspection)</p>
QoS Features	<p>Layer 2: Source/Destination MAC Address, VLAN ID, 802.1p Field</p> <p>Layer 3: Source/Destination IP Address, DSCP</p> <p>Layer 4: Source/Destination TCP/UDP Port</p> <p>Marking/Remarking: DSCP, 802.1p</p> <p>Packet Drop</p> <p>Mirroring/Redirect to Port</p> <p>Metering, Rate Limiting with 64Kbps unit</p> <p>8 queues per port</p> <p>SPQ, DWRR, Hybrid (SPQ+DWRR)</p> <p>Egress rate shaping per port/queue with 64Kbps unit</p>
Security Features	<p>Netbios, NBT filtering</p> <p>DHCP filtering</p> <p>Packet filtering with ACLs</p> <p>Illegal Source MAC address block</p> <p>ALL 0's, 1's, System Mac, Default G/W Mac</p> <p>Illegal Source IP address block</p> <p>Broadcast, DLF, Multicast packet rate control</p> <p>Source MAC based excessive traffic Block</p> <p>Static Mac address</p> <p>Mac filtering</p> <p>Max Mac Number limit</p> <p>Port based Self Loop Detect</p>
System Security Features	<p>RADIUS,</p> <p>TACACS+</p> <p>Telnet, SNMP with ACL</p> <p>CPU Packet Filtering with ACL</p> <p>CPU overload Packet traffic sender block</p> <p>TCP sync attack protection with sync cookies</p> <p>CPU packet rate-limit</p> <p>Management packet priority control</p> <p>Gratuitous ARP</p>
Management Features	<p>Telnet, SSH, SNMP v1/v2/v3</p> <p>GUI Based Management through EMS</p> <p>Remote OS Upgrade using TFTP, FTP</p> <p>Dual Flash Image</p> <p>Remote Configuration Data Download</p> <p>NTP</p> <p>Packet monitoring with TCPDUMP</p> <p>RMON, Syslog</p> <p>Type based Port, CPU Packet statistics</p>

GPON Solution >> OLT >> U9016B



Overview

U9016B is designed to be placed anywhere which can be powered by either DC or AC source. It has compact 2U box type form factor which enables all front access.

U9016B comprises of SCU (Switch and Control Unit), PSU (Power Supply Unit), and PIU (PON Interface Unit) along with the 2U chassis. The unit has 2 slots for PIU which has 8 (eight) 2.5GPON ports on the card. And the SCU of U9016B has 4-port 1000Base-X (SFP) and 2-port 10GBase-R (SFP+) itself for uplink interfaces. The PSUs are hot swappable regardless of powering types.

The PIUs for U9016B are fully compatible with U9264H, which will be a great benefit in reducing CAPEX and OPEX when a service provider builds a PON network with multiple sets of U9016B and U9264H.

Features

- 19 inch Rack mountable chassis structure
- 3 Card Slots
- Hot Swappable Cards
- 1G x 4 ports (SFP), 10G x 2 ports (SFP+)
- 1.25G GE-PON 8 ports per Card
- 2.5G GPON 8 ports per Card
- 1 FAN Interface Module
- Dual Power Supply(AC, DC), Hot Swappable

Specification

Hardware

Item	Description
Number of PON Interface	8-Port Hot-Swappable card Max 2 Cards
Network Interfaces	4-port 1000Base-X (SFP), 2-port 10GBase-R(SFP+)
Management Interfaces	10/100Base-TX, RS-232 (Console)
Power Supply	AC type: 100-240VAC, 50/60Hz
	DC type : -48V
Dimension (WxDxH)	Main body: 482mm x 88.8mm x 295mm
Operating Temperature	-20~60°C

Software

Features	Description
PON Features	Full ITU-T G.984.x GPON OLT functionality. 4K port-ID and 1K alloc-ID Support ITU-T G.984.4 ONT OMCI Multiple T-CONTs per ONU (ONT) Wire speed processing On-chip embedded reassembly buffer per GPON channel 2.5 Gbps downstream rate on each PON channel 1.25 Gbps upstream rate on each PON channel Supports up to 512 Alloc-IDs per GPON channel Internal GPON SERDES and Burst CDR 128-bit Advanced Encryption Standard (AES) encryption engine for PON security and privacy with up to 128 unique keys. Flexible optical transceiver interface for multiple vendor support. ITU-T G.984 compliant Forward Error Correction (FEC) encoding and decoding for an improved link budget. Hardware-based configurable Dynamic Bandwidth Allocation (DBA) IEEE 802.1D bridging: 8K MAC Address learning and aging on local interface IEEE 802.1p with four priority queues IEEE 802.1Q VLAN mapping
L2 Features	802.1Q, Max 4K VLANs, 4K VLAN IDs Private VLAN 802.3ad Link Aggregation Load-balancing based on source and destination MAC/IP 802.1d Spanning Tree Protocol 802.1w Rapid STP Per VLAN STP IGMP v1/v2, Snooping Max 1K Group Support Static Mac Address Port Mirroring
L3 Features	Static Routing RIP, OSPF, BGP Default Gateway VRRP

	ECMP Max 8 paths PBR (Policy Based Routing) PIM-SM, IGMP v2 Max 1K Group Support DHCP Server/Relay Blocking of illegal IP users DAI (Dynamic ARP Inspection)
QoS Features	Layer 2: Source/Destination MAC Address, VLAN ID, COS Field Layer 3: Source/Destination IP address, DSCP Layer 4: Source/Destination TCP/UDP port TCP control flag Marking/Remarking: DSCP, COS Packet Drop Mirroring to Port, Redirect to Port Metering, Rate Limiting with 1Mbps unit COS – Queue DSCP - Queue 8 queues per port SPQ, DWRR, Hybrid (SPQ+DWRR) Egress rate shaping per port/queue with 1Mbps unit
Security Features	Netbios, NBT filtering DHCP filtering Packet filtering with ACLs Block the illegal Source MAC address ALL 0's, 1's, System Mac, Default G/W Mac Block the illegal Source IP address Broadcast, DLF, Multicast packet rate control Cut-off of illegal traffic per Source MAC Static Mac address Mac filtering Limitation on Maximum Mac counts Port based Self Loop Detect
System Security Features	RADIUS, TACACS+ Telnet, SNMP with ACL CPU Packet Filtering with ACL Isolate the users who generate overly CPU-intensive Packet TCP sync attack protection with sync cookies CPU packet rate-limit Management packet priority control Gratuitous ARP

GPON Solution >> ONU >> E5024

PON ONU based on GE L2 switch



Overview

E5024 is an Gigabit Ethernet L2 switch devised as a PON ONU providing high-speed high-capacity broadband multimedia service of up to 1Gbps. E5024 can be applied to FTTB or FTTC based network users enabling high performance switching service economically by using of 1000Mbps link speed.

E5024 can have twenty-four 1000base-T (UTP RJ-45) ports and two optional modules that support either up to two PON ports (GPON or EPON) as well as 1000Base-T or 1000Base-X /100Base-FX (SFP) ports.

Besides LAN switching functionalitis, E5024 also provides QoS and multicasting and has increased the level of security with 802.1x.

E5024 is capable of supporting hardware-based bandwidth management and Quality of Service functionality that enable corporate users and ISPs to provide differentiated internet services in the environment of next generation network.

Features

- 24 ports 1000Base-T
- 2 Optional Slot Uplink Module(Hot-Swappable): 100Base-FX, 1000Base-T, 1000Base-X
- Uplink Module
 - 1 port Combo : 100Base-FX/1000Base-X (SFP) or 1000Base-T (RJ-45)
 - 1 port EPON 1.25G
 - 1 port GPON 2.5G
- Power: 110~220 VAC / 50~60 Hz
- 56Gbps Non-Blocking Switch Fabric
- 38Mpps Throughput
- 128MB Main Memory, 32MB Flash Memory
- Max. 16K MAC Address Support for Switching
- 256 VLANs Support
- Filtering: DHCP, NetBios, NBT, Mac, IP Packet Filtering, IP-Subnetwork range blocking, Selective handling of specified IP address, Detection of IP address collision
- Alert when traffic/CPU load threshold reached
- MAC address falsification & flooding prevention (static MAC, MAC count)
- Multicast/broadcast flooding prevention (broadband controlled & auto-lift after a period of time)
- Secure Network: DoS prevention, Warm virus Filtering
- IEEE 802.1p, IEEE802.1Q, IEEE802.1D
- Rate Limit: @ 1Mbps (100M & Gigabit port)
- Egress Traffic Shaping (Rate Limit) per port
- Ingress Traffic Policing per flow/packet
- VLAN, Multi VLAN, STP, RSTP, IGMP snooping & query
- Max. 128 ACL for QoS standards and filtering
- Gateway IP Address Resolution Protocol (GARP)
- IGMP v1/v2, IGMP Snooping, IGMP Snooping Proxy Reporting supported
- SNMP trap for up/down linking and system initialization
- TFTP, CLI, Telnet, Syslog, SNMP I/II, RMON, Port Mirroring

Application


- L2 Workgroup Switch over Metro Ethernet Network
- ONU over PON network
- Dynamic and Distributed Service, Contents and Applications Delivery to the MAN
- Enabling ISPs to construct Wireless broadband access networks
- Support intra-network environment for business and/or factory where power supply is not prepared.

Specification

Hardware Specification	
System Architecture & Console	24 fixed 1000Base-T ports & 2 uplink slots (Expansion Module) (Auto-negotiation, Auto-Sensing, Auto MDI/MDIX) 2 Expansion Module: 1 Port per Module - 100Base-FX/1000Base-X (SFP) or 1000Base-T(RJ-45) - EPON module - GPON module RS-232C Serial Console Port (RJ-45 type)
Memory	128MB Main Memory 32MB Flash Memory
Physical Dimension	19 inch Rack Mount Type, 1RU 482mm(W, Rack Guide included)x44mm(H)x220mm(D)
Environment Conditions	
Power	110~220 VAC / 50~60 Hz
Power consumption	Max. 40W
Operating temperature	0℃ ~ 50℃ (-20~60℃)
Storage temperature	-30℃ ~ 70℃
Performance	
Switching Fabric	56Gbps non-blocking
Throughput	38Mpps wire-speed L2 Switching
Capacity	
MAC Address	Up to 16K MAC Management
VLAN	256 VLAN (VLAN ID range 1~4094) Private Edge VLAN, 8021.Q Tagged-VLAN Link Aggregation (802.3ad): 13 group, Max 8 port/group
Services and Features	
Filtering, Security & QoS	IEEE 802.1p QoS, Diff-serv support, Congestion Management Filtering: Mac address, Mac address Count limit, Netbios, NBT, TCP Sync cookies, TCP RST-UNKNOWN, Martain-Filter, DHCP, Broadcast Storm, selective handling of specified IP address, IP Packet filtering, detection of IP address collision Virus Filtering: DoS prevention, Warm virus Filtering Subscriber Traffic control by ACLs (Access Control Lists) Queue: 8, SPQ, WRR, SPQ+WFO Service differentiation for Control Packet (Ping, Telnet, SNMP, FTP, TFTP, etc)
Management	SNMP v1/v2, RMON, MIB-I/II, log flash, Subscriber (Block/unblock), Last MAC Management, Remote S/W Upgrade, Telnet, TFTP, FTP, Port Mirroring, CLI, Syslog, Access level control for administrator Radius, TACAS+
Functions	STP(802.1D), RSTP(802.1w), Self-Loop controlled DHCP relay/DHCP snooping, DHCP option 82 Storm-control (L2DLF, Broadcast, Multicast),

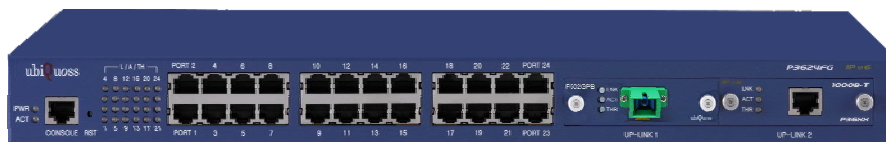
	<p>Flood-Guard (pps control), CPU Filter(IP+TCP/UDP Port NO)</p> <p>NTP (Network Time protocol) Client</p> <p>Jumbo Frame packet support: 9022byte</p> <p>Stacking & IP Clustering: 8 Clustering</p>
Multicasting Protocol	<p>IGMP v2.0,</p> <p>IGMP snooping, 255 snoop Table, IGMP query, IGMP Join/Leave Suppression, IGMP Fast Leave, IGMP Static Join, IGMP proxy reporting</p>
Standards	
IEEE Standards	<p>802.1D Spanning Tree Protocol</p> <p>802.1w RSTP</p> <p>802.1p Priority Control</p> <p>802.1Q VLAN</p> <p>802.3 10Base-T Ethernet</p> <p>802.3u 100Base-X Fast Ethernet</p> <p>802.3x Flow Control</p> <p>802.3ad Link Aggregation</p> <p>802.3z 1000Base-X Gigabit Ethernet</p>
IETF Standards	<p>RFC 768 UDP</p> <p>RFC 791 IP</p> <p>RFC 903 TCP</p> <p>RFC 2131 DHCP Relay</p> <p>RFC 2236 IGMP v2</p> <p>RFC 1112 IGMP</p>
Management Standards & MIB	<p>RFC 783 TFTP</p> <p>RFC 854 Telnet</p> <p>RFC 1157 SNMP v1</p> <p>RFC 1213 MIB-I I</p> <p>RFC 1493 Bridge-MIB</p> <p>RFC 1757 RMON-MIB</p> <p>RFC 1902 SNMP v2</p> <p>RFC 1907 SNMP-MIB</p> <p>RFC 1643 Ethernet-like Internet MIB</p>

GPON Uplink Module

Model Name	Picture	Specification
F502GPB		<p>- Downstream 2.5G / Upstream 1.25G</p> <p>- Distance : 20Km</p>

GPON Solution >> ONU >> P3624FG

GPON ONU based on FE L2 switch



Overview

P3624FG is an L2 switch devised as a GPON MDU providing FTTx broadband multimedia service. With its rack mount design and ease of installation, the P3624FG provides a cost effective way in supporting broadband connection to end users. When the switch is equipped with PON(passive optical network) expansion module, the reach distance of uplinks can be from 10Km up to 20Km. Besides the PON expansion module P3624FG can also have optional 2-port 1000BASE-X module or optional 1000BASE-T for the active optical network connectivity. The qualities of service features facilitate the deployment of triple play services such as VoIP, IPTV, and high-speed internet access as much as desirable.

The P3624FG supports comprehensive OAM functions for remote administration with SNMP v1/v2/v3 and provides easy-to-use management interface of Cisco-alike CLI through the Telnet and console.

Features

- Up to 24 10/100Base-TX ports (Fixed)
- 2 Option Module Slots: GPON module along with 100Base-FX, 1000Base-T and 1000Base-X
- Fully compliant of G.984.x set of standards
- Power : AC/DC
- 12.8 Gbps Non-Blocking Switch Fabric
- Max 6.5 Mpps L2 Switching, 64MB Main Memory, 16MB Flash Memory
- Up to 16K MAC Address Support for Switching
- Up to 256 VLANs Support
- Filtering : DHCP, NetBios, NBT, Mac, Broadcast Storm, IP Packet Filtering, IP-Subnetwork range blocking, Selective handling of specified IP address, Detection of IP address collision
- Secure Network : DoS prevention, Warm virus Filtering
- IEEE 802.1p, IEEE802.1Q, IEEE802.1D, IEEE802.3x
- Rate Limit : @ 1Mbps (100M & Gigabit port)
- Egress Traffic Shaping (Rate Limit) per Port
- Ingress Traffic policing per flow/packet
- VLAN, Multi VLAN, STP, RSTP, IGMP snooping & query
- Port Trunking, Link Aggregation(802.3ad), Port enable/disable, Stacking
- TFTP, CLI, Telnet, Syslog, SNMP I / II , RMON, Port Mirroring.

Specification

Hardware Specification	
System Architecture & Console	24 fixed 10/100Base-TX ports (Auto-negotiation, Auto-Sensing, Auto MDI/MDIX) 2 Expansion Module for uplink RS-232C Serial Port (RJ-45 type)
UP Link Interface	GPON Optical Interface EPON Optical Interface 10/100BASE-TX (RJ-45) 1000BASE-T (RJ-45) 1000BASE-SX (SC Type) 1000BASE-LX (SC Type)

	1000BASE-LH (SC Type) 100BASE-FX (SC Type)
Memory	64MB Main Memory 16MB Flash Memory
Physical Dimension	19 inch Rack Mount Type 44mm(H)x482.6mm(W)x260mm(D) Max 4Kg
Environment Conditions	
Power	AC, DC
Input power and frequency	110~220 VAC / 50~60 Hz, -44 ~ -52 VDC
Power consumption	Max 16.64 W
Operating temperature	0℃ ~ +50℃
Storage temperature	-20℃ ~ +60℃
Performance	
Switching Fabric	12.8 Gbps non-blocking
Throughput	6.5 Mpps wire-speed L2 Switching
Capacity	
MAC Address	Up to 16K MAC Management
VLAN	Up to 256 VLAN Private Edge VLAN, 802.1Q Tag Vlan (Max 256 Tag Vlan) Link Aggregation (802.3ad) : 13 group, Max 8 port/group
Services and Features	
Filtering, Security & QoS	IEEE 802.1p QoS, Diff-serv support Congestion Management Filtering : Mac address, Mac address Count limit, Netbios, NBT, DHCP, Broadcast Storm, Selective handling of specified IP address, IP Packet filtering, Detection of IP address collision, IP Sub-network range blocking Virus Filtering : DoS prevention, Warm virus Filtering Subscriber Traffic control by ACLs (Access Control Lists)
Bandwidth Management	Hardware-based Rate Limiting Rate Limiting : 1Mbps per Ethernet port Rate Limiting : 1Mbps per Gigabit port Egress Traffic Shaping per Port Ingress Traffic Policing per Flow/Package Hardware Based Symmetric & Asymmetric Rate Limiting
Management	SNMP v1/v2, RMON, MIB-I/II Remote S/W Upgrade, Telnet, TFTP, FTP, Port Mirroring CLI, Syslog, Access level control for administrator, RADIUS
Functions	STP(802.1D), RSTP(802.1w) DHCP relay/DHCP snooping NTP (Network Time protocol) Client Jumbo Frame packet support : 9022byte Stacking & IP Clustering : Max 8 Stacking
Multicasting Protocol	IGMP v2.0, IGMP snooping, IGMP proxy-reporting
Standards	
IEEE Standards	802.1D Spanning Tree Protocol 802.1w RSTP 802.1p Priority Control 802.1Q VLAN 802.3 10Base-T Ethernet 802.3u 100Base-X Fast Ethernet 802.3x Flow Control 802.3ad Link Aggregation 802.3z 1000Base-X Gigabit Ethernet
IETF Standards	RFC 768 UDP RFC 791 IP RFC 903 TCP RFC 2131 DHCP Relay RFC 2236 IGMP v2 RFC 1112 IGMP

Management Standards & MIB	RFC 783 TFTP RFC 854 Telnet RFC 1157 SNMP v1 RFC 1213 MIB-I I RFC 1493 Bridge-MIB RFC 1757 RMON-MIB RFC 1902 SNMP v2 RFC 1907 SNMP-MIB RFC 1643 Ethernet-like Internet MIB
ITU Standards	G.984.1 General characteristics for Gigabit-capable Passive Optical Networks (GPON) G.984.2 Gigabit-capable Passive Optical Networks (GPON): Physical Media Dependent (PMD) layer specification G.984.3 Gigabit-capable Passive Optical Networks (G PON): Transmission convergence layer specification G.984.3

GPON Uplink Module

Model Name	Picture	Specification
F502GPB		<ul style="list-style-type: none"> - Downstream 2.5G / Upstream 1.25G - Distance : 20Km

GPON Solution >> ONT >> C604G

GPON ONT 4-Ports GE



Overview

C604G is an GPON Optical Network Terminal designed for SFU (Single Family Unit) used in home and small office environment. It provides subscriber with high performance, individualized, and feature rich services including video (IPTV), voice and high speed internet access. It has a glossy appearance with eco friendly and energy-saving advantage.

It supports 4 Gigabit Ethernet (UTP, RJ45) interfaces to the subscriber. It is connected to GPON OLT and RN (Remote Node) via a fiber optic cable to provide TPS (Triple Play Service).

C604G basically operates at bridge mode providing complimentary features like Q-in-Q, VLAN translation, VLAN trunking and VLAN tagging/detagging per Ethernet port which will give network operator versatility to construct network per its own requirement. Besides, the OAM features based upon standard compliant OMCI facilitate more convenient and effective network operation.

Features

- ITU-T G.984 GPON compliant
- 4 Ethernet LAN ports supported 10/100/1000Base-T ports
- Bridge Mode
- OMCI
- DHCP Server
- QoS, CoS
- Dying Gasp support
- -10℃ ~ 60℃ Operating Temperature
- 5% ~ 95% Humidity(Non-Condensing)

Specification

Item	Description
SYSTEM HW ARCHITECTURE	<ul style="list-style-type: none">• 4 Port 10/100/1000 Base-T Ethernet data interfaces• Ethernet port auto negotiation or manual configuration• MDI/MDIX automatic sensing• AC Adapter input 100 ~ 240 volts , 50/60 Hz• Power Input 12V, 1.5A (feed via external AC/DC adapter)• 180mm(W) x 135mm(D) x 40mm(H) SFU-Type Dimension• -10℃~60℃ (32°F~140 °F) Operating Temperature• Dying Gasp support
NETWORK FEATURES	<ul style="list-style-type: none">• Bridge Mode Support• Up to 256 MAC address and 4 VLAN group• VLAN stacking (Q-in-Q), VLAN translation, VLAN trunking• VLAN tagging/detagging per Ethernet port• IGMP v2/v3 snooping

PON FEATURES	<ul style="list-style-type: none"> • ITU-T G.984 GPON compliant (984.1/.2/.3/.4) • Compliant to FSAN G.984.2 specifications • 1310nm Tx, 1490nm Rx • 1244Mbps Tx / 2488Mbps Rx asymmetric data rate • Burst mode upstream transmission • 20km reach • GR-468-CORE compliant SC/APC connector • Multiple T-CONTs, Multiple Port-IDs • NSR/SR DBA • Upstream and Downstream FEC • AES-128 decryption • 512 Port-Ids • 8 Transmission Container • Maximum 2.488 Gbps Downlink/1.244 Gbps Uplink
QoS / Security FEATURES	<ul style="list-style-type: none"> • IP ToS/DSCP to 802.1p mapping • CoS based on VLAN-ID, 802.1p bit, ToS/DSCP • Marking/remarking of 802.1p • QoS Support with 4-traffic classed based on arrival port, IEEE802.1p, Ipv4 TOS • Mac Address Limit for Mac Spoofing Attack • Static Mac Address
OAM	<ul style="list-style-type: none"> • Standards-compliant OMCI as defined in ITU-T G.984.4 and G.983.2 • Management Information Base (MIB) manipulation over OMCI by Create, Delete, Set, Get and Get Next commands • Provisioning for all services including Ethernet, IPTV, etc. • Alarming and AVC report, performance monitoring • Remote image download over OMCI, as well as activation and rebooting • Holds two F/W banks for image integrity and rollback

GPON Solution >> ONT >> C604R

GPON ONT 4-Ports GE + RF Port



Overview

C604R is an RF featured GPON Optical Network Terminal which comprises of 1 RF video port and 4 Gigabit Ethernet (UTP, RJ45) ports as its service interfaces. It provides subscriber with high performance, individualized, and feature rich services including video (IPTV), voice, high speed internet and CATV analog video service. It is connected to GPON OLT and RN (Remote Node) via a fiber optic cable to provide TPS (Triple Play Service) and digitalized RF signal.

C604R basically operates at bridge mode providing complimentary features like Q-in-Q, VLAN translation, VLAN trunking and VLAN tagging/detagging per Ethernet port which will give network operator versatility to construct network per its own requirement. Besides, the OAM features based upon standard compliant OMCI facilitate more convenient and effective network operation.

Features

- ITU-T G.984 GPON compliant
- 4 Ethernet LAN ports supported 10/100/1000Base-T ports
- RF video port(Coaxial F-Connector) for CATV
- Bridge Mode
- OMCI
- DHCP Server / NAT / NAPT
- QoS, CoS
- Dying Gasp support
- -10℃~60℃ Operating Temperature
- 5% ~ 95% Humidity(Non-Condensing)

Specification

Item	Description
SYSTEM HW ARCHITECTURE	<ul style="list-style-type: none"> • 4 Port 10/100/1000 Base-T Ethernet data interfaces • Ethernet port auto negotiation or manual configuration • MDI/MDIX automatic sensing • One coaxial interface (54Mhz~1GHz Frequency Range) • AC Adapter input 100 ~ 240 volts, 50/60 Hz • Power Input 12V, 1.5A (feed via external AC/DC adapter) • 180mm(W) x 135mm(D) x 40mm(H) SFU-Type Dimension • -10℃~60℃ (32°F~140°F) Operating Temperature • Dying Gasp support
NETWORK FEATURES	<ul style="list-style-type: none"> • Bridge Mode Support • 256 MAC address and 16 VLAN group • VLAN stacking (Q-in-Q), VLAN translation, VLAN trunking • VLAN tagging/detagging per Ethernet port • IGMP v2/v3 snooping
PON FEATURES	<ul style="list-style-type: none"> • ITU-T G.984 GPON compliant (984.1/.2/.3/.4) • Single fiber, integrated triplexer transceiver

	<ul style="list-style-type: none"> • Compliant to FSAN G.984.2 specifications • Data/Video FTTx ONT/ONU applications • 1310nm Tx, 1490nm Rx, 1555nm video Rx • 1244Mbps Tx / 2488Mbps Rx asymmetric data rate • Received Optical Power Min: -28dBm ~ -8dBm • Burst mode upstream transmission • Extinction Ratio: Min 10dB • Average Optical Output Power: Min 0.5dBm ~ 5dBm • 870MHz video bandwidth • 20km reach • GR-468-CORE compliant SC/APC connector • Multiple T-CONTs, Multiple Port-IDs • NSR/SR DBA • Upstream and Downstream FEC • AES-128 decryption • 512 Port-Ids • 8 Transmission Container • Maximum 2.488 Gbps Downlink/1.244 Gbps Uplink
RFoG Specification	<ul style="list-style-type: none"> • Frequency Range: Min 54MHz – Max 870MHz • Receiver Wavelength: Min 1540nm – Max 1560nm • Received Average Optical Power: Min -8dBm – Max 2dBm • RF Output Level : Min 18dBmV/ch • RF Output Impedance : 75 Ohm
QoS / Security FEATURES	<ul style="list-style-type: none"> • IP ToS/DSCP to 802.1p mapping • CoS based on VLAN-ID, 802.1p bit, ToS/DSCP • Marking/remarking of 802.1p • QoS Support with 4-traffic classed based on arrival port, IEEE802.1p, Ipv4 TOS • Mac Address Limit for Mac Spoofing Attack • Static Mac Address
OAM	<ul style="list-style-type: none"> • Standards-compliant OMCI as defined in ITU-T G.984.4 and G.983.2 • Management Information Base (MIB) manipulation over OMCI by Create, Delete, Set, Get and Get Next commands • Provisioning for all services including Ethernet, IPTV, etc. • Alarming and AVC report, performance monitoring • Remote image download over OMCI, as well as activation and rebooting • Holds two F/W banks for image integrity and rollback

GPON Solution >> ONT >> C624WGB

GPON ONT 4-port GE + 2-port FXS + Wi-Fi (n) + USB2.0 Host



Overview

C624WGB is a GPON ONT designed for advanced triple-play service deployments. It supports QoS enabled features including VoIP and multicast video application on top of high speed internet access via either UTP line or WiFi interfaces.

C624WGB ONT is ideal for triple-play service deployments in FTTH/FTTB architecture. Industry standard SIP voice signaling provides reliable voice services. The four Giga-Ethernet ports can be separated into different services allowing the configuration of dedicated ports for IP video and data.

Compliant with standard OMCI definition, C624WGB is manageable from remote site and supports the full range FCAPS functions including supervision, monitoring and maintenance.

Features

- High level throughput
- MAC address learning per port: 64 per Ethernet port
- Affordable Voice quality: G.711A 20ms, PESQ average value > 3.9
- Available coding methods: G.711, G.729A, G.723.1, Delay (loopback delay)
- Input Power: 110-220VAC, 50/60Hz (Region dependent)
- Output Power: 12V DC, 1.5A (Switch)
- Dying Gasp: Supported
- Power Switch: Push button power on or off
- Reset Button: Reset to factory default
- WPS Button: enables Push button WPS function
- RF Switch Button: Push button WIFI on or off
- Operation Temperature of - 32°F to 104°F (0°C to 40°C)
- Storage Temperature of - 4°F to 149°F (-20°C to 70°C)
- Humidity of 5% ~ 95% non-condensing

Specification

Hardware

Key Components / Connectors / Performance

Flash Memory	16M Bytes (MAX support 256MB)
SDRAM for CPU	64M Bytes (DDR2 ,MAX support 2Gbit)
Console	Internal console port (4 pin)
Interfaces (TR-068 compliant)	

LAN	4x 10/100/1000Base-T MDI/MDIX RJ-45 port compliant with following standards: 1. IEEE 802.3/802.3u 2. Hardware based 10/100/1000, full/half, flow control auto negotiation 3. Non-blocking wire speed reception and transmission 4. Full duplex IEEE 802.3x flow control and half duplex back-pressure flow control 5. Broadcast storm protection 6. Automatic address learning, address aging and address migration 7. Integrated address Look-Up Engine, 1 K absolute MAC addresses supported
WAN	1x inner GPON port Data Rate: Downstream: up to 2.4Gbps; Upstream: up to 1.2Gbps Down wavelength: 1490 nm Up wavelength: 1310 nm Maximum transmission distance: 20 Km

Software

Feature Item	Feature	Detailed Description
GPON Compliance	ITU-T G.984.1, G.984.2, G.984.3, G.984.4	
	Fully ITU-T G.984 compliant framing	
	Support 8 T-CONTs and 32 GEM Ports	
	Multiple T-CONTs per device Multiple GEM Ports per device	
	Flexible mapping between GEM Ports and T-CONT	
	Activation with automatic discovered SN and password in conformance with	
	ITU-T G.988	
	AES-128 Decryption with key generation and switching	
	FEC (Forward Error Correction)	
	DBA reporting in status indications in the PLOu, and by piggyback reports in the DBRu (mode 0)	
	802.1p service mapping profile on U/S	
	Mapping of GEM Ports into a T-CONT with priority queues based scheduling	
	Support for Multicast GEM Port	
Network Protocol	802.1q/1p VLAN over RFC2684 bridge encapsulation	
	PPPoE	Support AUTO, PAP, CHAP, MS-CHAP authentication. Auto or static IP address assignment.
	PPPoE passthrough	Supports concurrent PPPoE clients inside the modem and PPPoE clients on the LAN devices.
	PPPoE filtering of non-PPPoE packets between WAN and LAN	Support filtered non-PPPoE packets.
	Auto clean up of remote stalled PPP sessions at BRAS	

	Transparent bridging between all LAN and WAN interfaces	
	WAN to WAN blocking in bridge mode	
	Ethernet as WAN	
Networking	Full Cone NAT	
	DMZ Host	
ALGs	FTP	
	TFTP	
	RTSP	
	Port Triggering	
	PPTP	
	IPSec and L2TP	
Firewall/Filtering	Stateful Inspection	
	Packet filtering	Packets can be blocked based on interface, mac address, IP address, protocol, and port number.
	LAN side firewall	By default, LAN side firewall is disabled
Parental Control	Time of day usage restriction	
	URL Filtering	Supports INCLUDE and EXCLUDE modes
QoS	IP/Bridge/802.1p	
	Rate Control on upstream traffic	
	Support SP, WRR	
Routing	RIP v1/v2	Enable RIP over multiple WAN interfaces
	Policy Routing	Routes packets based on criteria other than destination IP address
IGMP	Proxy and snooping	
	IGMP v2 and v3	
MLD		
IPv6	IPv6 Ready Logo Certified	
	IPv6 Firewall	
	IPv6 capable apps	telnetd, ftpd, sshd, httpd
USB	USB 2.0 "Host" Driver USB 2.0	
	USB storage	
	Access to mounted USB disk via FTP	
DHCP Server	Support for multiple subnets	
	Static IP lease	
	DHCP relay	
DHCP client		
LAN services	Second IP address on LAN interface	
DNS Proxy	Built in DNS server	
	Caching previous requests	
ACL		
WebUI	Protection against Cross Site Request Forgery attack	
TR - 069	Digest Authentication, SSL and Basic Authentication, SSL and Authentication Digest	
	Auto - launch and exit - on - idle	
	TR - 098	
	TR - 098 profile support	

	TR - 111 (part 1)	
	TR - 140	
	TR - 104	
TR - 064		
SNMP	v1/v2c agent	
	MIB - II	
UPnP	Internet Gateway Device (IGDv1.0) Finite(24 hour) duration of virtual server entries created using UPnP	
Security	Three level login(local admin, local user, remote support)	
	Service access based on incoming interface and/or source IP address	
	Automatic logout from CLI after inactivity	
Audit and Logging	Send log to remote syslog server	
Diagnostics	Interface Connectivity	Ethernet and USB.
	Internet Connectivity	ISP authentication, assigned IP address, default gateway/primary DNS server connectivity
Other Features	Dynamic DNS	
	sntp time synchronization	
	telnetD	
	Power Management	
WIFI Compliance	IEEE 802.11b/g/n	
	Support 2x2 antennas	
	Support 2-stream spatial multiplexing up to 270Mbps	(Can upgrade to 300Mbps)
	Support MCS 0-15 and MCS 32 modulation and coding rates channels	
	Support 20M and 40M	
	WEP encryption	Support 64, 128 Bit WEP encryption
Voip	802.1x	
	WPA/WPA2	
	WPA-PSK/WPA2-PSK	
	Mac Filter base on each SSID	
	Multiple SSID	Up to 4 SSID Support SSID hidden
	Support SSID hidden	
	SSID User Isolation	
	WPS	WPS Push and WPS PIN method supported Housing WPS push button (optional)
	Enable or disable WIFI through GUI	
	SIP/ MGCP/ H.248 Protocols	Support SIP or MGCP Protocols
	FXS	Support 2 FXS
	RTP (RFC 1889)/ RTCP (RFC 1890)	
	UDP (RFC 768)	
	SDP (RFC 2327)	
	Outbound Proxy	

	Multiple voice codec - G.711 (u/a-law), G.726, G.729 (A and B), G.723.1 etc	
	T.30 and T.38 Fax	
	DTMF In band & Out of band Tone Detection & generation (RFC2833)	
	Echo Cancelling, Silence suppression, VAD, CNG	
	Various CLASS services - Caller ID, Call Waiting, Call Forwarding, Call Transfer, etc.	

GPON Solution >> >> ONT >> C624WFB

GPON ONT 4FE + 2FXS + Wi-Fi (n) + USB2.0 Host



Overview

C624WFB is a GPON ONT designed for advanced triple-play service deployments. It supports QoS enabled features including VoIP and multicast video application on top of high speed internet access via either UTP line or WiFi interfaces.

C624WFB ONT is ideal for triple-play service deployments in FTTH/FTTB architecture. Industry standard SIP voice signaling provides reliable voice services. The four Giga-Ethernet ports can be separated into different services allowing the configuration of dedicated ports for IP video and data.

Compliant with standard OMCI definition, C624WFB is manageable from remote site and supports the full range FCAPS functions including supervision, monitoring and maintenance.

Features

- High level throughput
- MAC address learning per port: 64 per Ethernet port
- Affordable Voice quality: G.711A 20ms, PESQ average value > 3.9
- Available coding methods: G.711, G.729A, G.723.1, Delay (loopback delay)
- Input Power: 110-220VAC, 50/60Hz (Region dependent)
- Output Power: 12V DC, 1.5A (Switch)
- Dying Gasp: Supported
- Power Switch: Push button power on or off
- Reset Button: Reset to factory default
- WPS Button: enables Push button WPS function
- RF Switch Button: Push button WIFI on or off
- Operation Temperature of - 32°F to 104°F (0°C to 40°C)
- Storage Temperature of - 4°F to 149°F (-20°C to 70°C)
- Humidity of 5% ~ 95% non-condensing

Specification

Hardware

Key Components / Connectors / Performance

Flash Memory	16M Bytes (MAX support 256MB)
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SDRAM for CPU	64M Bytes (DDR2 ,MAX support 2Gbit)
Console	Internal console port (4 pin)
LAN	4x 10/100Base-Tx MDI/MDIX RJ-45 port compliant with following standards: 1. IEEE 802.3/802.3u 2. Hardware based 10/100, full/half, flow control auto negotiation 3. Non-blocking wire speed reception and transmission 4. Full duplex IEEE 802.3x flow control and half duplex back-pressure flow control 5. Broadcast storm protection 6. Automatic address learning, address aging and address migration 7. Integrated address Look-Up Engine, 1 K absolute MAC addresses supported
WAN	1x inner GPON port Data Rate: Downstream: up to 2.5Gbps; Upstream: up to 1.25Gbps Down wavelength: 1490 nm Up wavelength: 1310 nm Maximum transmission distance: 20 Km

Software

Feature Item	Feature	Detailed Description
GPON Compliance	ITU-T G.984.1, G.984.2, G.984.3, G.984.4	
	Fully ITU-T G.984 compliant framing	
	Support 8 T-CONTs and 32 GEM Ports	
	Multiple T-CONTs per device Multiple GEM Ports per device	
	Flexible mapping between GEM Ports and T-CONT	
	Activation with automatic discovered SN and password in conformance with	
	ITU-T G.988	
	AES-128 Decryption with key generation and switching	
	FEC (Forward Error Correction)	
	DBA reporting in status indications in the PLOu, and by piggyback reports in the DBRu (mode 0)	
	802.1p service mapping profile on U/S	
	Mapping of GEM Ports into a T-CONT with priority queues based scheduling	
	Support for Multicast GEM Port	
Network Protocol	802.1q/1p VLAN over RFC2684 bridge encapsulation	
	PPPoE	Support AUTO, PAP, CHAP, MS-CHAP authentication. Auto or static IP address assignment.
	PPPoE passthrough	Supports concurrent PPPoE clients inside the modem and PPPoE clients on the LAN devices.
	PPPoE filtering of non-PPPoE packets between WAN and LAN	Support filtered non-PPPoE packets.
	Auto clean up of remote stalled PPP sessions at BRAS	
	Transparent bridging between all LAN and WAN interfaces	
	WAN to WAN blocking in bridge mode	

	Ethernet as WAN	
Networking	Full Cone NAT	
	DMZ Host	
ALGs	FTP	
	TFTP	
	RTSP	
	Port Triggering	
	PPTP	
	IPSec and L2TP	
Firewall/Filtering	Stateful Inspection	
	Packet filtering	Packets can be blocked based on interface, mac address, IP address, protocol, and port number.
	LAN side firewall	By default, LAN side firewall is disabled
Parental Control	Time of day usage restriction	
	URL Filtering	Supports INCLUDE and EXCLUDE modes
QoS	IP/Bridge/802.1p	
	Rate Control on upstream traffic	
	Support SP, WRR	
Routing	RIP v1/v2	Enable RIP over multiple WAN interfaces
	Policy Routing	Routes packets based on criteria other than destination IP address
IGMP	Proxy and snooping	
	IGMP v2 and v3	
MLD		
IPv6	IPv6 Ready Logo Certified	
	IPv6 Firewall	
	IPv6 capable apps	telnetd, ftpd, sshd, httpd
USB	USB 2.0 "Host" Driver USB 2.0	
	USB storage	
	Access to mounted USB disk via FTP	
DHCP Server	Support for multiple subnets	
	Static IP lease	
	DHCP relay	
DHCP client		
LAN services	Second IP address on LAN interface	
DNS Proxy	Built in DNS server	
	Caching previous requests	
ACL		
WebUI	Protection against Cross Site Request Forgery attack	
TR - 069	Digest Authentication, SSL and Basic Authentication, SSL and Authentication Digest	
	Auto - launch and exit - on - idle	
	TR - 098	
	TR - 098 profile support	
	TR - 111 (part 1)	
	TR - 140	

	TR - 104	
TR - 064		
SNMP	v1/v2c agent	
	MIB - II	
UPnP	Internet Gateway Device (IGDv1.0) Finite(24 hour) duration of virtual server entries created using UPnP	
Security	Three level login(local admin, local user, remote support)	
	Service access based on incoming interface and/or source IP address	
	Automatic logout from CLI after inactivity	
Audit and Logging	Send log to remote syslog server	
Diagnostics	Interface Connectivity	Ethernet and USB.
	Internet Connectivity	ISP authentication, assigned IP address, default gateway/primary DNS server connectivity
Other Features	Dynamic DNS	
	sntp time synchronization	
	telnetD	
	Power Management	
WIFI Compliance	IEEE 802.11b/g/n	
	Support 2x2 antennas	
	Support 2-stream spatial multiplexing up to 270Mbps	(Can upgrade to 300Mbps)
	Support MCS 0-15 and MCS 32 modulation and coding rates channels	
	Support 20M and 40M	
	WEP encryption	Support 64, 128 Bit WEP encryption
	802.1x	
	WPA/WPA2	
	WPA-PSK/WPA2-PSK	
	Mac Filter base on each SSID	
	Multiple SSID	Up to 4 SSID Support SSID hidden
	Support SSID hidden	
	SSID User Isolation	
	WPS	WPS Push and WPS PIN method supported Housing WPS push button (optional)
	Enable or disable WIFI through GUI	
VoIP	SIP Protocol	Support SIP Protocol
	FXS	Support 2 FXS
	RTP (RFC 1889)/ RTCP (RFC 1890)	
	UDP (RFC 768)	
	SDP (RFC 2327)	
	Outbound Proxy	
	Multiple voice codec - G.711 (u/a-law), G.726, G.729 (A and B), G.723.1 etc	
	T.30 and T.38 Fax	

	DTMF In band & Out of band Tone Detection & generation (RFC2833)	
	Echo Cancellation, Silence suppression, VAD, CNG	
	Various CLASS services - Caller ID, Call Waiting, Call Forwarding, Call Transfer, etc.	

GPON Solution >> ONT >> C601A



Overview

C601A is a complying with ITU-T G.984 Gigabit Passive Optical Network (GPON) standards ONU (Optical Network Unit) product, which supports Gigabit Ethernet interfaces to provide Triple-play service for FTTH users.

In addition to its high performance profile, C601A implementation assures maximum compatibility and provides remote management via OMCI channel.

Features

- Support full GPON bandwidth of up to 2.5Gbps downstream and 1.25Gbps upstream access
- Support IP video through data port
- Gigabits Ethernet interface

Specification

GPON:

- One SC/APC connector for GPON transceiver
- One RJ-45 connectors for 10/100/1000 BASE-T
- One reset button
- One power jack for 12V DC input
- One power switch
- Wavelength: 1490nm downstream and 1310nm upstream
- Support 28dB optical loss budget (Class B+: 13 – 28dB)
- LEDs : PWR, ALM, PON, LAN

Compliant Standards

- ITU-T G.984.1, 984.2, 984.3, 984.4
- IEEE 802.1p
- IEEE 802.1Q
- IEEE 802.3
- IEEE 802.3u
- IEEE 802.3x
- IEEE 802.3z

QoS

- Port-based VLAN
- Q-in-Q VLAN
- Strict Priority

- Weighted Round-Robin priority
- IGMP filtering & snooping
- Multicasting IGMP v1,v2,v3

Security

- AES-128 encryption per Port-ID
- IEEE 802.1x port authentication
- Supporting to Max.256 MAC filtering

Management

- Remote management via OMCI channel
- CLI management via Telnet
- Loopback test
- Remote firmware upgrade via FTP server or OMCI channel

Operating Environment

- Operating Temperature : 0 ~ 45 °C
- Storage Temperature : -20 ~ +65 °C
- Operating Humidity : 15%~85% (non-condensed)
- Storage Humidity : 10%~90% (non-condensed)

Power Requirement

- Power : 12V DC / 1A max input

Physical Specification

- Dimension: 50mmx70mmx20mm