

ubiQuoss Products

■ Datasheet



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FTTH Solutions >> GE-PON Solution >> U9264H-EPON



Overview

The ubiQuoss U9264H is a high density, high capacity, and multi-functional GE-PON 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 GE-PON network.

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 slot cards, meanwhile the PIU slots can accept 8-port 1.25G GE-PON up to 8 slot cards.

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, Security and IPv6 features as well.

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

- Easy and flexible deployment
- 19" Chassis with 8 RU Height, 14 slots
- All Front Access
- Non-blocking architecture
- Packet processing functionalities for IP-based "Triple Play Service" delivery
- 960Gbps switching capacity, 10GE based next generation platform
- Full Redundancy design (SCU, PSU, PIU)
- Max. 64 GE-PON

Features

- System Architecture
 - 14 slots, 8RU, 19" mounting
 - 3 FAN Module
 - AC / DC Power Module(Redundancy)
- Module based High Capacity L3 switching GE-PON Common Platform
 - 2 slots Power Supply Unit (PSU)
 - 8 slots PON Interface Unit (PIU)
 - 2 slots Line Interface Unit (LIU)
 - 2 slots Switch & Control Module (SCU)
- Switching capacity: 960Gbps/357Mpps
- Switching Fabric: 80G per slot
- Subscriber capacity: 64 GE-PON Max. 4096 subscribers(1:64 splits)
- All Cards and Modules support Hot-swapping
- PON interface
 - Max. 8 slots: up to 64 PONs
 - 8-port GE-PON module (Up to 64 GE-PON ports, 8 slots)
- Network interface
 - Max. 2 slots available for below slot cards:
 - 8-port 1GE card with 1000Base-T interface
 - 8-port 1GE card with 1000Base-X interface
 - 2-port 10GE card
 - 4-port 10GE card
- Fully Redundant System
 - Switch & Control Card(SCU)
 - AC/DC Power Supply Unit(PSU)
 - Any two PON ports from any two PIU cards
- Support Various SFP/XFP transceiver
- Management: 1-port 100Base-Tx & RS-232
- IPv4 / IPv6(planned)
- 10Km/20Km at different splits (32) at -22dBm(Basic) or -27dBm(Optional)
- S/W Upgrade without service interruption
- Loop-Back Test Function
- RSSI (Received Signal Strength Indicator)
 - Detects (Senses) and indicates EPON signal strength by checking Rx/Tx signal of ONTs.
- Automatic Laser Diode Shutdown (in case of ONT fault)
 - Detects any ONT working in continuous mode and shutdown the laser diode of the ONT to prevent service failure over PON network.

Specification

Hardware

| Product Specification | |
|-----------------------------------|---|
| Slot capacity | 14 slots |
| Full-duplex Switching Capacity | 960Gbps |
| System Throughput | 357.3 Mpps (With LIU 2X) |
| Full-duplex Capacity per slot | 80G per slot |
| Physical Dimension | 437mm(W) x 354.4mm(H) x 295mm(D) : 19 inch Rack Mount, 8 RU height |
| Chassis per rack | 4 chassis(2200mm : 45RU) |
| Electrical specifications (AC/DC) | |
| Total power Consumption | Max. 800W |
| Rated input voltage | 210~240VAC(47~63Hz), -48VDC |
| Environmental conditions | |
| Temperature | -20 ~ 60°C |
| Humidity | 90% |
| Management Interfaces | RS-232C, 10/100 Base-T |

Software

| Features | Description |
|--------------|--|
| PON Features | Max 4 bidirectional unicast LLID per ONU Max 256 bidirectional unicast LLID per OLT port Wire speed processing 1.25 Gbps upstream/downstream rate 128-bit Advanced Encryption Standard (AES) encryption engine for PON security and privacy with up to 128 unique keys Forward Error Correction(FEC) encoding and decoding Flexible optical transceiver interface for multiple vendor support 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 Supports Local and Remote Loop-back test |
| L2 Features | Max 32K Mac Address Table Limiting No. of MAC Address per Subscriber Enable/Disable MAC Learning Configurable Learned MAC aging time Max 4K VLANs, 802.1Q Support Private VLAN 802.1ad Q-in-Q Tagging/Stacking Port to VLAN Mapping |

| | |
|---------------------|---|
| | <p>Service to VLAN Mapping 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 Ethernet Jumbo Frame Port Mirroring</p> |
| <p>L3 Features</p> | <p>Static Routing RIPv2(IPv4) RIPng(IPv6) OSPFv2(IPv4)/v3(IPv6) BGP4(IPv4)/4+(IPv6) VRRPv2(IPv4)/v3(IPv6) 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 IGMP snooping IGMP Join/Leave PIM-ECMP Support IGMP Join Filter/Count Limit DHCP Server/Relay Blocks illegal IP users DHCP option82 DHCP Snooping DAI(Dynamic ARP Inspection)</p> |
| <p>QoS Features</p> | <p>DBA(Dynamic Bandwidth Allocation) Support LLID for GEPON Layer 2: Source/Destination MAC Address, VLAN ID, 802.1p Field Layer 3: Source/Destination IP Address, DSCP Layer 4: Source/Destination TCP/UDP Port Flow Classification through CoS, VLAN CoS Marking/Remarking: DSCP, 802.1p based on IEEE 802.1p bit support 8 priority levels or equivalent based on TOS (IP Precedence/DSCP) Packet Drop Mirroring/Redirect to Port Metering, Rate Limiting with 64Kbps unit</p> |

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|---------------------------------|---|
| | <p>Rate Limit per subscriber Rate Limit per service per subscriber Peak Information Rate (PIR) Sustained Information Rate (CIR) 8 queues per port SPQ, DWRR, Hybrid (SPQ+DWRR) Egress rate shaping per port/queue with 64Kbps unit</p> |
| <p>Security Features</p> | <p>Netbios, NBT filtering DHCP filtering Packet filtering with ACLs Destination MAC address Ether type VLAN ID Destination/Source IP address Enable/Disable data encryption upstream/downstream Illegal Source MAC address block ALL 0's, 1's, System Mac, Default G/W Mac Illegal Source IP address block Broadcast, DLF, Multicast packet rate control Source MAC based excessive traffic Block ONU/ONT auto discovery Static Mac address Mac filtering Max Mac Number limit Port based Self Loop Detect IP anti-spoofing ARP packet traffic limit Blocking of user-to-user flows Subscriber Isolation MAC Address Anti Spoofing ARP spoofing / ARP cache poisoning IP spoofing DHCP spoofing Broadcast flooding MAC address spoofing MAC flooding 802.1Q tagging</p> |
| <p>System Security Features</p> | <p>RADIUS, TACACS+ Telnet, SNMP with ACL DHCP, 82/60 option DHCP, PPPoE(option105) and static IP CPU Packet Filtering with ACL CPU overload Packet traffic sender block TCP sync attack protection with sync cookies CPU packet rate-limit Management packet priority control Gratuitous ARP</p> |
| <p>Management Features</p> | <p>Telnet, SSH, SNMP v1/v2/v3 GUI Based Management through EMS</p> |

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| | Remote OS Upgrade using TFTP, FTP Dual Flash Image Remote Configuration Data Download NTP Packet monitoring with TCPDUMP RMON, Syslog Type based Port, CPU Packet statistics |
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FTTH Solutions >> GE-PON Solution >> U9016B-EPON



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(Switching & CPU 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) 1.25G EPON ports on the card. And the SCU of U9016B has 4-ports of 1000Base-X (SFP) and 2-ports of 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 customer build a PON network with multiple sets of U9016B and U9264H.

Features

- 19" Rack mountable Shelf structure
- 3 Card Slots
- Hot Swappable Cards
- 1G x 4 PORT(SFP), 10G x 2 PORT(SFP+)
- 1.25G GE-PON 8 Ports per Card
- 1 FAN Interface Module
- Dual Power Supply(AC, DC), Hot Swappable

Specification

Hardware

| Item | Description |
|-------------------------|---|
| Number of PON Interface | 8 Ports 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 : -48VDC |
| Dimension (WxDxH) | Main body: 482mm x 88.8mm x 295mm |
| Operating Temperature | -20~60°C |

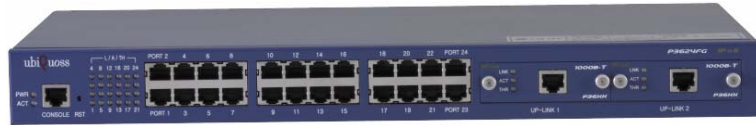
Software

| Features | Description |
|--------------|---|
| PON Features | Max 4 bidirectional unicast LLID per ONU Max 256 bidirectional unicast LLID per OLT port Wire speed processing 1.25 Gbps upstream/downstream rate 128-bit Advanced Encryption Standard (AES) encryption engine for PON security and privacy with up to 128 unique keys. AES-128 Downstream Encryption Forward Error Correction(FEC) encoding and decoding Flexible optical transceiver interface for multiple vendor support. 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 Supports Local and Remote Loop-back test |
| 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) |

| | |
|---------------------------------|---|
| | <p>PIM-SM, IGMP v2 Max 1K Group Support DHCP Server/Relay Blocking of illegal IP users DAI (Dynamic ARP Inspection)</p> |
| <p>QoS Features</p> | <p>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</p> |
| <p>Security Features</p> | <p>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</p> |
| <p>System Security Features</p> | <p>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</p> |

FTTH Solutions >> GE-PON Solution >> P3624FG

GEAPON ONU based on FE L2 switch



Overview

P3624FG is an L2 switch devised as a GEAPON 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 EPON(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-TX for the active optical network connectivity. P3624FG can have twenty-four 10/100base-TX (UTP) ports as its service interface toward end users.

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. All ports of P3624FG switch support full duplex communication. B

P3624FG adopts a high speed non-blocking switch fabric. This chipset makes internal delay as little as possible by processing the arriving packets in parallel manner. And it maximizes data integrity through Store-and-Forward switching method. In other words every packet that arrives at any port will be stored in the buffer of the port and checked up for integrity before transferred to destination port. Therefore it can prevent some data error from being spread over the network.

P3624FG supports IPv6, hardware-based bandwidth management and Quality of Service functionality, which enables corporate users and ISPs to provide differentiated internet services in the environment of next generation network.

Features

- Up to 24 10/100Base-TX ports
- 2 Option Module Slots: GEAPON module along with 100Base-FX, 1000Base-Tx and 1000Base-X
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.
- IPv6 Enabled

Application

- Dynamic and Distributed Service, Contents and Applications Delivery to the MAN
- Enabling ISPs to construct broadband access networks

- Support intra-network environment for business and/or home user
- Virtual Private Leased Line Service, Client-Server Network, SOHO Network
- FTTx GPON/EPON ONU as a Multi Dwelling Unit
- Stacking Configuration Available

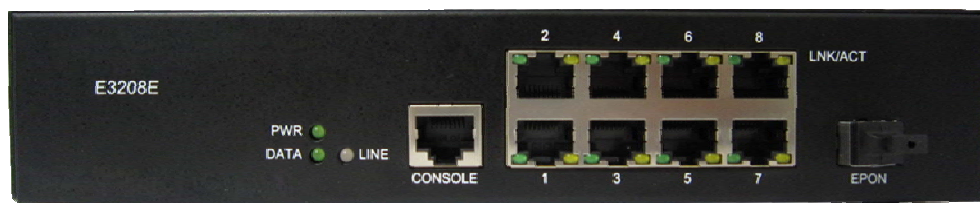
Specification

| P3624FG Specification | |
|-------------------------------|--|
| System Architecture & Console | 24 fixed 10/100Base-TX ports (Auto-negotiation, Auto-Sensing, Auto MDI/MDIX) 2 Expansion Module : 1 Port per Option Module 100Base-FX, 1000Base-X(GBIC), 1000Base-X(SFP), 1000Base-TX, GPON, EPON RS-232C Serial Port (RJ-45 type) |
| Memory | 64MB Main Memory 16MB Flash Memory |
| Physical Dimension | 19" 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°C ~ +60°C |
| Storage temperature | -20°C ~ +70°C |
| Performance | |
| Switching Fabric | 12.8 Gbps non-blocking |
| Throughput | 6.5 Mpps wire-speed L2 Switching |
| IPv6 | Enabled |
| Capacity | |
| MAC Address | Up to 16K MAC Management |
| VLAN | Up to 256 VLAN Private Edge VLAN, 8021.Q 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/Packet 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 |

FTTH Solutions >> GE-PON Solution >> E3208E

GEAPON ONU based on Mini L2 switch



Overview

E3208E is a Fast Ethernet L2 switch used in access network segments to provide broadband multimedia service. It can provide high performance switching service to subscribers. It can be also deployed economically because it is based on 100Mbps downlink speed as FE and an uplink port as GE-PON.

E3208E is the best solution for medium size networks with high traffic volumes. E3208E also provides advanced network management and switching functions that follow the world standard. E3208E consists of eight FE ports and one Uplink module as GE-PON port.

Features

- 8 ports 100Base-TX (Fixed)
- Uplink : 1-port EPON 1.25G
- Power: 110~220 VAC / 50~60 Hz
- 12.8Gbps Switching Capacity
- 1.19Mpps throughput
- Max. 16K MAC Address Support for Switching
- 256 VLANs Support (VLAN ID range 1 ~ 4094)
- 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
- Multicast/broadcast flooding prevention
- Secure Network: DoS prevention
- IEEE 802.1p, IEEE802.1Q, IEEE802.1D
- Rate Limit: @ 1Mbps (100M port)
- Ingress Traffic Policing per flow/packet
- VLAN, Multi VLAN, STP, RSTP, IGMP snooping & query
- Max. 128 ACL for QoS standards and filtering
- IGMP v1/v2, IGMP Snooping, IGMP Snooping Proxy Reporting supported
- SNMP trap for up/down linking and system initialization
- CLI, Telnet, Syslog, SNMP I/II, RMON, Port Mirroring
- OS upgrade with TFTP or FTP
- IPv6 support
- Backup(switch-over) upon AC power failure
- Over-charge and over-current prevention for battery
- Protection from voltage fluctuations for battery
- Battery charger included as part of the device/unit(4.5AH battery not incl.)
- Seamless failover to DC upon AC going down
- Shutting off the switch if Battery is powering the switch and voltage falls below 10.5V to ensure long life.
- Circuit handles 100V to 300V

Specification

| E3208E Hardware Specification | |
|--------------------------------------|--|
| System Architecture & Console | 8 fixed 100Base-TX ports (Auto-negotiation, Auto-Sensing, Auto MDI/MDIX) 1 Fixed Uplink EPON 1 port RS-232C Serial Console Port (RJ-45 type) |
| Physical Dimension | 268 x 44 x 128 mm (W x H x D) |
| Environment Conditions | |
| Power | AC |
| Input power & frequency | 110~220 VAC / 50~60 Hz |
| Power consumption | Max. 16.9W |
| Operating temperature | 0°C ~ 50°C |
| Storage temperature | -20°C ~ 60°C |
| Performance | |
| Switching Fabric | 12.8Gbps non-blocking |
| Throughput | 1.19Mpps wire-speed L2 Switching |
| Capacity | |
| MAC Address | Up to 16K MAC Management |
| VLAN | Up to 256 VLAN (VLAN ID range 1~4094) Private Edge VLAN, 8021.Q Tagged-VLAN Link Aggregation (802.3ad): 8 group, Max 8 port/group |
| Services and Features | |
| Filtering, Security & QoS | IEEE 802.1p QoS, Diff-serv support, Congestion Management Filtering: Mac address, Netbios, NBT, Mac Address Count Limit, Broadcast Storm, selective handling of specified IP address, IP Packet filtering, DoS Attack Prevention Subscriber Traffic control by ACLs (Access Control Lists) Queue: 8, SPQ, WRR, WFQ 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 with TFTP or FTP, Telnet, Port Mirroring, CLI, Syslog, Access level control for administrator Radius, TACAS+, Remote power reset, Auto-reset(software diagnosis) |
| Functions | STP(802.1D), RSTP(802.1w), Self-Loop controlled Storm-control (L2DLF,Broadcast,Multicast), CPU Flood-Guard (pps control), CPU Filter(IP+TCP/UDP PORT NO) NTP (Network Time protocol) Client |
| Multicasting Protocol | IGMPv1/v2, IGMP snooping, 255 snoop Table, IGMP query, IGMP /Leave Suppression, IGMP Fast Leave, IGMP Static Join, IGMP proxy reporting IGMPv3 aware |
| Support IPv6 | |
| IPv6 Multicast Protocol | MLDv1 MLD snooping, 255 snoop Table, MLD query, MLD Report/Done Suppression, MLD Fast Leave, MLD Static Join, MLD proxy reporting |

| | |
|----------------------------------|--|
| | MLDv2 aware |
| Etc | Classification: IPv6 header field Configuration: IPv6 address and IPv6 default gateway |
| 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 |
| IETF Standards | RFC 768 UDP RFC 791 IP RFC 903 TCP RFC 1112 IGMP RFC 2236 IGMP v2 RFC 2710 MLD v1 |
| 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 |

FTTH Solutions >> GE-PON Solution >> E5024

GEAPON ONU based on GE L2 switch



Overview

E5024 is an Gigabit Ethernet L2 switch devised as a GEAPON MDU 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 up to twenty-four 1000base-T (UTP RJ-45) ports and two optional modules that support either up to two GEAPON ports 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 IPv6, hardware-based bandwidth management and Quality of Service functionality, which enable corporate users and ISPs to provide differentiated internet services in the environment of next generation network.

Features

- 24 ports 1000Base-T (Fixed)
- 2 Optional Slot Uplink Module(Hot-Swappable) : 100Base-FX, 1000Base-Tx, 1000Base-X
- Uplink Module
 - 1 port Combo : 100Base-FX/1000Base-X (SFP) or 1000Base-T (RJ-45)
 - 1 port EPON 1.25G
- 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
- Hardware based IPv6

Application

- L2 Workgroup Switch over Metro Ethernet Network
- MDU over FTTH 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

| E5024 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) RS-232C Serial Console Port (RJ-45 type) |
| Memory | 128MB Main Memory 32MB Flash Memory |
| Physical Dimension | 19" Rack Mount Type, 1RU 44mm(H)x482.6mm(W, Rack Guide included)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 |
| IPv6 | H/W based supported |
| Capacity | |
| MAC Address | Up to 16K MAC Management |
| VLAN | 256 VLAN (VLAN ID range 1~4094) Private Edge VLAN, 802.1Q 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, Martian-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) NTP (Network Time protocol) Client Jumbo Frame packet support: 9022byte Stacking & IP Clustering: 8 Clustering</p> |
| Multicasting Protocol | <p>IGMP v2.0, 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 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</p> |
| IETF Standards | <p>RFC 768 UDP RFC 791 IP RFC 903 TCP RFC 2131 DHCP Relay RFC 2236 IGMP v2 RFC 1112 IGMP</p> |
| Management Standards & MIB | <p>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</p> |

FTTH Solutions >> GE-PON Solution >> E5016

GEAPON ONU based on GE L2 switch



Overview

E5016 is an Gigabit Ethernet L2 switch devised as a GEAPON MDU providing high-speed high-capacity broadband multimedia service of up to 1Gbps. E5016 can be applied to FTTB or FTTC based network users enabling high performance switching service economically by using of 1000Mbps link speed.

E5016 can have up to twenty-four 1000base-T (UTP RJ-45) ports and two optional modules that support either up to two GEAPON ports as well as 1000Base-T or 1000Base-X /100Base-FX (SFP) ports.

Besides LAN switching functionalitis, E5016 also provides QoS and multicasting and has increased the level of security with 802.1x.

E5016 is capable of supporting IPv6, hardware-based bandwidth management and Quality of Service functionality, which enable corporate users and ISPs to provide differentiated internet services in the environment of next generation network.

Features

- 16 ports 1000Base-T (Fixed)
- 1 Optional Slot Uplink Module(Hot-Swappable) : 100Base-FX, 1000Base-Tx, 1000Base-X
- Uplink Module
 - 1 port Combo : 100Base-FX/1000Base-X (SFP) or 1000Base-T (RJ-45)
 - 1 port GEAPON 1.25G
- 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

- Hardware based IPv6

Application

- L2 Workgroup Switch over Metro Ethernet Network
- MDU over FTTH 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

E5016 Hardware Specification

| | |
|-------------------------------|---|
| System Architecture & Console | 16 fixed 1000Base-T ports (Auto-negotiation, Auto-Sensing, Auto MDI/MDIX) 1 Expansion Module: 1 Port per Module - 100Base-FX/1000Base-X (SFP) or 1000Base-T(RJ-45) RS-232C Serial Console Port (RJ-45 type) |
| Memory | 128MB Main Memory 32MB Flash Memory |
| Physical Dimension | 19" Rack Mount Type, 1RU 44mm(H)x482.6mm(W, Rack Guide included)x220mm(D) |
| Environment Conditions | |
| Power | 110~220 VAC / 50~60 Hz |
| Power consumption | Max. 40W |
| Operating temperature | 0°C ~ 50°C (-20~60°C) |
| Storage temperature | -30°C ~ 70°C |
| Performance | |
| Switching Fabric | 56Gbps non-blocking |
| Throughput | 38Mpps wire-speed L2 Switching |
| IPv6 | H/W based supported |
| 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), Flood-Guard (pps control), CPU Filter(IP+TCP/UDP PORT NO) NTP (Network Time protocol) Client Jumbo Frame packet support: 9022byte Stacking & IP Clustering: 8 Clustering |
| Multicasting Protocol | IGMP v2.0, IGMP snooping, 255 snoop Table, IGMP query, IGMP Join/Leave Suppression, IGMP Fast Leave, IGMP Static Join, 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 |

FTTH Solutions >> GE-PON Solution >> C524W

GEPON ONT 4-port FE + 2-port FXS + Wi-Fi (n) + EPON (Routing mode)



Overview

The C524W is an EPON Optical Network Terminal designed for SFU (Single Family Unit) used in home and small office environment. It provides subscriber with rich, individualized, and comfortable triple-play services including video (IPTV), voice and high speed internet access. It has a glossy appearance and green, energy-saving advantage.

It supports 4 Fast Ethernet (UTP, RJ45) ports, 2 FXS (RJ 11) ports, and Wi-Fi (802.11 b/g/n) interface to the subscriber. It is connected to GEAPON OLT and RN (Remote Node) via a fiber optic cable to provide TPS (Triple Play Service).

By adopting the state-of-the-art E-PON technology, C524W supports various features including Quality of Service (QoS) function, management function enabling prompt reactions against the problems in the system or a subscriber line, security function protecting subscriber information safe, and subscriber management function sheltering user information from illegal users.

Features

- 4FE Downlink Interface
- 2 FXS Telephone Line(RJ-11) Interface for VoIP service
- Wireless LAN (802.11b/g/n)
- NAT/NAPT
- DHCP Function
- Multicast Function
- QoS Features
- IPv4/IPv6 Compatibility
- Maximum 1514 byte Ethernet frame (without VLAN)
- 128 MAC address learning for R end in FTTC scenario.
- Compliant with 1000BASE-PX10 according to YD/T 1475-2006 - EPON.
- Uplink throughput: no less than 360Mbps.
- Downlink throughput: 380Mbps.

- ONU queue priority: no less than 4.
- Power consumption: less than 12W

Specification

| Item | | Description |
|-----------------|--------------|--|
| Type | | Standalone type |
| Interface | PON | 1000Base-PX20 |
| | LAN | 10/100BaseTx (RJ-45: 4 ports), MDI/MDIX Auto-Negotiation |
| | VoIP | FXS Interface(RJ-11: 2 ports) |
| | Power Switch | On/Off |
| | Power(DC) | DC 12V 1.5A |
| | Reset Switch | Reset to factory |
| | WPS Switch | Wi-Fi Protected Setup |
| | ANT | Fixed Wireless LAN Antenna |
| Front Panel LED | Power | Power On/Off status |
| | PON | Logical Link status of PON, Loss Of Signal |
| | DATA | PON Link and Data Transmission status |
| | LAN 1/2/3/4 | LAN Link and Data Transmission status |
| | VoIP | VoIP Link and Voice Call status |
| | Wireless | WLAN Link and Data Transmission status |
| | TEL 1/2 | VoIP Link and Voice Call Status |
| Accessories | | UTP Cat.5 Ethernet Cable(RJ-45, Straight) Power Adaptor (Input - AC: 100 ~ 220V (± 20%)) User Manual |

Network Features

- Wire-speed WAN and LAN
- Full-duplex Mode WAN and LAN
- Auto MDI/MDIX (Medium Dependent Interface Cross) WAN and LAN
- IEEE 802.1q VLAN(Tagged, untagged by port) for WAN port
- Maximum 16 Active VLAN
- VLAN ID range of 1~4094
- 4K MAC Address

Multicast Features

- IGMPv2
- IGMPv3
- IGMP Snooping
- IGMP Join/Leave Suppression
- IGMP Fast Leave
- IGMP Proxy
- 32 Multicast Group entry
- Multicast throughput: 400M.
- Multicast delay < 1.5ms.
- Multicast address capacity: no less than 8.

VoIP Features

- G.711A/u, G.729, G.723, G.722 etc.
- T.38 Fax

- Support different signals: dialing tone, ring back tone, etc.
- Support SIP
- Support MGCP
- RTP / RTCP Support RFC 3550 & RFC 3551
- Support call waiting
- Support call holding
- Support call forwarding
- Three Party Service
- Support caller ID display (Type 1 and 2)
- Support DTMF

DHCP Feature

- DHCP Client
- DHCP Server
- In NAT mode, IP will be assigned from the IP Pool of the device, and in Bridge mode, the IP will be assigned from the DHCP server in the network

NAT/NAPT

- Selectable between NAT mode and bridge mode
- Dynamic/static private IP in NAT mode
- Wire-speed for bi-directional packets of more than 256 Byte in NAT/NAPT
- Port Forwarding and DMZ Host function
- Minimum 500 bi-directional concurrent sessions

QoS Feature

- Rate limiting ($\pm 10\%$)
- QoS for both upstream and downstream

| Item | Detail | Remark |
|----------------|---|------------------------|
| Classification | Physical port 802.1p SRC/DST IP address TOS/DSCP TCP/UDP SRC/DST port | Layer 1, 2, 3, 4 |
| Marking | 802.1p DSCP | Layer 2, 3 |
| Scheduling | SPQ | 3 Queues per interface |

Security

- Broadcast storm control
- MAC filtering

WiFi Features

- IEEE 802.11b/g/n
- Functional condition
- Automatic Fallback
- 4-level adjustable channel Transmission Output
- Manual or automatic selectable channel
- Setting and changing of number of CPEs that can access at one time
- Mixed use of 802.11b, 802.11g, 802.11n
- Encryption (Keys such as Hex, ASCII, special character should be supported)
- 64/128bit Static WEP Key
- WPA

- WPA2
- WPA-PSK
- WPA-PSK2(Option)
- 4 or more Virtual AP (Multi SSID), and each SSID supports different encryption
- SSID should support alphabet, numeric, special character
- Hidden SSID
- Wireless LAN QoS function: IEEE 802.11e(WMM)
- Traffic classification by 802.1p and DSCP field value
- IEEE 802.1x
- EAP MD5/EAP TTLS
- PEAP
- RADIUS Client function
- TR-069
- Session Timeout function.
- Upon re-authentication due to Session Timeout, it should be managed by the same Session ID
- Idle Timeout
- Session Timeout value and Idle Timeout value shall be obtained from Authentication system
- Web Redirection upon authentication failure
- Session termination upon wireless link down
- Account termination transmission function

| Acct-Terminate-Cause | Value | Description |
|----------------------|-------|--|
| User Request | 1 | User logoff |
| Lost Carrier | 2 | Wireless link down for specific time period |
| Lost Service | 3 | When the previous AP sends Acct-stop in roaming mode |
| Idle Timeout | 4 | Idle Timeout termination |
| Session Timeout | 5 | Session Timeout termination |
| Admin Reset | 6 | When admin stops specific Session |
| Admin Reboot | 7 | When admin reboots the AP |

Operating & Management

- OAM
- System or module LED.
- SNMP v1, v2 MIB.
- Memory structure that allows to save or modify Configuration File
- Memory should keep the contents of the memory even when power supply is stopped.
- Local and remote Firmware Upgrade (The existing Image should be kept when upgrade fails).
- Normal session for system management even when CPU overload
- Remote Management
- Remote access through Telnet(RFC 854, 855)
- CPE Management Server
- Device Reset
- LAN port reset
- Setting and changing Config
- Firmware download only through Web Server by TR069
- VLAN ID change
- MAC Filtering
- Time sync through NTP Server
- Device status and performance management

Interface Configuration

| Name | Spec. | Description |
|--------------------|-------|--|
| ON/OFF | | Power On / Off |
| Power Jack DC 5V2A | | The input terminal that a power adaptor is connected to. |

| | | |
|-------------|-------------|--|
| LAN 1/2/3/4 | RJ-45 | Connected through a LAN port UTP cable. |
| TEL 1/2 | RJ-11 | Connected through a FXS port RJ-11 cable. |
| WiFi | 802.11b/g/n | Wi-Fi Interface with WPS button (Optional) |
| Line | SC/APC | EPON port (need to be kept clean) |

FTTH Solutions >> GE-PON Solution >> C504W

GEPON ONT 4-port FE + Wi-Fi (n) + EPON (Routing mode)



Overview

The C504W is an EPON Optical Network Terminal designed for SFU (Single Family Unit) used in home and small office environment. It provides subscriber with rich, individualized, and comfortable triple-play services including video (IPTV), voice and high speed internet access. It has a glossy appearance and green, energy-saving advantage.

It supports 4 Fast Ethernet (UTP, RJ45) ports and Wi-Fi (802.11 b/g/n) interface to the subscriber. It is connected to GEAPON OLT and RN (Remote Node) via a fiber optic cable to provide TPS (Triple Play Service).

By adopting the state-of-the-art E-PON technology, C504W supports various features including Quality of Service (QoS) function, management function enabling prompt reactions against the problems in the system or a subscriber line, security function protecting subscriber information safe, and subscriber management function sheltering user information from illegal users.

Features

- 4FE Downlink Interface
- Wireless LAN
- NAT/NAPT
- DHCP Function
- Multicast Function
- QoS Features
- IPv4/IPv6 Compatibility

Specification

| Item | | Description |
|-----------------|--------------|--|
| Type | | Standalone type LED: Power,PON,DATA,LAN1,LAN2,LAN3,LAN4,Wireless |
| Interface | PON | 1000Base-PX20 |
| | LAN | 10/100BaseTx (RJ-45: 4port), MDI/MDIX Auto-Negotiation |
| | Power Switch | On/Off |
| | Power(DC) | DC 5V 2A |
| | Reset Switch | Return to initial factory settings |
| | WPS Switch | Wi-Fi Protected Setup |
| | ANT | Fixed Wireless LAN Antenna |
| Front Panel LED | Power | Power On/Off status |
| | PON | Logical Link status of PON, Loss of Optical Signal |
| | DATA | PON Link and Data Transmission status |
| | LAN | LAN Link and Data Transmission status |
| | Wireless | WLAN Link and Data Transmission status |
| Accessories | | UTP Cat.5 Ethernet Cable(RJ-45, Straight) Power Adaptor (Input - AC: 100 ~ 220V (± 20%)) User Manual |

Network Features

- Wire-speed WAN and LAN
- Full-duplex Mode WAN and LAN
- Auto MDI/MDIX (Medium Dependent Interface Cross) WAN and LAN
- IEEE 802.1q VLAN(Tagged, untagged by port) for WAN port
- Maximum 16 Active VLAN
- VLAN ID range of 1~4094
- 4K MAC Address

Multicast Features

- IGMPv2
- IGMPv3
- IGMP Snooping
- IGMP Join/Leave Suppression
- IGMP Fast Leave
- IGMP Proxy
- 32 Multicast Group entry

DHCP Feature

- DHCP Client
- DHCP Server
- In NAT mode, IP will be assigned from the IP Pool of the device, and in Bridge mode, the IP will be assigned from the DHCP server in the network

NAT/NAPT

- Selectable between NAT mode and bridge mode
- Dynamic/static private IP in NAT mode
- Wire-speed for bi-directional packets of more than 256 Byte in NAT/NAPT.
- Port Forwarding and DMZ Host function

- Minimum 500 bi-directional concurrent sessions

QoS Feature

- Rate limiting ($\pm 10\%$)
- QoS for both upstream and downstream

| Item | Detail | Remark |
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| Marking | 802.1p DSCP | Layer 2, 3 |
| Scheduling | SPQ | 3 Queues per interface |

Security

- Broadcast storm control
- MAC filtering

WiFi Features

- IEEE 802.11b/g/n
- Functional condition
- Automatic Fallback
- 4-level adjustable channel Transmission Output
- Manual or automatic selectable channel
- Setting and changing of number of CPEs that can access at one time.
- Mixed use of 802.11b, 802.11g, 802.11n
- Encryption (Keys such as Hex, ASCII, special character should be supported).
- 64/128bit Static WEP Key
- WPA
- WPA2
- WPA-PSK
- WPA-PSK2(Optional)
- 4 or more Virtual AP (Multi SSID), and each SSID supports different encryption.
- SSID should support alphabet, numeric, special character
- Hidden SSID
- Wireless LAN QoS function: IEEE 802.11e(WMM)
- Traffic classification by 802.1p and DSCP field value
- IEEE 802.1x
- EAP MD5/EAP TTLS
- PEAP
- RADIUS Client function
- TR-069
- Session Timeout function.
- Upon re-authentication due to Session Timeout, it should be managed by the same Session ID.
- Idle Timeout
- Session Timeout value and Idle Timeout value shall be obtained from Authentication system.
- Web Redirection upon authentication failure
- Session termination upon wireless link down
- Account termination transmission function

| Acct-Terminate-Cause | Value | Description |
|----------------------|-------|-------------|
| User Request | 1 | User logoff |

| | | |
|-----------------|---|--|
| Lost Carrier | 2 | Wireless link down for specific time period |
| Lost Service | 3 | When the previous AP sends Acct-stop in roaming mode |
| Idle Timeout | 4 | Idle Timeout termination |
| Session Timeout | 5 | Session Timeout termination |
| Admin Reset | 6 | When admin stops specific Session |
| Admin Reboot | 7 | When admin reboots the AP |

Operating & Management

- OAM
- System or module LED.
- SNMP v1, v2 MIB.
- Memory structure that allows to save or modify Configuration File
- Memory should keep the contents of the memory even when power supply is stopped.
- Local and remote Firmware Upgrade(The existing Image should be kept when upgrade fails).
- Normal session for system management even when CPU overload
- Remote Management
- Remote access through Telnet(RFC 854, 855)
- CPE Management Server
- Device Reset
- LAN port reset
- Setting and changing Config
- Firmware download Only through Web Server by TR069
- VLAN ID change
- MAC Filtering
- Time sync through NTP Server
- Device status and performance management

Interface Configuration

| Name | Spec. | Description |
|--------------------|-------------|--|
| ON/OFF | - | Power On / Off |
| Power Jack DC 5V2A | - | The input terminal that a power adaptor is connected to. |
| LAN1/2/3/4 | RJ-45 | Connected through a LAN port UTP cable. |
| WiFi | 802.11b/g/n | Wi-Fi Interface with WPS button |
| Line | SC/APC | EPON port (need to be kept clean) |

FTTH Solutions >> GE-PON Solution >> C504LL



Overview

The C504LL is an EPON Optical Network Terminal designed for SFU (Single Family Unit) used in home and small office environment. It provides subscriber with rich, individualized, and comfortable triple-play services including video (IPTV), voice and high speed internet access. It has a small form factor and green, energy-saving advantage.

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

By adopting the state-of-the-art E-PON technology, C504LL supports various features including Quality of Service (QoS) function, management function enabling prompt reactions against the problems in the system or a subscriber line, security function protecting subscriber information safe, and subscriber management function sheltering user information from illegal users.

Features

- Four ports Gigabit Ethernet for downstream
- Bridge mode operation
- Multicast Support for IPTV Service
- Power Saving Mode Support
- LD Shutdown Function
- QoS Features
- IPv4/IPv6 Compatibility
- Support up to 256 MAC addresses
- Compliant with 1000BASE-PX10 according to YD/T 1475-2006-EPON.
- Uplink throughput: no less than 360Mbps.
- Downlink throughput: 380Mbps.
- ONU queue priority: no less than 4.
- Low Power consumption: less than 15W

Specification

Hardware

| Item | Description | |
|-----------|-----------------|---|
| Type | Standalone type | |
| Interface | Line | PON, 1000Base-PX20 (SC/APC), need to be kept clean |
| | LAN 1/2/3/4 | Four 10/100/1000BaseTx ports, MDI/MDIX Auto-Negotiation |

| | | |
|-----------------|--|--|
| | PWR | Power Switch, On/Off |
| | Input Power | DC 5V 2A |
| Front Panel LED | PWR | Power On/Off status |
| | Line | Logical Link status of PON, Loss of Optical Signal |
| | Data | PON Link and Data Transmission status |
| | LAN 1/2/3/4 | LAN Link and Data Transmission status |
| Accessories | UTP Cat.5 Ethernet Cable(RJ-45, Straight) Power Adaptor (Input - AC: 100 ~ 220V (± 20%)) User Manual | |

Software

| Item | | Description |
|---------------------------------|----------------------|--|
| Standard | | IEEE 802.3ah |
| Function and Performance | EPON | IEEE802.3ah MPCP, OAM compliant 802.1Q VLAN Per LLID Filtering/Classification Supports up to four Logical Link IDs (LLID) AES-128 Downstream decryption Dying Gasp Automatic Plug and Play function for WAN PON Port (Discovery and Authorization) |
| | L2 Features | IEEE802.1Q VLAN IEEE802.1D Spanning Tree Protocol Support up to 256 MAC Address |
| | Multicasting | IGMP v1/v2, IGMP proxy/snooping for IPTV service |
| | QoS | IEEE802.1P Packet classification and marking (802.1P) Rate limiting |
| | Security & filtering | MAC address limiting |
| Technical Standard and Protocol | | IEEE Std 802.3™-2002 Carrier sense multiple access with collision detection (CSMA/CD) access method and physical layer specifications IEEE Std 802.1D, 1998 Edition Media Access Control (MAC) Bridges IEEE Std 802.1Q, 2003Edition Virtual Bridged Local Area Networks IEEE Std 802.1w-2001 Media Access Control (MAC) Bridges — Amendment 2: Rapid Reconfiguration IEEE Std 802.1s™-2002 Virtual Bridged Local Area Networks—Amendment 3: Multiple Spanning Trees IEEE Std 802.1X-2001 Port-Based Network Access Control IEEE Std 802.3ah.-2004 Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications Amendment: Media Access Control Parameters, Physical Layers, and |

| | |
|--|--|
| | <p>Management Parameters for Subscriber Access Networks IEEE P802.1ad/D6.0 Draft Standard for Local and Metropolitan Area Networks—Virtual Bridged Local Area Networks — Amendment 4: Provider Bridges</p> |
|--|--|

FTTH Solutions >> GE-PON Solution >> C501LL



Overview

The C501LL is an EPON Optical Network Terminal designed for SFU (Single Family Unit) used in home and small office environment. It provides subscriber with rich, individualized, and comfortable triple-play services including video (IPTV), voice and high speed internet access. It has a small form factor and green, energy-saving advantage.

It supports 1(one) Gigabit Ethernet (UTP, RJ45) ports to subscriber. It is connected to GE-PON OLT and RN (Remote Node) via a fiber optic cable to provide TPS (Triple Play Service).

By adopting the state-of-the-art E-PON technology, C501LL supports various features including Quality of Service (QoS) function, management function enabling prompt reactions against the problems in the system or a subscriber line, security function protecting subscriber information safe, and subscriber management function sheltering user information from illegal users.

Features

- One port Gigabit Ethernet for downstream
- Bridge mode operation
- Multicast Support for IPTV Service
- LD Shutdown Function when ONT occurs the fault. (Automatic Shutdown Function)
- QoS Features
- IPv4/IPv6 Compatibility
- Compliant with 1000BASE-PX10 according to YD/T 1475-2006-EPON.
- ONU queue priority: no less than 4.
- Low Power consumption: less than 5W

Specification

Hardware

| Item | Description | |
|-----------------|-----------------|---|
| Type | Standalone type | |
| Interface | Line | 1000Base-PX10 (SC/APC), need to be kept clean |
| | LAN | One 10/100/1000BaseTx port, MDI/MDIX Auto-Negotiation |
| | PWR | Power Switch, On/Off |
| | Input Power | Input Power, DC 5V 2A |
| Front Panel LED | PWR | Power On/Off status |
| | Line | Logical Link status of PON, Loss of Optical Signal |
| | Data | PON Link and Data Transmission status |
| | LAN | LAN Link and Data Transmission status |

| | |
|-------------|--|
| Accessories | UTP Cat.5 Ethernet Cable(RJ-45, Straight) Power Adaptor (Input - AC: 100 ~ 220V (± 20%)) User Manual |
|-------------|--|

Software

| Item | Description |
|---------------------------------|---|
| Standard | IEEE 802.3ah |
| Function and Performance | EPON IEEE802.3ah MPCP, OAM compliant 802.1Q VLAN Per LLID Filtering/Classification Supports up to four Logical Link IDs (LLID) AES-128 Downstream decryption Dying Gasp Automatic Plug and Play function for WAN PON Port (Discovery and Authorization) |
| | L2 Features IEEE802.1Q VLAN IEEE802.1D Spanning Tree Protocol Support up to 256 MAC Address |
| | Multicasting IGMP v1/v2, IGMP proxy/snooping for IPTV service |
| | QoS IEEE802.1P Packet classification and marking (802.1P) Rate limiting |
| | Security & filtering MAC address limiting |
| Technical Standard and Protocol | IEEE Std 802.3™-2002 Carrier sense multiple access with collision detection (CSMA/CD) access method and physical layer specifications IEEE Std 802.1D, 1998 Edition Media Access Control (MAC) Bridges IEEE Std 802.1Q, 2003Edition Virtual Bridged Local Area Networks IEEE Std 802.1w-2001 Media Access Control (MAC) Bridges — Amendment 2: Rapid Reconfiguration IEEE Std 802.1s™-2002 Virtual Bridged Local Area Networks—Amendment 3: Multiple Spanning Trees IEEE Std 802.1X-2001 Port-Based Network Access Control IEEE Std 802.3ah.-2004 Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications Amendment: Media Access Control Parameters, Physical Layers, and Management Parameters for Subscriber Access Networks IEEE P802.1ad/D6.0 Draft Standard for Local and Metropolitan Area Networks—Virtual Bridged Local Area Networks — Amendment 4: Provider Bridges |

FTTH Solutions >> GPON Solution >> U9264H-GPON



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 network.

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 slot cards, meanwhile the PIU slots can accept 8-port 2.5G GPON up to 8 slot cards.

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, Security and IPv6 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" Chassis with 8 RU Height, 14 slots
- 960Gbps switching capacity, 10GE based next generation platform
- 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
- IPv4/IPv6 Dual Stack Operations

Features

- System Architecture
 - 14 slots, 8RU, 19" mounting
 - 3 FAN Module
 - AC / DC Power Module(Redundancy)
- 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 Module (SCU)
- Switching capacity: 960Gbps/357Mpps
- Switching Fabric: 80G per slot
- Subscriber capacity: 64 GPON Max. 4096 subscribers(1:64 splits)
- All Cards and Modules support Hot-swapping
- PON interface
 - Max. 8 slots: up to 64 PONs
 - 8-ports GPON module (Up to 64 GPON ports, 8 slots)
- Network interface
 - Max. 2 slots available for below slot cards:
 - 8-port 1GE card with 1000Base-T interface
 - 8-port 1GE card with 1000Base-X interface
 - 2-port 10GE card
 - 4-port 10GE card
- Fully Redundant System
 - Switch & Control Card(SCU)
 - AC/DC Power Supply Unit(PSU)
 - Any two PON ports from any two PIU cards
- Support Various SFP/XFP transceiver
- Management:1-port 100Base-Tx & RS-232
- IPv4 / IPv6(planned)
- 10Km/20Km at different splits (32) at -22dBm(Basic) or -27dBm(Optional)
- S/W Upgrade without service interruption
- Loop-Back Test Function
- RSSI (Received Signal Strength Indicator)
 - Detects (Senses) and indicates GPON signal strength by checking Rx/Tx signal of ONTs.
- Automatic Laser Diode Shutdown (in case of ONT fault)
 - Detects any ONT working in continuous mode and shutdown the laser diode of the ONT to prevent service failure over PON network.

Specification

Hardware

| U9264H 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 OMC1 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) RIPng(IPv6) OSPFv2(IPv4)/v3(IPv6) IS-IS BGP4(IPv4)/4+(IPv6) VRRPv2(IPv4)/v3(IPv6) PBR(Policy Based Routing) ECMP Max 8 Routes |

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

| | |
|--|--|
| | <p>NTP Packet monitoring with TCPDUMP RMON, Syslog Type based Port, CPU Packet statistics</p> |
| <p>Synchronization (Optional)</p> | <p>BITS Clock : 2.048MHz Support of 1588v2 Slave and Master ITU-T G.8261 / ITU-T G.8262 Compliant E1/T1 Timing source : 2.048MHz / 1.544MHz / 8KHz SyncE Timing source : 156.25MHz or 125MHz</p> |

FTTH Solutions >> GPON Solution >> U9016B-GPON



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(Switching & CPU 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-ports of 1000Base-X (SFP) and 2-ports of 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 customer build a PON network with multiple sets of U9016B and U9264H.

Features

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

Specification

Hardware

| Item | Description |
|-------------------------|---|
| Number of PON Interface | 8 Ports 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 |

| | |
|---------------------------------|---|
| | <p>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)</p> |
| <p>QoS Features</p> | <p>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</p> |
| <p>Security Features</p> | <p>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</p> |
| <p>System Security Features</p> | <p>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</p> |

FTTH Solutions >> GPON Solution >> P3424GP

GPON ONU based on FE L2 switch



Overview

P3424GP is an L2 switch devised as a GPON MDU providing FTTH broadband multimedia service. With its rack mount design and ease of installation, the P3424GP 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 P3424GP can also have optional 2-port 1000BASE-X module or optional 100/1000BASE-TX 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.

As one of the preparation for the future network enhancement, Premier 3424GP is designed to support IPv6 and is capable of adapt itself to IPv6 network environment easily.

The P3424GP 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-Tx 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.
- Hardware based IPv6

Specification

| P3424GP 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 10/100BASE-TX (RJ-45) 1000BASE-TX (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" 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°C ~ +50°C |
| Storage temperature | -20°C ~ +60°C |
| Performance | |
| Switching Fabric | 12.8 Gbps non-blocking |
| Throughput | 6.5 Mpps wire-speed L2 Switching |
| IPv6 | Enabled |
| 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/Packet 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, |

| Standards | |
|----------------------------|---|
| IEEE Standards | IGMP snooping, IGMP proxy-reporting 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 |

FTTH Solutions >> GPON Solution >> 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°C ~ 60°C Operating Temperature
- 5% ~ 95% Humidity(Non-Condensing)

Specification

| Item | Description |
|------------------------|--|
| SYSTEM HW ARCHITECTURE | 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°C ~60°C (32°F ~140 °F) Operating Temperature Dying Gasp support |
| NETWORK FEATURES | 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 | ITU-T G.984 GPON compliant (984.1/.2/.3/.4) |

| | |
|--------------------------------|--|
| | <p>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</p> |
| <p>QoS / Security FEATURES</p> | <p>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</p> |
| <p>OAM</p> | <p>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</p> |

FTTH Solutions >> GPON Solution >> C604GR

GPON ONT 4-Ports GE + RF Port



Overview

C604GR 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.

C604GR basically operates at bridge mode providing complimentary features like Q-in-Q, VLAN translation, VLAN trunking and VLAN tagging/detaagging 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°C ~60°C Operating Temperature
- 5% ~ 95% Humidity(Non-Condensing)
- FCC/ UL/ ETSI Certified

Specification

| Item | Description |
|------------------------|---|
| SYSTEM HW ARCHITECTURE | 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°C ~60°C (32°F ~140 °F) Operating Temperature Dying Gasp support |
| NETWORK FEATURES | Bridge Mode Support 256 MAC address and 16 VLAN group VLAN stacking (Q-in-Q), VLAN translation, VLAN trunking VLAN tagging/detaagging per Ethernet port IGMP v2/v3 snooping |

| | |
|--------------------------------|---|
| <p>PON FEATURES</p> | <p>ITU-T G.984 GPON compliant (984.1/.2/.3/.4) Single fiber, integrated triplexer transceiver 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</p> |
| <p>RFoG Specification</p> | <p>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</p> |
| <p>QoS / Security FEATURES</p> | <p>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</p> |
| <p>OAM</p> | <p>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</p> |

FTTH Solutions >> GPON Solution >> 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) |
| LAN | 4x 10/100/1000Base-TX 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 | |

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| | 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 | |

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| | 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 |

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| | 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. | |