

# GE-PON ONT

## C501LL

# Installation Guide



ubiQuoss

ubiQuoss Inc.

24F Millennium B/D, 467-12 Dogok-Dong  
Gangnam-Gu, Seoul 135-700 Korea

TEL: +82-70-8666-5000

FAX: +82-2-2190-3201

E-mail: [oversea.team@ubiQuoss.com](mailto:oversea.team@ubiQuoss.com)

## Overview

The C501LL is an ONT (Optical Network Terminal) based on EPON technology for home and small office. It supports 1 Gigabit Ethernet (UTP, RJ45) ports to the subscriber. It is connected to GE-PON OLT and RN (Remote Node) via a fiber optic cable to provide TPS (Triple Play Service).

C501LL is connected to the IP terminal devices such as a subscriber's home-gateway, PC, laptops, or VoIP phone. It also provides high speed internet service.

C501LL 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, C501LL 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

- One port Gigabit Ethernet for downstream
- Bridge mode operation
- Multicast Support for IPTV Service
- LD Shutdown function (In case that ONT occurs the fault )
- QoS Features
- IPv4/IPv6 Compatibility
- Compliant with 1000BASE-PX20 according to YD/T 1475-2006-EPON
- ONU queue priority: no less than 4

## Contents of the Package



C501LL



Power Adaptor

RJ45 Cable



User Guide

## Precautions



**Warning** Before you install the C501LL, 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.

## Installation

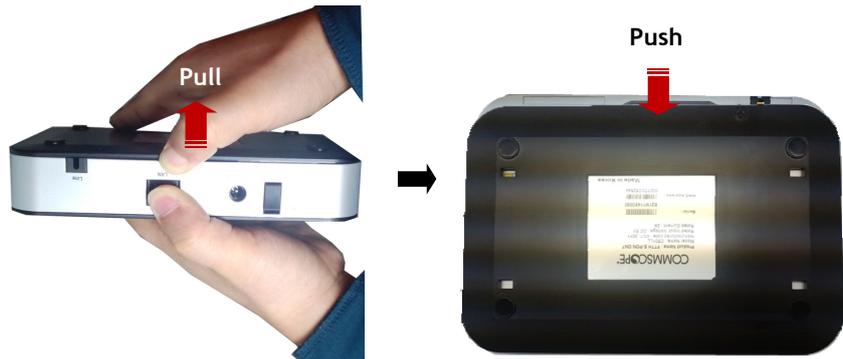


### Warning

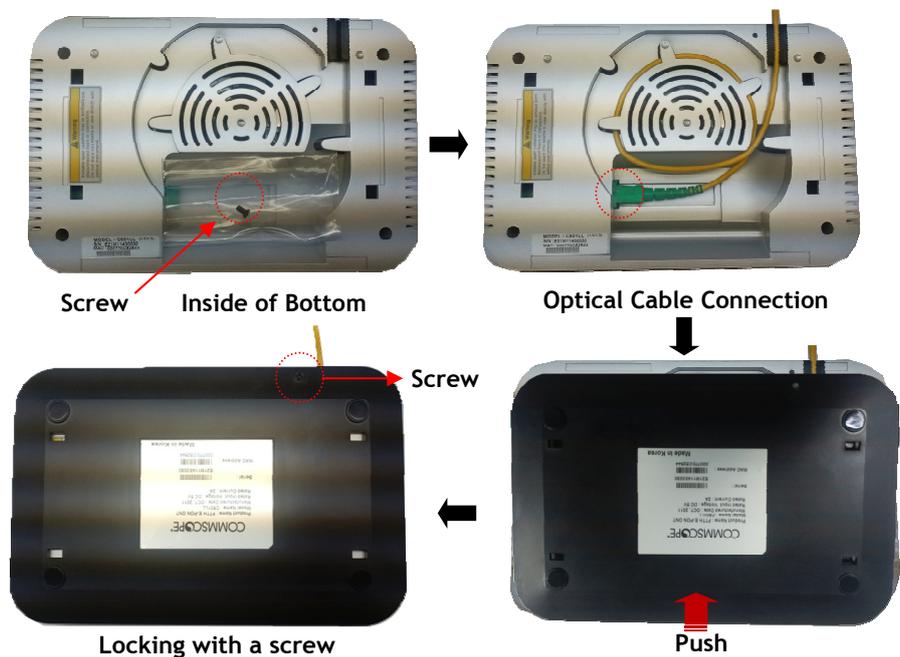


Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments.

1. Open the bottom cover case.
  - Grip the ONT upside down. Then pull the bottom cover case up with your thumb and push it backward with the others at the same time.



2. 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 C501LL by pushing them until you hear a clicking sound.



3. Connect C501LL and PC with Ethernet (RJ 45) cable.

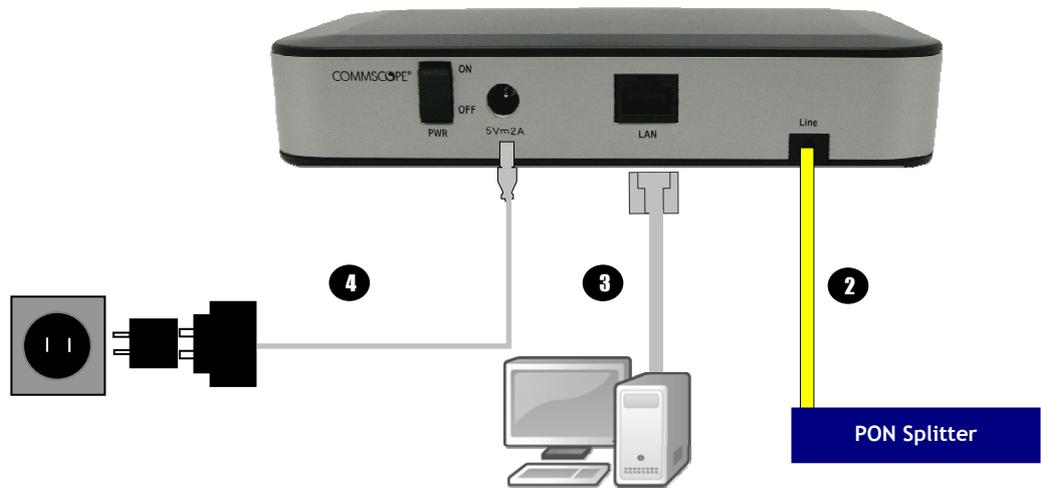


### Caution

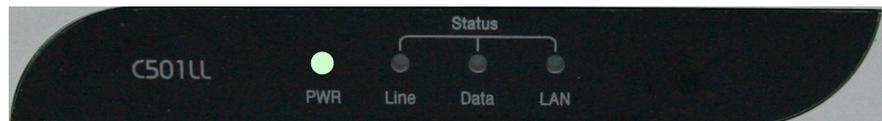
You must connect more than Category 5(RJ 45) cable to use 1G speed. In case of using a twisted-pair cable, choose the one of a proper category, depending on the device speed.

- 10M: Category 3, 4
- 100M: Category 5
- 1000M: Category 5, 5+, 6

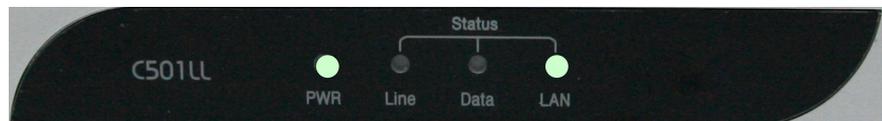
4. Connect the rated power adaptor (5V 2A) provided together with C501LL main body.



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



7. Make sure that LAN LED is ON.



8. Make sure that the Line LED is ON in several seconds or minutes. If Line LED is red, the optical signal is very low, so please contact the Service Provider.
9. If everything is installed properly, the user can see the Data LED blink while Internet data is sent / received.

## System Architecture

### Front Panel



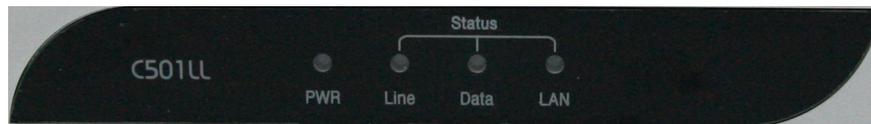
### LED

Name	Color	Status	Function	Actions to take
PWR	GREEN	ON	Power ON	
		OFF	Power OFF	Check Power switch at the back panel-> Power adapter & power outlet
Line	GREEN	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
	ORANGE	ON	Link Up but optical signal is very low	Call Service Provider
Data	GREEN	OFF	No Data transmitting/receiving	Call Service Provider
		BLINK	Transmitting/receiving Data	Normal Operation
LAN	GREEN	ON	1000Base-T Ethernet Link Up	Normal Operation
		BLINK	1000Base-T Transmitting/Receiving Ethernet data	Normal Operation
		OFF	1000Base-T Ethernet Link Down	Check cable at PCs
	Yellow	ON	10/100Base-T Ethernet Link Up	Normal Operation
		BLINK	10/100Base-T Transmitting/Receiving Ethernet data	Normal Operation
		OFF	10/100Base-T Ethernet Link Down	Check cable at PCs

**Rear Panel**

Indication	Description
Line	1.25G PON Port
LAN	Gigabit Ethernet Port
5.0V---2.0 A	Power Terminal
ON/OFF	Power Switch

## 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 PWR LED on the front panel of C501LL should be turned on. If the PWR 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 Line LED on the front panel of C501LL should be turned on within few seconds. If the Line 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, 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)	180(W) x 135(D) x 40(H)
Power	Input: 110~220 V $\pm$ 15%, 60 $\pm$ 3Hz Output: +5V, 2A (power adaptor used) Consumption: Max 4.0W	
Available Interface	PON interface	1.25G 1000Base-PX, 1 Core SMF
	User interface	one port 10/100/1000base-Tx (IEEE 802.3u)
Environmental Condition	<ul style="list-style-type: none"> <li>- Operating Temperature/humidity: 0~50<math>^{\circ}</math>C , humidity: 20~90%</li> <li>- Storage Temperature/humidity: -30<math>^{\circ}</math>C ~60<math>^{\circ}</math>C / 10%~90%</li> <li>- In compliance with EMI/EMC Class B</li> </ul>	
Function and Performance	EPON	<ul style="list-style-type: none"> <li>- IEEE802.3ah MPCP, OAM compliant</li> <li>- 802.1Q VLAN</li> <li>- Per LLID Filtering/Classification</li> <li>- Supports up to four Logical Link IDs (LLID)</li> <li>- AES-128 Downstream decryption</li> <li>- Dying Gasp</li> <li>- Automatic Plug and Play function for WAN PON Port (Discovery and Authorization)</li> </ul>
	L2 Features	<ul style="list-style-type: none"> <li>- IEEE802.1Q VLAN</li> <li>- IEEE802.1D Spanning Tree Protocol</li> <li>- Support up to 256 MAC Address</li> </ul>
	Multicasting	IGMP v1/v2, IGMP proxy/snooping for IPTV service
	QoS	<ul style="list-style-type: none"> <li>- IEEE802.1P</li> <li>- Packet classification and marking (802.1P)</li> <li>- Rate limiting</li> </ul>
	Security & filtering	- MAC address limiting
System Operation and Maintenance	Link Measurement and diagnostic	- Support OAM Remote Loopback test
	LD Shutdown Function	<ul style="list-style-type: none"> <li>- Support the LD shutdown function so that OLT detects any ONTs working in continuous mode and turn off (shutdown) the laser diode of the ONT to prevent service failure over PON network</li> <li>- OLT forces to turn off the malfunctioning ONT by checking continuous mode on laser diode of ONT to block its burst operation.(Optional)</li> </ul>

Physical Characteristics	Optical characteristics	<ul style="list-style-type: none"> <li>- Transmission distance: 10Km or 20Km(Optional)</li> <li>- Transmission quality: BER 10<sup>-10</sup> or lower</li> <li>- Transmission level : -1~4dBm</li> </ul>
	Dielectric resistance	100Mohm or higher (based on DC 500V)
Technical Standard and Protocol		<ul style="list-style-type: none"> <li>- IEEE Std 802.3™-2002 Carrier sense multiple access with collision detection (CSMA/CD) access method and physical layer specifications</li> <li>- IEEE Std 802.1D, 1998 Edition Media Access Control (MAC) Bridges</li> <li>- IEEE Std 802.1Q, 2003Edition Virtual Bridged Local Area Networks</li> <li>- IEEE Std 802.1w-2001 Media Access Control (MAC) Bridges – Amendment 2: Rapid Reconfiguration</li> <li>- IEEE Std 802.1s™-2002 Virtual Bridged Local Area Networks– Amendment 3: Multiple Spanning Trees</li> <li>- IEEE Std 802.1X-2001 Port-Based Network Access Control</li> <li>- IEEE Std 802.3ah.-2004 Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications Amendment:</li> <li>- Media Access Control Parameters, Physical Layers, and Management Parameters for Subscriber Access Networks</li> <li>- IEEE P802.1ad/D6.0 Draft Standard for Local and Metropolitan Area Networks–Virtual</li> <li>- Bridged Local Area Networks – Amendment 4: Provider Bridges</li> </ul>