

Appendix 6.

User manual

Overview

The CS6204W is an ONT (Optical Network Terminal) based on EPON technology for home and small office. 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 GE-PON OLT (Optical Line Terminal) and RN (Remote Node) via a fiber optic cable to provide internet and voice service.

CS6204W is connected to the IP terminal devices such as a subscriber's home-gateway, PC, laptops, smart phones or VoIP phone. It provides internet service, VoIP, and Wi-Fi service at the speed of up to 300 Mbps per subscriber.

CS6204W allows up to 32 subscribers to share the data of 1.25Gbps with one optic cable via passive optical distribution device. It adopts the state-of-the-art E-PON technology.

By adopting the state-of-the-art E-PON technology, CS6204W supports various functions, superior to those of the existing Ethernet switch, including QoS (Quality of Service) function, management function that enables prompt actions to be taken against the problems in the system and a subscriber line, security function that secures subscriber information safely, and subscriber management function that secures user information from illegal users such as crackers.

Key Features

- Supports IEEE 802.11b/g/n standard.
- 2 FXS Phone Line(RJ-11) Interface for VoIP service
- Supports WEP 64-bit / 128-bit Security password authentication and WPA, WPA2.
- Powerful internet sharing function
- Supports IEEE 802.1q VLAN Configuration function.
- 4 Ethernet LAN ports supported 10/100Mbps and one 1.25G EPON port for WAN
- Supports ProDHCP function (Server/Client).
- Supports specific application, virtual server, DMZ, Access Control and Firewall.
- The management program based on WEB and GUI
- Remote system management via Internet and software upgrade

Contents of the Package



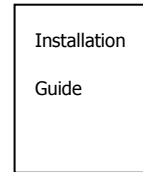
CS6204W



Power Adaptor



RJ45 Cable



Installation Guide

Precautions



Warning Before you install the CS6204W, read this section. This section contains important safety information you should know before working with the system.

Power Considerations

- Be careful when connecting the system to the supply circuit so that wiring is not overloaded.
- When plugging in a power socket or handling any power source, avoid ring, necklace, metal watch for better safety. If these materials touch the power socket or ground of the product, the parts can be burnt out.
- Always make sure if there is any possible danger in the workshop. Wet floor, ungrounded extension, rubbed-off power code, or unsafe (or ungrounded) floor might be dangerous.

Installing and Servicing the System

- Before installation, the power switch of the system should be turned OFF and disconnect all power and external cables.
- Remove all jewelry (including rings and chains) or other items that could get caught in the system or heat up and cause serious burns.
- Do not work alone under potentially hazardous conditions.
- Do not perform any action that creates a potential hazard to people or makes the equipment unsafe.

Disconnecting Power

When disconnecting power, note the following guidelines.

- Locate the emergency power-off switch for the room before working with the system.

- To completely turn off the system, disconnect the power connection to all power supplies.
- For DC power supplies, locate the circuit breaker on the panel board that services the DC circuit, switch the circuit breaker to the off position, and tape the switch handle of the circuit breaker in the off position.
- Do not touch the power supply when the power cord is connected. Line voltages are present within the power supply even when the power switch is off and the power cord is connected.

Connecting Cables

When you connect cables, note the following guidelines.

- Do not work on the system or connect or disconnect cables during periods of lightning activity.

Working with Lasers

If your system includes a fiber-optic port, note the following guidelines.

- To avoid exposure to radiation, do not stare into the aperture of a fiber-optic port. Invisible radiation might be emitted from the aperture of the port when no fiber cable is connected.
- Always keep unused fiber-optic ports capped with a clean dust cap.

Preventing EMI

- When you run wires for any significant distance in an electromagnetic field, electro magnetic interference (EMI) can occur between the field and the signals on the wires.
- Bad plant wiring can result in radio frequency interference (RFI).
- Strong EMI, especially when it is caused by lightning or radio transmitters, can destroy the signal drivers and receivers in the system, and can even create an electrical hazard by conducting power surges through lines and into the system.
- If Strong EMI occurs in the installation place, consult RFI experts to get rid of it.

Disposing of the System

Dispose of the system and its components (including batteries) as specified by all national laws and regulations.

RF Exposure Compliance Issue

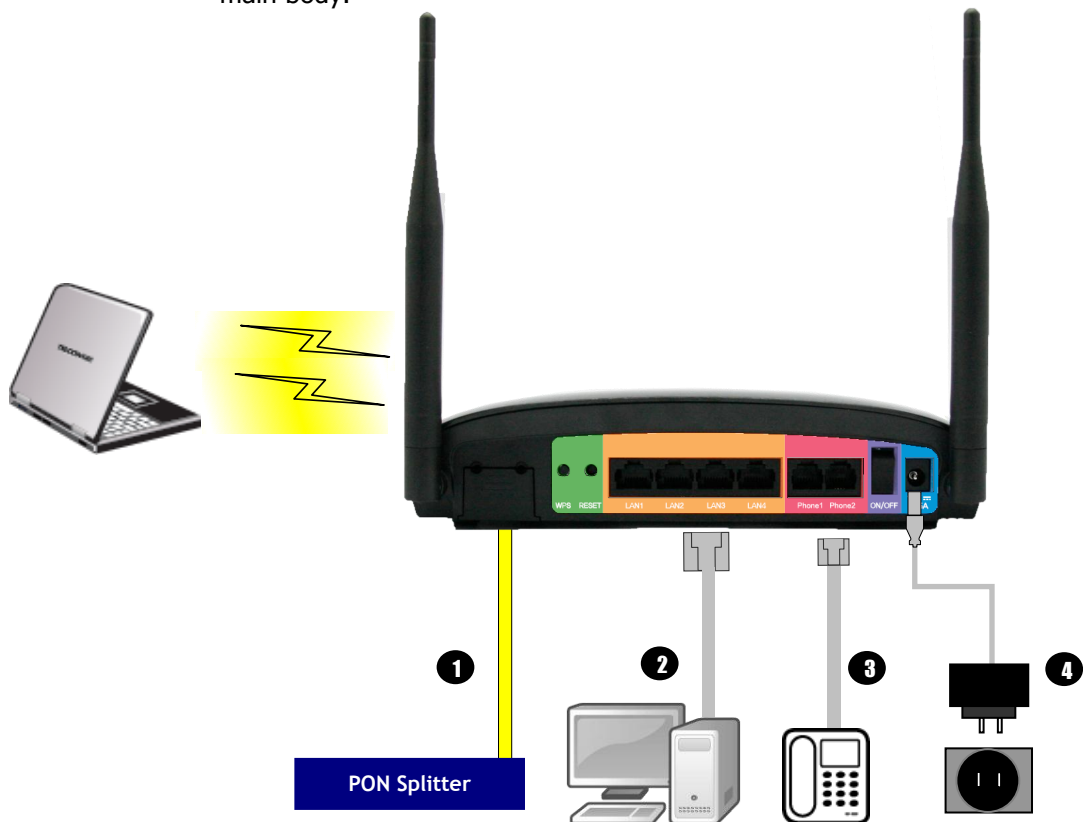
This appliance and its antenna must not be co-located or operation in conjunction with any other antenna or transmitter.

A minimum separation distance of 20 cm must be maintained between the antenna and the person for this appliance to satisfy the RF exposure requirements.

Installation

Warning Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments.

1. Connect the SC/APC connector on the side of a yellow single-mode optical fiber into the optical terminal of the optical outlet and the other connector into the PON port of CS6204W by pushing them until you hear a clicking sound.
2. Connect CS6204W and PC with Ethernet cable.
3. Connect CS6204W and Phone with RJ11 cable.
4. Connect the rated power adaptor (12V 1.5A) provided together with CS6204W main body.



5. Turn on the power switch.
6. Make sure that the POWER LED is ON.



7. Make sure that LAN LED is ON.



8. Make sure that the PON LED is ON in several seconds or minutes. If PON LED is red, the optical signal is very low, so please contact the carrier.
9. If everything is installed properly, the user can see the DATA LED blink while Internet data is sent / received.
10. If you set the wireless configuration properly, the user can see the applicable wireless device (Wireless) LED blink while data is sent or received.
11. If you set the connection of phone connector exactly, the user can see the Phone LED comes to light while voice data is sent or received.

Caution : Any changes or modifications in construction of this device which are not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

System Architecture

Front Panel



LED

| Name | Color | Status | Function | Actions to take |
|----------|--------|------------------------|--|---|
| POWER | BLUE | ON | Power ON | Normal Operation |
| | | OFF | Power OFF | Check Power switch at the back panel-> Power adapter & power outlet |
| PON | BLUE | ON | Link Up (Normal) | Normal Operation |
| | | BLINK (Every 1 sec) | Link Down. Optic signal ON | Call Service Provider |
| | RED | ON | Optical signal has been lost | Call Service Provider |
| | PURPLE | ON | Link Up but optical signal is very low | Call Service Provider |
| DATA | BLUE | OFF | No Data transmitting/receiving | Call Service Provider |
| | | BLINK | Transmitting/receiving Data | Normal Operation |
| LAN 1~4 | BLUE | ON | Ethernet Link Up | Normal Operation |
| | | BLINK | Transmitting/Receiving Ethernet data | Normal Operation |
| | | OFF | Ethernet Link Down | Check cable at PCs |
| Wireless | BLUE | ON | Wireless Link Up | Normal Operation |
| | | BLINK | Transmitting/Receiving Wireless data | Normal Operation |

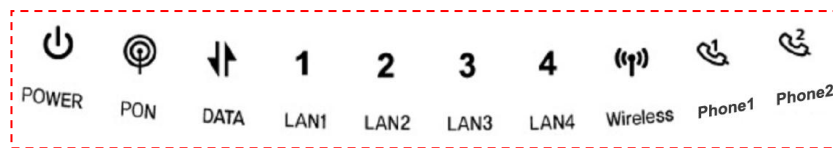
| | | | | |
|-----------|------|-------|-----------------------------------|------------------------------|
| | | OFF | Wireless Link Down | CALL Service Provider |
| PHONE 1,2 | BLUE | ON | PHONE Link Up | Normal Operation |
| | | BLINK | Transmitting/Receiving voice data | Normal Operation |
| | | OFF | PHONE Link Down | CALL Service Provider |

Rear Panel



| Indication | Description |
|-------------------------------------|---------------------------------------|
| PON Interface | 1.25G PON Port |
| WPS | Wi-Fi Protect Setup |
| RESET | Resets the system to factory default. |
| LAN 1~4 | Fast Ethernet Ports |
| PHONE 1~2 | VoIP Ports |
| ON/OFF | Power Switch |
| 12.0V $\overline{\text{---}}$ 1.5 A | Power Terminal |

Troubleshooting:



Symptom: Can not access to the Internet;

- Step 1** Make sure that the ONT is turned on. Once you turn on the power, the POWER LED on the front panel of CS6204W should be turned on. If the POWER LED is turned OFF, please check if the power cable is connected to the power inlet of ONT properly or switch of power strip if any is turned ON. If the problem persists, please call Service Provider.
- Step 2** Make sure that the optical line is connected properly. Once the optic fiber is connected, the PON LED on the front panel of CS6204W should be turned on within few seconds. If the PON LED blinks, call Service Provider to check the optical line connection.
- Step 3** Make sure that the LAN cable is connected properly. Once the LAN cable is connected and user PC is turned on, LAN LED should be turned on. If the LED is not turned on, check the cable connection
- Step 4** Make sure that network setting of your PC is correct. Select "set to 'Obtain IP address automatically'".

Symptom: All the cables are connected, but still can not obtain IP address

- Step 1** Look for the Network Neighborhood or My Network Places icon in your desktop. If it is not there, try your Start Menu.
- Step 2** Right-click the Network Neighborhood/My Network Places icon. A drop-down menu will appear.
- Step 3** Choose the "Properties" option, generally found at the bottom of the menu.
- Step 4** Look for an icon named "Local Area Connection". The icon looks like a pair of computer connected by a link. Double-click this icon.
- Step 5** Click the "General" tab, if it is not already selected. You will see a list of protocols to choose from.
- Step 6** Scroll down and choose Internet Protocol (TCP/IP), and then click the button that is labeled "Properties".
- Step 7** Again, click the "General" tab, if it is not already selected. You will see two choices:
 - 1) "Obtain an IP address Automatically"
 - 2) "Use the following IP address..."
- Step 8** Choose 1) option
- Step 9** Click OK

Specification

| Item | Description | |
|--------------------------|--|--|
| Standard | IEEE 802.3ah | |
| System Architecture | Type | Desktop |
| | Size (mm) | 215(W) x 160(D) x 45(H) |
| Power | Input: 110~220 V \pm 15%, 60 \pm 3Hz Output: 12V, 1.5A (power adaptor used) Consumption: Max 10.0W | |
| Available Interface | PON interface | 1.25G 1000Base-PX, 1 Core SMF |
| | User interface | 4 10/100base-Tx (IEEE 802.3u) |
| | VoIP interface | 2 FXS Phone Line Interface for VoIP (RJ-11) port |
| | Wi-Fi Interface | 802.11b/g/n compliant |
| Environmental Condition | - Operating Temperature/humidity: 0~50 °C , humidity: 20~90% - Storage Temperature/humidity: -30 °C ~60 °C /10%~90% - In compliance with EMI/EMC Class B | |
| Function and Performance | EPON | <ul style="list-style-type: none"> - 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 | <ul style="list-style-type: none"> - IEEE802.1Q VLAN - IEEE802.1D Spanning Tree Protocol - Support up to 256 MAC Address |
| | L3 Features | <ul style="list-style-type: none"> - DHCP Function (Server) - NAPT Function |
| | Multicasting | IGMP v1/v2, IGMP proxy/snooping for IPTV service |
| | QoS | <ul style="list-style-type: none"> - IEEE802.1P - Packet classification and marking (802.1P) - Rate limiting |
| | Security & filtering | - MAC address limiting |
| | VoIP | <ul style="list-style-type: none"> - G.711A/u, G.729, G.723, G.722 etc. - T.38 Fax - Support different signals: dialing tone, ring back tone, etc. |

| | | |
|----------------------------------|---------------------------------|---|
| | | <ul style="list-style-type: none"> - Support SIP - RTP / RTCP Support RFC 3550 & RFC 3551 - Support call waiting, call holding, call forwarding - Three Party Service - Support caller ID display (Type 1 and 2) - Support DTMF |
| System Operation and Maintenance | Link Measurement and diagnostic | <ul style="list-style-type: none"> - Support OAM Remote Loop back test. - OLT detects EPON Signal Strength to check the status of ONT signal received/transmitted based on |
| Physical Characteristics | Optical characteristics | <ul style="list-style-type: none"> - Transmission distance: 10Km or 20Km(Optional) - Transmission quality: BER 10⁻¹⁰ or lower - Transmission level : -1~4dBm |
| | Dielectric resistance | 100Mohm or higher (based on DC 500V) |
| Technical Standard and Protocol | | <ul style="list-style-type: none"> - IEEE Std 802.3™-2002 Carrier sense multiple access with collision detection (CSMA/CD) access method and physical layer specifications - IEEE Std 802.11n: Wireless Local Area Networks - 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 |