

User's Manual



2-Port GEPON Managed OLT

▶ EPL-2000



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Revision

PLANET GEPON OLT (2-PON Interface, 2 x GbE SFP, 1 x MGT Port) User's manual MODEL: EPL-2000 REVISION: 1.2 (December, 2014) Part No.: EM-EPL-2000 (2081-BA0080-002)

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1. INTRODUCTION

PLANET GEPON OLT – EPL-2000 – is GEPON Optical Line Terminal (OLT), consisting of two GEPON ports, two Gigabit SFP Interfaces and one management port. The term "GEPON OLT" refers to the OLT in this user's manual.

1.1 Packet Contents

The box should contain the following items:

V	GEPON OLT	x 1
V	MGB-PX20 SFP Transceivers	x 2
V	Quick Installation Guide	x 1
V	19" Rack Mount Accessory Kit	x 1
V	AC Power Cord	x 1

If any of these are missing or damaged, please contact your dealer immediately; if possible, retain the carton including the original packing material, and use them again to repack the product in case there is a need to return it to us for repair.

1.2 Product Description



Perfectly Designed for FTTx Applications

PLANET EPL-2000 is a GEPON **Optical Line Terminal (OLT)**, consisting of two GEPON ports, two Gigabit SFP Interfaces and one management port. It is easy to install and maintain the GEPON deployment. Working with PLANET GEPON **Optical Network Units (ONU)** EPN series, PLANET EPL-2000 can provide highly-effective GEPON solutions and convenient management for broadband network. PLANET GEPON technology provides a high bandwidth of up to 1.25Gbps for both upstream and downstream, long-distance coverage of up to 20km between equipment nodes, and scalability and flexibility in network deployment. It is a cost-effective access technology with reliable and scalable network for Triple-play service applications.



High-speed Connectivity for ISP / Triple Play Devices

With the growing network services such as HDTV, IPTV, voice-over-IP (VoIP) and multimedia broadband applications, the demand for broadband increases quickly. The present broadband environment has not met the market needs; however, **Passive Optical Network (PON)** would be the most promising NGN (Next Generation Networking) technology to fulfill the demand.

Robust Layer 2 Features

With a high-split ratio of 1:64 and supporting the usage of PLANET ONUs, the EPL-2000 can minimize the investment cost for carriers. By using the advanced technology in the telecommunication industry, the EPL-2000 provides strong functionalities for Ethernet features such as VLAN, Multicast, DBA (Dynamic Bandwidth Allocation), and Access Control List. The EPL-2000 is an ideal solution for FTTx applications.

GEPON is a point to multipoint communications protocol based on Gigabit Ethernet. It allows a Gigabit Ethernet communications fiber to be shared by multiple end users using a passive optical splitter. GEPON communication takes place between an Optical Line Terminal (OLT) and multiple Optical Network Units (ONUs). Using standard terminology, downstream traffic flows from OLT to ONU, and upstream traffic flows from ONU to OLT. A protocol called Multi Point Control Protocol (MPCP) is used to arbitrate the channel between the ONU's so that no collisions will occur on the common fiber.

1.3 How to Use This Manual

This User Manual is structured as follows:

Section 2, Hardware INSTALLATION

The section explains the functions of the Switch and how to physically install the GEPON OLT.

Section 3, EMS Utility INSTALLATION

The section contains the information about how to install EMS Utility.

Section 4, EMS Utility CONFIGURATION

The section explains how to manage the GEPON OLT by EMS Utility.

Section 5, SWITCH OPERATION

The chapter explains how to do the switch operation of the GEPON OLT.

Appendix A

The section contains cable information of the GEPON OLT.

1.4 Product Features

GEPON Port

- 2 x SC type GEPON OLT port
- Up to 1.25Gbps for upstream and downstream speed
- Maximum transfer distance of up to 20km
- Each OLT port supports up to 64 ONUs
- Fully compliant with IEEE 802.3ah
- Point-to-multipoint network topology
- LED indicators for link status

Uplink and Management Port

- 2 x 1000BASE-SX/LX SFP Interface
- Maximum transfer distance of up to 120km
- 1 x 10/100BASE-TX RJ45 management port

Layer 2 Features

- Dynamic bandwidth allocation (DBA) support
- Supports VLAN
 - IEEE 802.1Q tagged VLAN
 - Up to 255 VLAN groups, out of 4094 VLAN ID
- Supports up to 8K MAC Address Table
- Enhanced IGMP features
- Supports Link Aggregation on two uplink ports

OLT Management

- User-friendly GUI Management
- IPTV multicast creation and management
- Up to 32 OLTs management through single GUI
- SNMP v1 / v2c monitoring
- Three users levels control
- 2 control interfaces
 - Out-of-band IP via the Management RJ45 port
 - In-band IP via the two uplink ports
- Supports ONU authentication; averts illegal ONUs access to network
- Event message logging to system log
- SNMP trap for alarm notification

ONU Management

- ONU Port control
- ONU Multicast control
- ONU IGMP fastleave
- ONU VLAN mode

1.5 Product Specifications

Product		EPL-2000	
Hardware S	Specifications		
Transmissi	on Speed	Downstream: 1.25 Gbps Upstream: 1.25 Gbps	
Optical Spl	it Ratio	Up to 1:64	
	Uplink Port	2 x 1000BASE-X SFP slot	
Port	PON Port	2 x PON Port	
	MGMT Port	1 x RJ45 (10/100BASE-TX)	
LED Indica	tors	1 x Power LED 1 x System LED 4 x Uplink Port LED (ACT and Link) 2 x PON LED (Link)	
EMS Utility	Specifications		
Switch Fea	ture	IPTV multicast creation and management MAC address learning and binding MAC filtering Supports IGMP mode Supports the VLAN division on the basis of port Up to 4094 VLAN support 8K MAC Addresses support ONU Multicast control ONU IGMP fastleave ONU VLAN mode ONU Port Management	
Manageme	nt	User-friendly GUI Utility Firmware and Configuration upgradeable via Utility Remote ONU Management	
Standards	Conformance		
Safety		FCC Part 15 Class A, CE	
Standards	Compliance	IEEE 802.3 10BASE-T IEEE 802.3u 100BASE-TX IEEE 802.3z Gigabit SX/LX IEEE 802.3x Flow Control and Back pressure IEEE 802.1Q VLAN Tagging	
Environment Specifications			
Dimension	s (W x D x H)	441 x 206 x 44mm	
Weight		2.31kg	
Power		100 – 250V AC	
Temperatu	re	Operating temperature: 0 ~ 50 degrees C Storage temperature: -30 ~ 60 degrees C	
Humidity		Operating Humidity: 10 ~ 90% non-condensing Storage Humidity: 5 ~ 95% non-condensing	

2. HARDWARE INSTALLATION

This section describes the hardware features and installation of the GEPON OLT on the desktop or rack mount. For easier management and control of the GEPON OLT, familiarize yourself with its display indicators and ports. Front panel illustrations in this chapter display the unit LED indicators. Before connecting any network device to the GEPON OLT, please read this chapter completely.

2.1 Hardware Description

2.1.1 OLT Front Panel

The unit front panel provides a simple interface monitoring the OLT. Figure 2-1 shows the front panel of the GEPON OLT.

EPL-2000 Front Panel

PLANET 2-Port GEPON OLT			
	Console Manage	Uplink Port	
	R5-485	GEI GE2	PON1 PON2
		ACT ACT	annan ink ink
EPL-2000	Deal regiment	1000X 1000X	

Figure 2-1 EPL-2000 Front Panel

RS-485 and RJ45 Console Connector

This is just for Manufacturer Technical Use

Reset Button

The reset button is designed for rebooting the GEPON OLT without turning off and on the power. The following is the summary table of reset button functions:

Reset Button Pressed and Released	Function
System reboot	Reboot the GEPON OLT

Management Port

10/100BASE-TX Copper, RJ45 Twisted-[pair: Up to 100 meters

Gigabit SFP Uplink Slots

1000BASE-SX/LX mini-GBIC slot, SFP (Small Form Factor Pluggable) transceiver module: From 550 meters (multi-mode fiber), up to 10/30/50/70/120 kilometers (single-mode fiber).



GE1 & GE2 Gigabit SFP uplink slots support **1000Mbps Forced Mode** only. The remote Gigabit switch or media converter's SFP port must support 1000Mbps Forced Mode as well.

Gigabit SFP PON Slots

1000BASE-PX20 mini-GBIC slot, SFP (Small Form Factor Pluggable) transceiver module: up to 20 kilometers (single-mode fiber).

2.1.2 LED Indications

The front panel LEDs indicate instant status of port links, data activity and system power and help to monitor and troubleshoot when needed. Figure 2-2 shows the LED indications of these GEPON OLTs.

EPL-2000 LED Indication



Figure 2-2 EPL-2000 LED Panel

System

LED	Color	Function	
PWR	Green	Lights: To indicate that the Switch is powered on.	
SVS Groop		Blink: The OLT is ready for management	
515	Green	Off: The OLT is abnormal in system operation	

■ 1000BASE-SX/LX SFP interfaces (GE1 and GE2 Port)

LED	Color	Function	
	Lights: To indicate the link through that SFP port is successfully established		
Off: To indicate that the SFP port is link-down.		Off: To indicate that the SFP port is link-down.	
ACT	Green	Blink: To indicate that the switch is actively sending or receiving data over that port.	

1000BASE-PX20 SFP PON interfaces (PON1 and PON2 Port)

LED	Color		Function
			: To indicate the link through that PON port is successfully established.
LINK Greer		Off:	To indicate that the PON port is link-down.

2.1.3 OLT Rear Panel

The rear panel of the GEPON OLT indicates an AC inlet power socket, which accepts input power from 100 to 250V AC, 50-60Hz. Figure 2-3 shows the rear panel of this GEPON OLT.

EPL-2000 Rear Panel





AC Power Receptacle

For compatibility with electric service in most areas of the world, the GEPON OLT's power supply automatically adjusts to line power in the range of 100-250V AC and 50/60 Hz.

Plug the female end of the power cord firmly into the receptable on the rear panel of the GEPON OLT and the other end of the power cord into an electric outlet and then the power will be ready.

There is a power switch for AC power input use only, whereas DC power input has no power switch.



The device is a power-required device; if your networks should be active all the time, please consider using UPS (Uninterrupted Power Supply) for your device. It will prevent you from network data loss or network downtime.

In some areas, installing a surge suppression device may also help to protect your GEPON OLT from being damaged by unregulated surge or current to the switch or the power adapter.

2.2 Installing the OLT

This section describes how to install your GEPON OLT and make connections to the GEPON OLT. Please read the following topics and perform the procedures in the order being presented. To install your GEPON OLT on a shelf, simply complete the following steps.

2.2.1 Rack Mounting

To install the GEPON OLT in a 19-inch standard rack, please follow the instructions described below:

Step 1: Place the GEPON OLT on a hard flat surface, with the front panel positioned towards the front side.

Step 2: Attach the rack-mount bracket to each side of the GEPON OLT with supplied screws attached to the package.

Figure 2-4 shows how to attach brackets to one side of the GEPON OLT.



Figure 2-4 Attaching Brackets to the GEPON OLT.



You must use the screws supplied with the mounting brackets. Damage caused to the parts by using incorrect screws would invalidate the warranty.

- Step 3: Secure the brackets tightly.
- Step 4: Follow the same steps to attach the second bracket to the opposite side.
- Step 5: After the brackets are attached to the GEPON OLT, use suitable screws to securely attach the brackets to the rack, as shown in Figure 2-5.



Figure 2-5 Mounting the GEPON OLT on a Rack

2.2.2 Installing the SFP Transceiver

The sections describe how to insert an SFP transceiver into an SFP slot. The SFP transceivers are hot-pluggable and hot-swappable. You can plug in and out the transceiver to/from any SFP port without having to power down the GEPON OLT as Figure 2-6 shows.



Figure 2-6 Plugging in the SFP Transceiver

■ Approved PLANET SFP Transceivers

PLANET GEPON OLT supports both Single mode and Multi-mode SFP transceivers. The following list of approved PLANET SFP transceivers is correct at the time of publication:

1000BASE-X SFP modules:

- MGB-SX SFP (1000BASE-SX SFP transceiver / Multi-mode / 850nm / 220m~550m)
- MGB-LX SFP (1000BASE-LX SFP transceiver / Single mode / 1310nm / 10km)
- MGB-L30 SFP (1000BASE-LX SFP transceiver / Single mode / 1310nm / 30km)
- **MGB-L50** SFP (1000BASE-LX SFP transceiver / Single mode / 1310nm / 50km)
- MGB-LA10 SFP (1000BASE-LX SFP transceiver / WDM Single mode / TX: 1310nm, RX: 1550nm/ 10km)
- MGB-LB10 SFP (1000BASE-LX SFP transceiver / WDM Single mode / TX: 1550nm, RX: 1310nm / 10km)
- MGB-TSX SFP (1000BASE-SX SFP transceiver / Multi-mode / 850nm / 220m ~550m; -40~75°C)
- MGB-TLX SFP (1000BASE-SX SFP transceiver / Signle mode / 1310nm / 10km; -40~75°C)
- MGB-TL30 SFP (1000BASE-SX SFP transceiver / Signle mode / 1310nm / 30km; -40~75°C)
- MGB-TL70 SFP (1000BASE-SX SFP transceiver / Signle mode / 1310nm / 70km; -40~75°C)



GEPON OLT EPL-2000 SFP ports of GE1 and GE2 are configured in 1000Mbps Forced Mode. If want to make the connection successfully, the switch's SFP ports should also be in 1000Mbps Forced Mode. Otherwise, the connection might fail.

Before connecting the other GEPON OLT, workstation or Media Converter,

- Make sure both sides of the SFP transceiver are with the same media type, for example: 1000BASE-SX to 1000BASE-SX, 1000Bas-LX to 1000BASE-LX.
- 2. Check whether the fiber-optic cable type matches the SFP transceiver model.
 - To connect to 1000BASE-SX SFP transceiver, use the multi-mode fiber cable, with one side being male duplex LC connector type.
 - To connect to 1000BASE-LX SFP transceiver, use the single-mode fiber cable, with one side being male duplex LC connector type.

• Connecting the fiber cable

- 1. Insert the duplex LC connector on the network cable into the SFP transceiver.
- 2. Connect the other end of the cable to a device switches with SFP installed, fiber NIC on a workstation or a Media Converter.
- Check the LNK/ACT LED of the SFP slot on the front of the GEPON OLT. Ensure that the SFP transceiver is operating correctly.
- 4. Check the Link mode of the SFP port if the link fails. Works well with some fiber-NICs or Media Converters. Set the Link mode to "1000 Force" if needed.

Removing the transceiver module

- 1. Make sure there is no network activity by consulting or checking with the network administrator. Or through the management interface of the switch/converter (if available), disable the port in advance.
- 2. Remove the Fiber Optic Cable gently.
- 3. Turn the handle of the MGB module to a horizontal position.
- 4. Pull out the module gently through the handle.



Figure 2-8 Pulling Out the SFP Transceiver



Never pull out the module without pulling the handle or the push bolts on the module. Directly pulling out the module with force could damage the module and SFP module slot of the GEPON OLT.

3. MANAGEMENT SOFTWARE INSTALLATION

This chapter explains the methods that you can use to configure management access to the GEPON OLT. It describes the types of management applications and the communication and management protocols that deliver data between your management device (workstation or personal computer) and the system. It also contains information about port connection options.

This chapter covers the following topics:

- Requirements
- Management Access Overview
- MySQL Installation
- EMS Utility Installation
- SNMP Access

3.1 Requirements

The GEPON OLT provides a GUI utility to manage the system; the following equipment is necessary for further management.

- Subscriber PC is installed with Ethernet NIC (Network Card)
- MySQL Software (Windows Platform) <u>http://dev.mysql.com/</u>
- EMS Software (Windows Platform)
- Management Port connection
 - Network cables -- use standard network (UTP) cables with RJ45 connectors
- PON Port connection
 - Fiber Transceiver Slot with a 1000BASE-PX20 SFP PON transceiver
 - Fiber Cable Using single mode of Fiber (SC) cable

3.2 Management Access Overview

The GEPON OLT EPL-2000 supports 10/100Mbps Management interface and two 1000BASE-X net interfaces for

TCP/IP-based GUI Management. The GEPON OLT gives you the flexibility to access and manage it by using any or all of the following methods:

- EMS (Element Management System) Utility
- An external SNMP-based network management application

Each of these management methods has their own advantages. Table 3-1 compares the two management methods.

Method	Advantages	Disadvantages	
EMS Utility	Ideal for configuring the EPL-2000	Can't remote control over Etherent	
	Compatible with most popular		
	Windows-based Systems		
	Most visually appealing		
SNMP Agent	Communicates with switch functions at	Requires SNMP manager software	
	the MIB level	Least visually appealing of all three methods	
	Based on open standards	Some settings require calculations	
		Security can be compromised (hackers need	
		only know the community name)	

Table 3-1 Management Methods Comparison

3.3 EMS Utility Management

The **EMS (Element Management System)** Utility comes with sophisticated software Graphical User Interface (GUI). It is highly intuitive and allows the user to control the GEPON and set such things as SLAs, bridging and VLAN modes, static table entries, and to perform firmware upgrades, etc. It is found in the Utility folder on the CD provided. There are two softwares that need to be installed in your management PC:

- Microsoft MySQL Server
- EMS Utility

To install and use the GUI, do the following two sections.



3.3.1 MySQL Server Installation

- Please visit MySQL official website <u>http://dev.mysql.com/</u> and download MySQL-Essential-5.1.73-win32.msi or MySQL-Essential-5.1.73-win64.msi for the Windows system.
- 2. Once the Setup program starts running, please click "Next" button for starting installation.



Figure 3-2 MySQL Installation Screen

3. When the Setup Type window appears, choose the default "Typical" mode. Please click "Next" button.



Figure 3-3 Setup Type Screen

4. When the Ready to Install the Program window appears, please click "Install" button.

🙀 MySQL Server 5.1 - Setup Wizard 🛛 🔀
Ready to Install the Program Image: Constallation installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard. Current Settings:
Setup Type:
Destination Folder: C:\Program Files\MySQL\MySQL Server 5.1\
Data Folder: C:\Documents and Settings\All Users\Application Data\MySOL\MySOL Server 5.1\
< <u>B</u> ack Install Cancel

Figure 3-4 Begin Installation Wizard Screen

5. When the installation is done, the MySQL Enterprise window appears. Please click "Next" button.

MySQL Enterprise	\mathbf{X}
MySQL.	A MySQL Enterprise subscription is the most comprehensive offering of MySQL database software, services, and support to ensure your business achieves the highest levels of reliability, security, and uptime.
Enterprise	An Enterprise Subscription includes:
1. The MySQL Enterprise Se version of the world's most popul	erver - The most reliable, secure, and up-to-date lar open source database.
2. MySQL Enterprise Monito assistant.	or Service - An automated virtual database
3. MySQL Production Support you need it, along with service pa	ort - Technical and consultative support when icks, hot-fixes, and more.
For more information click [More] or visit www.mysql.com/enterprise
More	< Back Next > Cancel



6. The "Wizard Completed" window appears, and it will ask for Configure the MySQL server and Register the MySQL Server now. Please click "Finish" button.



Figure 3-6 Wizard Completed Screen

7. The MySQL Server Instance Configuration Wizard window appears; please click "Next" button.



Figure 3-7 MySQL Configuration Wizard Screen

 The MySQL Server Instance Configuration window appears; keep the default setting of "Detailed Configuration" and click "Next" button.

MySQL Server Instance Configuration Wizard	×
MySQL Server Instance Configuration Configure the MySQL Server 5.1 server instance.	
Please select a configuration type.	
Detailed Configuration	
Choose this configuration type to create the optimal server setup for this machine.	
🔿 Standard Configuration	
Use this only on machines that do not already have a MySQL server installation. This will use a general purpose configuration for the server that can be tuned manually.	
< Back (Next >) Can	cel

Figure 3-8 MySQL Server Instance Configuration (1) Screen

9. Please select a Server type. Keep the default setting of "Developer Machine" and click "Next" button.



Figure 3-9 MySQL Server Instance Configuration (2) Screen

10. Please select the database usage. Keep the default setting of "Multifunctional Database" and click "Next" button.

MySQL Server Instance Configuration	on Wizard 🔀		
MySQL Server Instance Configurat Configure the MySQL Server 5.1 serve	tion er instance.		
Please select the database usage.			
General purpose data of the fast transaction MyISAM storage engin	bases. This will optimize the server for the use nal InnoDB storage engine and the high speed ne.		
🔿 Transactional Database Only			
Optimized for application servers and transactional web applications. This will make InnoDB the main storage engine. Note that the MyISAM engine can still be used.			
🔿 Non-Transactional Database Only			
Suited for simple web applications, monitoring or logging applications as well as analysis programs. Only the non-transactional MyISAM storage engine will be activated.			
	< Back Next > Cancel		

Figure 3-10 MySQL Server Instance Configuration (3) Screen

11. Choose where you want to place the InnoDB Datafile. Here is the remaining default setting. Please click "Next" button.



Figure 3-11 MySQL Server Instance Configuration (4) Screen

12. Please set the approximate number of concurrent connections. Keep the default setting of "Decision Support

(DSS)/OLAP" and click "Next" button.

MySQL Server In	stance Configuration Wizard	×
MySQL Server I Configure the M	Instance Configuration IySQL Server 5.1 server instance.	
Please set the a Decision Su Online Tran Manual Set Online Set	Approximate number of concurrent connections to the server. Apport (DSS)/OLAP Select this option for database applications that will not require a high number of concurrent connections. A number of 20 connections will be assumed. Ansaction Processing (OLTP) Choose this option for highly concurrent applications that may have at any one time up to 500 active connections such as heavily loaded web servers. Etting Please enter the approximate number of concurrent connections. Concurrent connections: 15	
	< Back Next > Cancel	

Figure 3-12 MySQL Server Instance Configuration (5) Screen

13. Please set the Network options and Server SQL mode. Keep the default setting and click "Next" button.

MySQL Server Instance Configuration Wizard
MySQL Server Instance Configuration Configure the MySQL Server 5.1 server instance.
Please set the networking options. F Enable TCP/IP Networking Enable this to allow TCP/IP connections. When disabled, only local connections through named pipes are allowed. Port Number:
Please set the server SQL mode. Finable Strict Mode This option forces the server to behave more like a traditional database server. It is recommended to enable this option.
< Back Next > Cancel

Figure 3-13 MySQL Server Instance Configuration (6) Screen

14. Please select the default character set. Keep the default setting of "Standard Character Set" and click "Next" button.

MySQL Server Instance Configuration Wizard	×
MySQL Server Instance Configuration Configure the MySQL Server 5.1 server instance.	\bigcirc
Please select the default character set.	
Hello! Makes Latin1 the default charset. This character set is suited for English and other West European languages.	
🔿 Best Support For Multilingualism	
Make UTF8 the default character set. This is the recommended character set for storing text in many different languages.	
O Manual Selected Default Character Set / Collation	
Please specify the character set to use.	
Character Set: atin1	
< Back Next >	Cancel

Figure 3-14 MySQL Server Instance Configuration (7) Screen

15. Please set the Windows options. Keep default setting and click "Next" button.

MySQL Server In	nstance Configuration Wizard	×
MySQL Server Configure the	Instance Configuration MySQL Server 5.1 server instance.	
Please set the	Windows options. Windows Service	
Contraction	This is the recommended way to run the MySQL server on Windows.	
	Service Name: MySQL Launch the MySQL Server automatically	
🔲 Include Bi	in Directory in Windows PATH	
MySQL2.	Check this option to include the directory containing the server / client executables in the Windows PATH variable so they can be called from the command line.	
	< Back (Next >)	Cancel

Figure 3-15 MySQL Server Instance Configuration (8) Screen

16. Please set the security options. Type the password "1234" for current root and new root. Click "Next" button.

MySQL Server In	nstance Configuration	Wizard		
MySQL Server Instance Configuration Configure the MySQL Server 5.1 server instance.				
Please set the	security options.			
🔽 Modify Se	curity Settings			
	Current root password:	****	Enter the current password.	
root	New root password:	****	Enter the root password.	
	Confirm:	****	Retype the password.	
		🔲 Enable root a	ccess from remote machines	
🔲 Create An /	Anonymous Account			
This option will create an anonymous account on this server. Please note that this can lead to an insecure system.				
		< Back	Next > Cancel	

Figure 3-16 MySQL Server Instance Configuration (9) Screen

17. Please click "Execute" button for starting the configuration.

MySQL Server Instance Configuration Wizard	
MySQL Server Instance Configuration Configure the MySQL Server 5.1 server instance.	\bigcirc
Ready to execute	
Prepare configuration	
 Write configuration file 	
 Start service 	
 Apply security settings 	
Please press [Execute] to start the configuration.	
< Back Execute	Cancel

Figure 3-17 MySQL Server Instance Configuration (10) Screen

18. Please give a check to "Configuration file created", "Windows service MySQL installed", "Service started successfully" and "Security applied", and then click "**Finish**" button.

MySQL Server Instance Configuration Wizard
MySQL Server Instance Configuration Configure the MySQL Server 5.1 server instance.
Processing configuration
Prepare configuration
𝕑 Write configuration file (C:\Program Files\MySQL\MySQL Server 5.1\my.ini)
✓ Start service
Apply security settings
Configuration file created. Windows service MySQL installed. Service started successfully. Security settings applied. Press [Finish] to close the Wizard.
< Back [Finish] Cancel

Figure 3-18 MySQL Server Finish Screen

3.3.2 EMS Utility Installation

- 1. Insert the bundled CD disk into the CD-ROM drive to launch the autorun program. Once completed, a welcome menu screen will appear. Click the "PL-EMS" hyperlink, the InstallShield Wizard dialog box will appear below.
- 2. Once the Setup program starts running, please click "Next" button for starting installation.



Figure 3-19 PL-EMS Setup Wizard Screen

3. During the installation, it will ask for the place to put the PL_EMS folder.



Figure 3-20 PL-EMS Folder Installation Screen

4. Click "**Install**" for starting installation.



Figure 3-21 PL-EMS Installation Screen

5. Click "Finish" button for completing the EMS Setup.



Figure 3-22 PL-EMS Installation Completing Screen

6. When the PL-EMS is done, two icons -- PL Server and PL Client – will appear on the desktop.



3.3.3 Starting PLANET EMS Management

The following shows how to start-up the PL-EMS Management on the management PC.

1. Double-click the **PL Server** icon on the PC desktop. After a couple of seconds, it will appear on the lower-right corner of the system tray.





Figure 3-23 PL Server Icon

2. Double-click the **PL Client** icon on the PC desktop. It will pop-up a window to enter the user name and password. Please enter the default user name "admin" and password "admin". The login screen in Figure 3-24 appears.



Login				×
Advand	User name: Password: ce>>	ОК	Cancel	

Figure 3-24 PL Client Icon and Login Window



3. After entering the user name and password, the PL-EMS main screen will appear as in Figure 3-25.

Figure 3-25 Main Screen of EPL-2000 GEPON OLT

3.4 SNMP-based Network Management

You can use an external SNMP-based application to configure and manage the GEPON OLT, such as SNMPc Network Manager, HP Openview Network Node Management (NNM) or What's Up Gold. This management method requires the SNMP agent on the switch and the SNMP Network Management Station to use the **same community string**. This management method, in fact, uses two community strings: the **get community** string and the **set community** string. If the SNMP Net-work management Station only knows the set community string, it can read and write to the MIBs. However, if it only knows the get community string, it can only read MIBs. The default gets and sets community strings for the GEPON OLT are public.



Figure 3-26 SNMP Management Diagram

4. EMS Management System

PLANET GEPON solutions include the OLT EPL-2000 and ONUs -- EPN-102 and EPN-103. The following information introduces the software configuration.

This document explains how to use the EMS Utility for the purpose of evaluating the functionality and usability of Host Interface Protocol. This manual assumes that the reader has a technical background and a base level of understanding regarding the basic operation of PON equipment. The EMS Utility is a demonstration package, intended for evaluation purposes only.

Organization of the EMS Utility

The screen real estate used by the EMS Utility is divided into three sash windows and one EMS toolbar.

- The upper left panel displays the entities that may be managed by the Host Interface, including the OLT, ONUs and Logical Links. This sash window will be referred to as the Element Status Window.
- Left clicking on an entity with the mouse will open a tabbed panel in the upper right sash window that may be used to manage the entity. This sash window will be referred to as the Entity Management Window.
- The bottom sash window is used for the purpose of logging the host interface message that is sent and received by the EMS Utility, and will be referred to as the Message Log.

If the OLT is running normally and the ONUs register each of their LLIDs, you should see something similar to the figure. The left handed pane shows the MAC addresses of the OLT and the ONU's LLIDs. Depending on the number of ONUs, LLIDs, MAC addresses, etc., you may see something slightly different. If the GUI fails to connect to the OLT, check the IP addresses of the Host PC and the management port. Make sure you can ping the IP address assigned to the management port or uplink port. Also verify that the Host and management IP addresses match in the GUI's Utilities.



4.1 EMS Toolbar

The toolbar includes System, Alarm, Config, Performance and Help features which allows users to do advanced setting.



Figure 4-1 EPL-2000 GEPON OLT Toolbar

4.1.1 System:

It includes System Config, Mib Browser, Database Mainteance, User Manage and Exit.

📫 Elem	ent Management System
<u>S</u> ystem	<u>A</u> larm <u>C</u> onfig <u>P</u> erformance <u>H</u> elp
∰ <u>S</u> yst ∭ <u>M</u> ib	em Config Browser
<u>§</u> Use	r Manage
S Exit	

Figure 4-2 Toolbar of System Screen

4.1.1.1 System Config

Connection Deploy		
Language:	English	-
IP:	127.0.0.1	
Port:	8888	
Timeout(Sec):	10	
Retry:	2	
0	K Cancel	

Figure 4-3 System Config Screen

The popup window includes the following fields:

Object	Description			
Language:	Allows user to select the language: English and Simplified Chinese.			
IP:	Enter the IP address which allows user to remote control from other PC with same IP subnet address. The default IP is 127.0.0.1.			
Port:	Enter the UDP port number. The default port is 8888.			
Timeout(Sec):	Enter relay time. The default timeout is 10 Sec.			
Retry:	Reconnection times. The default retry is 2.			

4.1.1.2 MIB Browser

A **management information base (MIB)** is a virtual database used for managing the entities in a communications network. A built-in trap receiver can receive SNMP traps and handle trap storm.

🗐 Mib Browser		\mathbf{X}
Loaded MibModules IF-MiB IF-MIB	Object ID: Syntax: Access: Index: Object ID:	Status: Reference: Unit:
Global View	Descript:	

Figure 4-4 MIB Browser Screen

4.1.1.3 Database Maintenance

🚅 Elem	ent Mana	gement	Syste	em.				
<u>S</u> ystem	<u>A</u> larm	<u>C</u> onfig	<u>P</u> er	formai	nce	<u>H</u> elp		
🎲 <u>S</u> ystem Config								
Mib I	👫 Mib Browser				88			
Database Maintenance 🕨			ce 🕨	Data <u>b</u>	ase	Backup)	6
🍦 <u>U</u> se	r Manage	9		Datab	ase	<u>R</u> estor	е	
🗐 E <u>x</u> it								
								α

Figure 4-5 Database Maintenance screen

The popup window includes the following fields:

Object	Description
Database Backup:	Save the current data
Database Restore:	Restore the previous backup data

4.1.1.4 User Manage

It is allowed to configure the GEPON OLT to authenticate users logging into the system for management access using local authentication methods. The EPL-2000 provides totally three different security levels for local user management.

Account	Name	Phone	Right
lmin	admin		System Admin
Login Name:	Use	r name:	
Login Name:	Use Pas	rr name:	

Figure 4-6 User Manager Screen

The popup window includes the following fields:

Object	Description			
	Add New Account			
× .	Delete Account			
:	Save Account			
Login Name:	Enter the Name for login			
User name:	Enter the Name for user			
Password:	Enter the Password			
Password Confirm:	Enter the Password for confirming again			
Phone:	Enter the Phone No.(Optional)			
Right:	Allows user to choose right - System Admin - Net Manager - Comm User			

4.1.1.5 Exit

Exit the Element Management System

4.1.2 Alarm:

It includes Alarm Query, Config Trap Rule, System Log and Trap Window.



Figure 4-7 Toolbar of Alarm Screen

4.1.2.1 Alarm Query

The OLT alarms manager works in concert with the ONUs to provide enhanced management capabilities and complementary set of OLT specific alarms.

🗊 Alarm Filter	11					
ſ Time:	Clear	Severity	Handler	Trap Object	NE IP Address	∇ Time
From Time: 2012-11-05 19:33:00						
End Date: 2012-11-05 19:33:00						
🗖 Days 🗧 🗖 Current Time						
Alarm Status						
Handler Critical						
🔲 No Handler 📃 Major						
Minor 📃						
Infomation						
Network Element Page Record Count						
NE Selected Alarms: 50						
Select Trap Name						
Select ALL Deselect All						
TRAP_NAME.IllegalUserLogin						
PL_TRAP_NAME.ONU_POWER_DOWN						
PL_TRAP_NAME.ONU_PORT_DOWN						
PL_TRAP_NAME.ONU_PORT_UP						
PL_TRAP_NAME.ONU_OFFLINE						
Start Filter Reset Filter Save As	4	111	Previou	ie Novt	2	Urrent Page

Figure 4-8 Alarm Query screen

The popup window includes the following fields:

Object	Description			
Time:	Select the Range of time for filtering.			
Alarm Status:	Allows user to choose Handler or No Handler.			
Severity:	Allows user to choose the Level of Alarm.			
Network Element:	Allows user to choose the Element of devices.			
Page Record Counts:	Allows user to edit the number of events for per page.			
Select Trap Name:	Allows user to choose the Traps			
4.1.2.2 Config Trap Rule

🗊 Config Trap Rule			
System	Trap Name	Severity	Filter
GEPON OLT	PL_TRAP_NAME.ONU_POWER_DOWN	Maior 📃 🔻	No
	PL_TRAP_NAME.ONU_PORT_DOWN	Infomation	No
	PL_TRAP_NAME.ONU_PORT_UP	Minor	No
	PL_TRAP_NAME.ONU_OFFLINE	Malar	No
	PL_TRAP_NAME.ONU_ONLINE	Major	No
	PL_TRAP_NAME.ONU_LINK_DOWN	Critical	No
	PL_TRAP_NAME.ONU_LINK_UP	Infomation	No
	PL_TRAP_NAME.ONU_TRAFFIC_CHANGE	Minor	No
	PL_TRAP_NAME.LNK_RESOURCE_EXHAUST	Major	No
	PL_TRAP_NAME.ONU_RESOURCE_EXHAUST	Major	No
	PL_TRAP_NAME.ILLEGAL_REGIST	Major	No
	PL_TRAP_NAME.OLT_TRAFFIC_CHANGE	Minor	No
	PL_TRAP_NAME.SNI_PORT_TRAFFIC	Major	No
	PL_TRAP_NAME.SNI_PORT_LINKDOWN	Infomation	No
	PL_TRAP_NAME.SNI_PORT_LINKUP	Infomation	No
	PL_TRAP_NAME.SNI_SFP_PLUGOUT	Minor	No
	PL_TRAP_NAME.SNI_SFP_PLUGIN	Minor	No
		-	
	Refresh Apply Close		

Figure 4-9 Config Trap Rule screen

Object	Description
Refresh:	Refresh the Configuration.
Apply:	Apply the configuration.
Close:	Close the Alarm Filter.

4.1.2.3 System Log

The GEPON EMS system log information is provided here. This window allows you to log the messages happened in this system for later reference.

🗊 System Log				
Filter	UserName	Log	DateTime	
	1234	User 1234 login from /127.0.0.2:3032	2012-10-18 18:42:58	
From Time: 2012-10-05 16:13:27	1234	????	2012-10-18 18:42:58	
End Date: 2012-10-18 19:13:27	1234	User 1234 login from /127.0.0.2:3024	2012-10-18 18:42:35	
	1234	????	2012-10-18 18:42:35	
Osername. All	admin	Add User 1234 success.	2012-10-18 18:41:54	
Page record: 50	admin	User admin login from /127.0.0.2:2721	2012-10-18 16:30:27	
	admin	login system.	2012-10-18 16:30:27	
Search Save	admin	RSTP Config (EPL-2000->PON Card->PON Port-2->[2012-10-18 16:14:54	
	admin	add device "EPL-2000" success	2012-10-18 16:14:36	
	admin	????	2012-10-18 16:00:43	
		User 1234 login from /127.0.0.1:2617	2012-10-18 16:00:13	
		????	2012-10-18 16:00:13	
	admin	Add User 1234 success.	2012-10-18 15:59:46	
	admin	User admin login from /127.0.0.1:2571	2012-10-18 15:30:34	
	admin	login system.	2012-10-18 15:30:34	
	admin	reset managecard "EPL-2000" IP:192.168.1.10Error	2012-10-17 14:44:00	
	1 <u> </u>	Previous Next		Current Page 1/2

Figure 4-10 System Log screen

The popup window includes the following fields:

Object	Description
From Time:	Choose the time you want to start.
End Time:	Choose the time you want to end.
User name:	Choose the user.
Page Record:	Allows user to edit the number of logs for each page.
Search:	Start searching the logs.
Save:	Save the Logs.

4.1.2.4 Trap Window

This function displays the EPL-2000 trap; it includes Severity, Handler, Trap Object and more.

🍰 Тта	🖆 Traps						
Clear	Severity	Handler	Trap Object	NE IP Address	Time	Resume Time	Descript
	Minor	admin		/127.0.0.1:1928	11/05/2012 12:10:11		A user try to use account as admin to login, but authority fail.
	Minor	admin		/127.0.0.1:1928	11/05/2012 12:10:16		A user try to use account as admin to login, but authority fail.



4.1.3 Config

This feature allows user to configure the Top Tree, EPL-2000, PON Card and ONU property.



Figure 4-12 Toolbar of Config Screen

Object	Description
Add:	Allows user to add Location and Device
Modify:	Allows user to modify the property of Devices like: EPL-2000 and PON Card.
Delete:	Allows user the delete the Devices.
Change Map:	Allows user to change the background Map.
Upload:	Allows user to upload new Map.
Device Unameder	Allows user to upgrade firmware for EPL-2000 or ONU
Device opgrade:	For more details, please refer to Chapter 4.5 "How to upgrade EPL-2000"

4.1.4 Performance

This performance function helps user to verify the OLT connection. This window allows user to issue ICMP PING packets to troubleshoot IP connectivity issues.

Once you select the target OLT in the Top Tree and click Performance\Ping from the Toolbar, ICMP packets are transmitted. The report windows pop up automatically until responses to all packets are received, or until a timeout occurs. The Ping screen in Figure 4-13 appears.



Figure 4-13 Toolbar of Perofrmance screen



Be sure the target OLT's IP Address is within the same network subnet of the EMS workstation, or you have to set up the correct gateway IP address.

4.1.5 Help

Allows user to change the color of window and language.



Figure 4-14 Skin Screen



Figure 4-15 Language Screen



Figure 4-16 About Screen

Object	Description
Skin:	Allows user to change the color of window
Lauange:	Allows user to choose two kinds of languages: English and Simplified Chinese.
About:	Shows the version of EMS utility

4.2 OLT Management

To manage EPL-2000, EMS manager needs to add EPL-2000 device. They can add and manage the EPL-2000 from the two types of interfaces:

- Management Port the 10/100BASE-TX RJ45 interface
- Uplink ports the two 1000BASE-X SFP interfaces

The EPL-2000 is shipped with default IP addresses as follows:

Management Por	rt: IP Address: 192.168.1.10
	Subnet Mask: 255.255.255.0
Uplink Ports:	IP Address: 192.168.10.100
	Subnet Mask: 255.255.255.0

Right-click Top Tree and then click [Add Device] in the interface as the windows appear below.



Figure 4-17 Top Tree Interface Screen

🚅 Add Device	
Location:	Top Tree 👻
Device Type:	GEPON DEVICE
Device Name:	OLT-
IP:	
Read community:	
Write community:	
Poll Interval(Sec.):	5
Snmp set Timeout(Sec):	5
Snmp get Timeout(Sec):	5
<u>0</u> K	Cancel

Figure 4-18 Add Device Screen

For example, add EPL-2000 through Management Port connection

Please enter the EPL-2000 default IP address "**192.168.1.10**", Read Community "**public**" and Write Community "**private**" of the management port.

Ę	Add Device	
	Location:	Top Tree
	Device Type:	GEPON DEVICE
	Device Name:	EPL-2000
	IP:	192.168.1.10
	Read community:	
	Write community:	
1	Poll Interval(Sec.):	5
	Snmp set Timeout(Sec):	5
	Snmp get Timeout(Sec):	5
	<u>0</u> K	<u>C</u> ancel

Double-click the EPL-2000 device node unit in the topology tree, and click **Chassis Management** in the interface as the window appears below:

🗊 Element Manageme	nt System		
<u>System A</u> larm <u>C</u> onf	ig <u>P</u> erformar	ice <u>H</u> elp	
E- C Top Tree E- EPL-20/ E- PON E- PON E- C PON E- C PON	Modify Modify Delete	Aanagement	

Figure 4-19 EPL-2000 Interface Screen

OLT Management			
PRANET	EPL-2000	RS-495 BST BDD • CONSOLE IMANAGE CONSOLE IMANAGE PW/R GE1 GE2 ACT UNK C UNK C UNK C	
OLT 020LT-	System Description System Model		
System Basic Information Basic Information Net Interface Manage	System Description		
 User manage IgmpSetting Trunk Management VI AN Management 			
- IPTV Profile - IPTV Channel - Port			
Port Property Port Status			
		Refresh	

Figure 4-20 EPL-2000 OLT Management Screen

4.2.1 System Basic Information

The Basic System Information page provides information for the current device information. Basic System Information page helps an OLT administrator to identify the System Model, System Description, System Location and System Contact.

🗐 OL T Management			
	EPL-2000	CONSOLE MANAGE RS-485 KST • • • • • • • • • • • • • • • • • • •	PONI LINK PON2 LINK
OLT 020LT-	System Description System Model epi-2000 System Description System Location System Contact	Refresh	

Figure 4-21 System Basic Information Screen

Object	Description
System Model:	Model name of OLT
System Location:	Allows user to fill in the words for system location
System Description:	Allows user to fill in the words for system description
System Contact:	Allows user to fill in the words for system contact

4.2.2 Basic Information

The Basic System Info page provides information for the current device information. Basic System Info page helps an OLT administrator to identify the firmware / hardware version, System Config and Switch Mode Configure.

G OLI Management					×
PLANET	EPL-2000	RS-485 BST CONSOLE MANAGE PW/R 0000 • Console MANAGE SYS	GEI ACT UNK	GE2 ACT FONT LINK	PON2 LINK
OLT 020LT-	Basic Information Card Type epon-oit Hardware Vesion PL_804V Running Status online System Config	3.0	 Serial No. Firmware Version Run Total time 	10221 PL_V1.0R1SP001 17 hours, 0 minutes, 40 sec	onds.
IgmpSetting Trunk Management VLAN Management IPTV Profile IPTV Channel Port Port Property Port Status	Console Port Speed Read Community Trap Receiver 1 IP Address Trap Receiver 3 IP Address Outbandip	bps115200 public 192.168.1.100 192.168.1.102 192.168.1.10 Refrech Set	Oam Type RW Community Trap Receiver 2 II Trap Receiver 4 II OutbandMask	ctc-broadcom private P Address 192.168.1.101 P Address 192.168.1.103 255.255.255.0 255.255.0	

Figure 4-22 Basic Information Screen

Object	Description
Card Type:	The OLT device type, EPL-2000 is epon-olt type.
Serial NO.:	The manufacture number.
Hardware Version:	The version of Current Hardware.
Firmware Version:	The version of Current Firmware.
Running Status:	Status of EPL-2000.
Running Time:	The period of time the device has been operational.
Console Port Speed:	The baud rate of Console Port. (Only for Manufacturer)
oam Type:	The default type is ctc-broadcom.
Read Community:	Indicates the community read access string to permit access to SNMP agent.
R/W Community:	Indicates the community write access string to permit access to SNMP agent.
Trap Receiver 1~4 IP Address:	Assign IP address of host to receive trap from the device.
Outbandip:	Manage Port IP address, the default is 192.168.1.10.
OutbandMask:	Manage Port subnet mask, the default is 255.255.255.0

4.2.3 Net Interface Management

The system supports two Management IP ports: One is **in-band IP** and one is **out-band IP ports**. This page is allow you to modify the in-band IP

🗐 OLT Management						
CREARED	EPL-2000	RS-48 888	CONSOLE MANAGE	GE1 GE2 LINK GE2		
	Net Interface Table					
OLT 020LT-	lfindex	Inband IP Address	Inband IP Netmask	Inband Gateway	Inband Vlan[1~4094]	Inband Manage enable
	1	192.168.10.100	255.255.255.0	192.168.10.1	1	disable
- Basic Information - <mark>Net Interface Manage</mark> - User Manage - IgmpSetting - Trunk Management						
	Inband IP Address			Inband IP Netmask		
- IPTV Profile IPTV Channel	Inband Gateway			Inband Vian[1~4094]]	1
Port Property	Inband Manage enable			•		

Figure 4-23 Net Interface Management Screen

Object	Description
Inhand ID Address	Allows user to change the IP Address.
Indaliu IF Address.	The default IP address of Net interface is 192.168.10.100
Inband IP Notmask:	Allows user to change the Network Mask.
inbanu ir Netinask.	The default Network Mask of Net interface is 255.255.255.0
Inhand Gatoway:	Allows user to change the Default Gateway.
Inballu Galeway.	The default IP address of Net interface is 192.168.10.1
VI ANI 1 40041.	Allows user to change the VLAN ID.
VLAN[1~4094].	Default VLAN ID: 1
Inband Manage enable:	Allows user to manage EPL-2000 through GE1 and GE2 port.

4.2.4 User Manage

This Page provides an overview of the current users. Currently the only way to login as another user on the web server is to close and reopen the browser. Please press "**Add**" button for adding new login user account, after setup is completed, press "**OK**" button to take effect. Please login web interface with new user name and password, the screen in Figure 4-24 appears.

🗐 OLT Management					
	EPL-200	RS-485 BST 000 ●	SNSOLE MANAGE PWR * SYS *	Uplink Port GE2 CT ACT LINK	
	Index	User Name[1~32]	User Password[1~32]	Permission	Login Timeout(Sec.)[0~3600]
OLT 020LT-	1	guest	guest	guest	300
	2	user	user	user	300
	3	admin	admin	admin	300
System Basic Information	4	planet	1234	admin	200
Basic Information	5	111	111111111111111111111111111111111111111	1 guest	111
Net Interface Manage User Manage IgmpSetting Trunk Management VLAN Management IPTV Profile IPTV Channel Port Port Property Port Deperty					
Port Status		Refresh	Add Dele	te Set	

Figure 4-24 User Manage Screen

The window includes the following fields:

Object	Description
Index:	The number identifying the user.
User Name:	The name identifying the user.
User Password:	The password of the user. The allowed string length is 1 to 32 .
Premission:	The level of the user. There are three levels: guest, user and admin.
Levie Time ente	The login time for the user, when idle and over the setting time, it will login out
Login Timeout:	automatically.

Buttons

Add : Click to add a new user.

Add / Edit User

This Page configures a user

ф.	X
User Name	
PassWord	
Permission	guest 👻
Login Timeout(s)	
	<u>O</u> K <u>C</u> ancel

Figure 4-25 User Manage Screen

The window includes the following fields:

Object	Description
User Name:	The name identifying the user.
User Password:	The password of the user. The allowed string length is 1 to 32 .
Premission:	The level of the user. There are three levels: guest, user and admin.
Login Timeout:	The login time for the user, when idle and over the setting time, it will login out automatically.

4.2.5 IGMPSetting

This page allows user to modify the IGMP configuration.

🗐 OLT Management		×
PRANET		ĸ
OLT 020LT-	OLT IGMP Setting(When change IgmpMode please save configuration and reboot to active) IgmpMode ctc-control Robustness[1~10]	2 -
System Basic Information Basic Information Net Interface Manage	Queryinterval[100~200] 125 + / · · · QueryresponseInterval[10~20] Lastmemberqueryinterval[10~20] 10 + / · · Lastmemberquerycount[1~5]	10 + + 2 + +
– User Manage – IgmpSetting – Trunk Management		
- VLAN Management - IPTV Profile - IPTV Channel		
Port Property Port Status	Refresh	

Figure 4-26 IGMPsetting Screen

The window includes the following fields:

Object	Description
IgmpMode:	Allows user to select IGMP mode.
Robustness:	Allows user to modify the Robusness, the range is 1 to 10.
Queryinterval:	Allows user to modify the Query interval, the range is 100 to 200.
QueryresponseInterval:	Allows user to modify the Query respon interval, the range is 10 to 20.
Lastmemberqueryinterval:	Allows user to modify the last member query interval, the range is 10 to 20.
Lastmemberquerycount:	Allows user to modify the last member query count, the range is 1 to 5.

4.2.6 Trunk Management

Trunk Management optimizes port usage by linking 2 GE ports together to form a single Link Aggregated Groups (LAGs). Trunk multiplies the bandwidth between the devices, increases port flexibility, and provides link redundancy.





As GEPON OLT EPL-2000 SFP Ports of GE1 and GE2 is configured in 1000Mbps Forced Mode, the switch's SFP Ports should also change to the same mode if the connection is to be established successfully. Otherwise, the connection might fail.

🗊 OLT Management		×
	EPL-2000	
OLT 020LT- System Basic Information Basic Information Net Interface Manage User Manage IgmpSetting Trunk Management PTV Profile IPTV Profile IPTV Channel Port Port Property Port Status	ig sable	

Figure 4-27 Trunk Management Screen

The window includes the following fields:

Object	Description					
	Enable: Trunk function Enable.					
Up Trunk:	Disable: Trunk function Disable.					

4.2.7 VLAN Management

4.2.7.1 VLAN Overview

A Virtual Local Area Network (VLAN) is a network topology configured according to a logical scheme rather than the physical layout. VLAN can be used to combine any collection of LAN segments into an autonomous user group that appears as a single LAN. VLAN also logically segments the network into different broadcast domains so that packets are forwarded only between ports within the VLAN. Typically, a VLAN corresponds to a particular subnet, although not necessarily. VLAN can enhance performance by conserving bandwidth, and improve security by limiting traffic to specific domains.

IEEE 802.1Q Standard

IEEE 802.1Q (tagged) VLAN are implemented on the Switch. 802.1Q VLAN requires tagging, which enables them to span the entire network (assuming all switches on the network are IEEE 802.1Q-compliant).

VLAN allows a network to be segmented in order to reduce the size of broadcast domains. All packets entering a VLAN will only be forwarded to the stations (over IEEE 802.1Q enabled switches) that are members of that VLAN, and this includes broadcast, multicast and unicast packets from unknown sources.

VLAN can also provide a level of security to your network. IEEE 802.1Q VLAN will only deliver packets between stations that are members of the VLAN. Any port can be configured as either **tagging** or **untagging**.:

■ The untagging feature of IEEE 802.1Q VLAN allows VLAN to work with legacy switches that don't recognize VLAN tags

in packet headers.

The tagging feature allows VLAN to span multiple 802.1Q-compliant switches through a single physical connection and allows Spanning Tree to be enabled on all ports and work normally.

Some relevant terms:

- Tagging The act of putting 802.1Q VLAN information into the header of a packet.
- Untagging The act of stripping 802.1Q VLAN information out of the packet header.

802.1Q VLAN Tags

The figure below shows the 802.1Q VLAN tag. There are four additional octets inserted after the source MAC address. Their presence is indicated by a value of **0x8100** in the Ether Type field. When a packet's Ether Type field is equal to 0x8100, the packet carries the IEEE 802.1Q/802.1p tag. The tag is contained in the following two octets and consists of 3 bits of user priority, 1 bit of Canonical Format Identifier (CFI - used for encapsulating Token Ring packets so they can be carried across Ethernet backbones), and 12 bits of **VLAN ID (VID)**. The 3 bits of user priority are used by 802.1p. The VID is the VLAN identifier and is used by the 802.1Q standard. Because the VID is 12 bits long, 4094 unique VLAN can be identified.

The tag is inserted into the packet header making the entire packet longer by 4 octets. All of the information originally contained in the packet is retained.



The Ether Type and VLAN ID are inserted after the MAC source address, but before the original Ether Type/Length or Logical Link Control. Because the packet is now a bit longer than it was originally, the Cyclic Redundancy Check (CRC) must be recalculated.



Adding an IEEE802.1Q Tag

Port VLAN ID

Packets that are tagged (are carrying the 802.1Q VID information) can be transmitted from one 802.1Q compliant network device to another with the VLAN information intact. This allows 802.1Q VLAN to span network devices (and indeed, the entire network – if all network devices are 802.1Q compliant).

Every physical port on a switch has a PVID. 802.1Q ports are also assigned a PVID, for use within the switch. If no VLAN are defined on the switch, all ports are then assigned to a default VLAN with a PVID equal to 1. Untagged packets are assigned the PVID of the port on which they were received. Forwarding decisions are based upon this PVID, in so far as VLAN are concerned. Tagged packets are forwarded according to the VID contained within the tag. Tagged packets are also assigned a PVID, but the PVID is not used to make packet forwarding decisions, the VID is.

Tag-aware switches must keep a table to relate PVID within the switch to VID on the network. The switch will compare the VID of a packet to be transmitted to the VID of the port that is to transmit the packet. If the two VID are different the switch will drop the packet. Because of the existence of the PVID for untagged packets and the VID for tagged packets, tag-aware and tag-unaware network devices can coexist on the same network.

A switch port can have only one PVID, but can have as many VID as the switch has memory in its VLAN table to store them.

Because some devices on a network may be tag-unaware, a decision must be made at each port on a tag-aware device before packets are transmitted – should the packet to be transmitted have a tag or not? If the transmitting port is connected to a tag-unaware device, the packet should be untagged. If the transmitting port is connected to a tag-aware device, the packet should be tagged.

Default VLANs

The Switch initially configures one VLAN, VID = 1, called "default." The factory default setting assigns all ports on the Switch to the "default". As new VLAN are configured in Port-based mode, their respective member ports are removed from the "default."

Assigning Ports to VLANs

Before enabling VLANs for the switch, you must first assign each port to the VLAN group(s) in which it will participate. By default all ports are assigned to VLAN 1 as untagged ports. Add a port as a tagged port if you want it to carry traffic for one or more VLANs, and any intermediate network devices or the host at the other end of the connection supports VLANs. Then assign ports on the other VLAN-aware network devices along the path that will carry this traffic to the same VLAN(s), either manually or dynamically using GVRP. However, if you want a port on this switch to participate in one or more VLANs, but none of the intermediate network devices nor the host at the other end of the connection supports VLANs, then you should add this port to the VLAN as an untagged port.

Tagged and Untagged

Every port on an 802.1Q compliant network device can be configured as tagged or untagged.

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- Tagged: Ports with tagging enabled will put the VID number, priority and other VLAN information into the header of all packets that flow into those ports. If a packet has previously been tagged, the port will not alter the packet, thus keeping the VLAN information intact. The VLAN information in the tag can then be used by other 802.1Q compliant devices on the network to make packet-forwarding decisions.
- Untagged: Ports with untagging enabled will strip the 802.1Q tag from all packets that flow into those ports. If the packet doesn't have an 802.1Q VLAN tag, the port will not alter the packet. Thus, all packets received by and forwarded by an untagging port will have no 802.1Q VLAN information. (Remember that the PVID is only used internally within the Switch). Untagging is used to send packets from an 802.1Q-compliant network device to a non-compliant network device.

Frame Income Frame Leave	Income Frame is tagged	Income Frame is untagged			
Leave port is tagged	Frame remains tagged	Tag is inserted			
Leave port is untagged	Tag is removed	Frame remain untagged			

 Table 4-2-1 Ingress/Egress port with VLAN VID Tag/Untag table

4.2.7.2 VLAN Configuration

To completely configure the VLAN functions on the GEOPN OLT, two of the following sub-menus are needed to be well configured.

- OLT Management \ VLAN Management
- OLT Management \ Port \ Port Property

OLT Management \ VLAN Management

This page is used for configuring the OLT port VLAN. The VLAN Management page contains fields for managing ports that are part of a VLAN.

🚅 OL I Management				
	EPL-2000	R8-495 BST	ANAGE GE1 GE2 ACT FWR GE1 LINK CT SYS LINK LINK	FONT LINK FON2 LINK
OLT 020LT-	Vlan ID Description(0~255) 1 defaultvlan1 10 nonamed-vlan10 20 nonamed-vlan20 30 nonamed-vlan30 40 nonamed-vlan40 50 nonamed-vlan50	Egress Ports[0~4294967295] 15 1 1 1 1 1 1 1	Untagged Ports[0~4294967295] 0 1 1 0 0 0 0	Add VLAN(format : 1,10-20) Vian string Add Add Muticast Vlan(format : 1,10-20) MMan string Add Vian Description nonamed-vlan50 Egress Ports GE1 GE2 PON1 PON2 Untagged Ports GE1 GE2 PON1 PON2 Refresh Delete Set

Figure 4-28 VLAN Management Screen

The window includes the following fields:

Object	Description				
VLAN ID:	Indicates the ID of this particular VLAN.				
Description:	Allows user to fill in the words for VLAN description				
Egress Ports: Selects specific port for VLAN group.					
Untoggod Ports	Select specific port for this check box to transmit outgoing frames without				
Untagged Port:	VLAN-Tagged.				
Add:	Add new VLAN ID configuration.				
Delete:	Delete VLAN ID.				
Set:	Set VLAN configuration.				

OLT Management \ Port \ Port Property

🗊 OL T Management										
	EP	L-2000		RS-485 RST	CONSOLE MANAGE	PWR • SYS •	Uplin GEI ACT● UNK●	GE2 GE2 LINK		PON2 LINK
	Port Prop	perties							1	
OLT 020LT-	Port ID	Mode Config	Flow Contro onfig	C Port VID[1~4094]	swPortvlanm ode	Port Enab	e Ingress Fil ter	Permit Frame Type	ingressRateCtl	ingressRateCtlRate[0~1 000000]
System Basic Information	upport1	copper-auto	disable	1	vlan-trunk	lisable	disable	allType	li nitAll	0
Basic Information	upport2	copper-auto	disable	1	vlan-trunk	lisable	disable	allType	li nitAll	0
- Net Interface Manage	pon1	fiber-1000ba	disable	10	vlan-trunk	enable	disable	allType	li nitAll	0
- IgmnSetting	pon2	fiber-1000ba	disable	1	vlan-trunk	enable	disable	allType	li nitAll	0
 Trunk Management VLAN Management IPTV Profile IPTV Channel Port Port Port Status 									-	
					Refre	sh	Set			

Figure 4-29 Port Property Screen

Object	Description					
Port ID:	This is the logical port name for this row.					
	Allows to assign PVID for selected port. The range for the PVID is 1-4094.					
	The PVID will be inserted into all untagged frames entering the ingress port. The					
Port VID:	PVID must be the same as the VLAN ID whose port belongs to VLAN group, or					
	the untagged traffic will be dropped.					
	Allows user to modify the VLAN mode, there are two modes:					
swPortvlanmode:	Vlan-access: Only allow Untagged frames					
	Vlan-Trunk: Allows Tagged and Untagged frames.					
	Enable ingress filtering for a port by checking the box. This parameter affects					
	VLAN ingress processing. If ingress filtering is enabled and the ingress port is not					
Ingross Filter	a member of the classified VLAN of the frame, the frame is discarded.					
ingress ritter.	■ Enabled					
	■ Disabled					
	By default, ingress filtering is disabled (no checkmark).					
	Determines whether the port accepts all frames or only VLAN tagged frames.					
	This parameter affects VLAN ingress processing. If the port only accepts tagged					
	frames, untagged frames received on the port are discarded.					
Permit Frame Type:	Options:					
	■ allType					
	■ tagged					
	By default, the field is set to allType .					

4.2.8 IPTV Profile

This page allows user to create IPTV profile.

🗐 OLT Management			
	EPL-2000	RS-485 RST	Uplink Port
OLT 020LT-	IPTV Profile	Name[1~32] tainandiqu taibeidiqu taizhongdiqu taibeidiqu2	Refresh Add Delete

Figure 4-30 IPTV Profile Screen

The window includes the following fields:

Object	Description
Index:	The number identifying the user.
Name:	Indicates the per IPTV profile name.
Refresh:	Refresh the Page. Any changes made locally will be undone.
Add:	Add new VLAN ID configuration.
Delete:	Delete VLAN ID.

4.2.9 IPTV Channel

This page allows for selecting the specific IPTV profile and creates their own IPTV channels.

G OLT Management		
		K LINK
OLT 020LT-	IPTV Profile Islinandiqu IPTV Channel Index Channel Name(0~255) Multicast Group IPTV Vlan(1~4095) IPTV User ID(1~48) User View Time(0~15	Channel Name Multicast Group IPTV Vlan(1~4095) 1 ÷ IPTV User ID[1~48] User View Time[0~15] 0 ÷ Refresh Add Delete Set

Figure 4-31 IPTV Channel Screen

The window includes the following fields:

Object	Description			
IPTV Profile:	The user can select specific IPTV Profile; the IPTV profile is creating by IPTV profile page.			
Index:	The number identifying the user.			
Channel Name:	Indicates the name of IPTV channel.			
Multicast Group: Allows user to fill the multicast streaming IP address.				
IPTV Vlan:	Add IPTV VLAN ID configuration.			
	The User ID is meaning of ONU ethernet ports.			
	For example: EPN-103, there are two ethernet ports.			
	User ID1: Gigabit port (Port 1)			
	User ID2: Fast Ethernet Port (Port 2)			
User View Time:	Configures the time for viewing IPTV channel.			

4.2.10 Port Property

In Port Property you can configure the settings of each port to control the connection parameters, and the status of each port is listed below:

🗊 OLT Management										×
	EPL-200	00	RS-48	CONSOLE A	IANAGE PW/R SYS	GEI ACT LINK	GE2 GE2 UNK	PONT		LINK
OLT 020LT-	Port ID	Mode Config	Flow Control Config	Port VID[1~4 094]	swPortvlanm ode	Port Enable	Ingress Filter	Permit Fram e Type	ingressRate Ctl	ingressRate CtlRate[0~10 00000]
Basic Information	upport1	copper-auto	disable	1	vlan-access	disable	disable	allType	limitAll	0
- Net Interface Manage	upport2	copper-auto	disable	1	vlan-access	disable	disable	allType	limitAll	0
User Manage	pon1	fiber-1000b	disable	1	vlan-access	enable	disable	allType	limitAll	0
Trunk Management	pon2	fiber-1000b	disable	1	vlan-access	enable	disable	allType	limitAll	0
 VLAN Management IPTV Profile IPTV Channel Port Port Port Status 					Refresh	Set]			

Figure 4-32 Port Property Screen

Object	Description				
Port ID:	This is the logical port name for this row.				
Mode Config:	That is only one speed 1000Mbps for SFP transceivers.				
Flow Control Config:	Whether or not the receiving node sends feedback to the sending node is determined by this item. When enabled, once the device exceeds the input data rate of another device, the receiving device will send a PAUSE frame which halts the transmission of the sender for a specified period of time. When disabled, the receiving device will drop the packet if too much to process.				
Port VID:	Allows to assign PVID for selected port. The range for the PVID is 1-4094. The PVID will be inserted into all untagged frames entering the ingress port. The PVID must be the same as the VLAN ID whose port belongs to VLAN group, or the untagged traffic will be dropped.				
swPortvlanmode:	Allows user to modify the VLAN mode, there are two modes: Vlan-access: Only allow Untagged frames Vlan-Trunk: Allows Tagged and Untagged frames.				
Port Enable: The port can be set to disable or enable mode. If the port is set as 'Disable', it will not receive or transmit any packet					
Ingress Filter:	 Enable ingress filtering for a port by checking the box. This parameter affects VLAN ingress processing. If ingress filtering is enabled and the ingress port is not a member of the classified VLAN of the frame, the frame is discarded. Enabled Disabled 				

	By default, ingress filtering is disabled (no checkmark).			
	Determines whether the port accepts all frames or only VLAN tagged frames. This parameter affects VLAN ingress processing. If the port only accepts tagged			
	frames, untagged frames received on the port are discarded.			
Permit Frame Type:	Options:			
	■ allType			
	■ tagged			
	By default, the field is set to allType .			
	There are four kinds of Limit Rates:			
	1. LimitAll			
Ingress Rate Control:	2. LimitB			
	3. LimitM			
	4. LimitBMUC			
Ingress Rate Control Rate	Set up the Dete of Ingrees Dete			
[0~100000]	Set up the kate of ingress kate.			



As GEPON OLT EPL-2000 SFP Ports of GE1 and GE2 are configured in **1000Mbps Forced** Mode, the switch's SFP Ports should also be changed to 1000Mbps Forced Mode if the connection is to be established successfully,. Otherwise, the connection might fail.

4.2.11 Port Status

This page displays current port configurations and operating status – it is a ports' configurations summary table. Via the summary table, you can know status of each port clearly at a glance, like Port Link Up/Link Down status, Link Speed and Duplex mode.

🗊 OLT Management					×
	EPL-2000	RS-485 RST	IANAGE GET	Uplink Port	
OLT 020LT-	Port ID upport1 upport2	swPortrstpstatus forwarding forwarding	Link State linkDown linkDown	Work Speed mbps10 mbps10	Work Duplex halfDup halfDup
			Refresh		

Figure 4-33 Port Status Screen

4.3 PON Card Management

Double-click the PON Card device node unit in the topology tree or right-click **PON Card Management** in the interface as the window shows below:



Figure 4-34 PON Card Interface Screen

4.3.1 Interface Information

This page displays the current PON Card Information – it is a PON Card Configuration page. Via the PON Card Configuration page, you can know like PON Card MAC addresses or configure ONU AUTH and etc.

🗊 PON Management				
	PON1 Interface Config			
OLT 020LT-	PON MAC	A8-F7-E0-00-C4-BB	ONU AUTH	disable 👻
PON PON Card	PON Port Enabled	enable 👻	Max LLID Number[0~239]	255
Interface Information	Registered LLID Number	2	On Line Onu Number	1
OLT Global Setting	Upstream Bandwidth Left [kbps]	1000000	Downstream Bandwidth Left [kbps]	1000000
- Onu Auth	(*Allowed Max Links writable who	en disable OLT)		
	PON2 Interface Config			
	PON MAC	A8-F7-E0-00-C4-BC	ONU AUTH	disable 👻
	PON Port Enabled	enable 🗸 👻	Max LLID Number[0~239]	255 -
	Registered LLID Number	0	On Line Onu Number	0
	Upstream Bandwidth Left [kbps]	1000000	Downstream Bandwidth Left [kbps]	1000000
	(*Allowed Max Links writable who	en disable OLT)		
		Refresh	Set	

Figure 4-35 Interface Information Screen

Object	Description			
	PON MAC: Shows the PON1 interface MAC address.			
	ONU AUTH: Selects the Auth mode.			
	PON Port Enabled: Enabled or Disable the PON1 port.			
	Max LLID Number[0~239]: Allows for setting value of LLID			
DON4 Interface Configu	Registered LLID Number: Allows for setting number of Registered LLID.			
PONT Interface Config:	On Line ONU Number: Shows how many current ONUs connects on PON1.			
	Upstream Bandwidth Left[kbps]: Shows how much cureent upstream			
	bandwidth left.			
	Downstream Bandwidth Left[kbps]: Shows how much cureent Downstream			
	bandwidth left.			
	PON MAC: Shows the PON2 interface MAC address.			
	ONU AUTH: Selects the Auth mode.			
	PON Port Enabled: Enabled or Disable the PON2 port.			
	Max LLID Number[0~239]: Allows for setting value of LLID			
PON2 Interface Config:	Registered LLID Number: Allows for setting number of Registered LLID.			
r Onz internace coning.	On Line ONU Number: Shows how many current ONUs connects on PON1.			
	Upstream Bandwidth Left[kbps]: Shows how much cureent upstream			
	bandwidth left.			
	Downstream Bandwidth Left[kbps]: Shows how much cureent Downstream			
	bandwidth left.			

4.3.2 OLT Global Setting

🗊 PON Management			×
PON Management	title.onup2p ONU P2P Link Encryption Link Key Exchange Time[1~65535]	enable anone a	
		Refresh	

Figure 4-36 OLT Global Setting Screen

Object	Description
ONU P2P:	Enabled/Disable the ONU P2P function.
Link Encryption:	Selects the link encryption mode, there are three modes.
	None, Teknoves and CTC mode
Link Key Exchange Time:	Arranges the time of Link Key, the range is 1 to 65535.

4.3.3 ONU Auth

🗊 PON Management				X
OLT 020LT-	PON Port ONU Aut	Pon Port 0 h Mac Address	LOID[1~24]	Password[1~24]
OLT Global Setting				
		Refresh	Add Dele	te

Figure 4-37 Onu Auth Screen

The popup window includes the following fields:

Object	Description
PON Port:	Allows for selecting which PON port for modifying.
Index:	The number identifying the user.
Mac Address:	The MAC address of the entry.
LOID:	The LOID of the entry, it is same as user name.
Password:	The password of the user. The allowed string length is 1 to 24 .



If want to configure Onu Auth, the user must enable the ONU Auth from Interface infomraiton page.

4.4 ONU Management

Double-click the EPL-2000 device node unit in the topology tree or right-click **Chassis Management** in the interface as the windows show below:

🚅 Element Management System	
<u>S</u> ystem <u>A</u> larm <u>C</u> onfig <u>P</u> erformance <u>H</u> elp	
□ □	G
[99]	
	A

Figure 4-38 ONU Interface Screen

ONU Management				
CONCEPTION & Communication	PON RESET	SPEED LNK/ACT	12V DC • • • •	EPN-103
OLT 020LT-	Basic Config			
PON PON Card 👻		1	ONU Device Type	epn-103 💌
Pon Port PON Port-1	Description		ONU Hardware Revision	
ONU EPN-103-1 👻	ONU Firmware Revision		ONU MAC	A8-F7-E0-07-68-12
Basic Configure	Max Allowed LLIDs	8	Registered LLID Num	2
- Global Parameter	ONU On Line Status	online 🗸 🗸	ONU User Traffic Enable	enable 👻
⊡-Port	ONU Range Value	57.1meter	Uni Number	2
ONU Port Manage	Mgt Oam	ctc-broadcom 🗸 🗸	CTC Version	ete21 👻
- ONU VLAN	ServiceType	sfu 👻	CATV Support	not-support
Port Policying	Refre	sh Set Ret	ooot Default	Save

Figure 4-39 ONU Management Screen

4.4.1 Basic Configuration

The Basic System page provides information on the current device status. Basic System page helps an OLT administrator to identify the ONU device's firmware / hardware version, ONU MAC Address, ONU Line Status and others.

🗊 ONU Management					×
CORPERENCE Examplesion	PON RESET	SPEED LNK/ACT	0/100	12V DC • • • •	EPN-103
OLT 020LT-	Basic Config				
PON PON Card	ONU ID	1		ONU Device Type	epn-103 👻
Pon Port PON Port-1	Description			ONU Hardware Revision	
ONU EPN-103-1	ONU Firmware Revision			ONU MAC	A8-F7-E0-07-68-12
Basic Configure	Max Allowed LLIDs	8		Registered LLID Num	2
Global Parameter	ONU On Line Status	online	-	ONU User Traffic Enable	enable 👻
E-Port	ONU Range Value	57.1meter		Uni Number	2
- ONU Port Manage	Mgt Oam	cic-broadcom	-	CTC Version	ete21 👻
- ONU VLAN	ServiceType	stu	-	CATV Support	not-support 👻
Port Policying	Refre	sh Set .	Rel	ooot Default	Save

Figure 4-40 Basic Configuration Screen

Object	Description		
ONU ID:	Number of ONU Devices detected by EMS Utility.		
ONU Device Type:	Model name of ONU device.		
Description:	Allows user to fill in the words for ONU description		
ONU Hardware Revision:	Displays the ONU Hardware Version.		
ONU Software Revision:	Displays the ONU Firmware Version.		
Max Allowed LLIDs:	Displays the ONU MAX		
Registered LLID Num:	Displays the registered LLID Number of ONU.		
ONU On Line Status:	Displays the current ONU status.		
ONU User Traffic Enable:	Enable: Allows user to transfer data via port.		
	Disable: User is not allowed to transfer data via port.		
ONU Range Value:	Displays the distances from OLT to ONU.		
	(Short cabling would make detection difficult.		

Uni Number:	Displays the ONU Uni unmber.
Mgt Oam:	Displays the ONU OAM management type.
CTC Version:	Displays the CTC version.
Service Type:	Displays the ONU service type.
CATV Support:	Displays the ONU CATV support type.

4.4.2 Global Parameter

This page allows user to configure the IGMP Fastleave, IPTV Profile and etc.

ONU Management		
CORPORATE E Communication	SPEED LNK/ACT 12V DC PON RESET 10/100/1000 10/100 0000	EPN-103
OLT 020LT- PON PON Card Pon Port PON Port-1 ONU EPN-103-1 Basic Configure Global Parameter Muticast Group Port ONU Port Manage Port Miticast ONU VLAN Port Policying Port Egress	Global Configuration disable IGMP Fastleave disable IPTV Profile	

Figure 4-41 Global Parameter Screen

Object	Description			
ICMP Eastloave	Enable: Open the ONU IGMP Fastleave function.			
IGMP Fastleave:	Disable: Close the ONU IGMP Fastleave function.			
IPTV Profile:	Fill the IPTV Profile name which has created from EPL-2000 IPTV Profile page.			
onuLaserRXPower(dbm):	Displays the ONU Fiber Laser RX power.			
onuLaserTXPower(dbm):	Displays the ONU Fiber Laser TX power.			

4.4.3 ONU Multicast Group

🗐 ONU Management		
EXPERIMENT	SPEED LNK/ACT 12V DC PON RESET 10/100/1000 10/100 0000	EPN-103
OLT 020LT- PON PON Card Pon Port PON Port-1 ONU EPN-103-1 Basic Configure Global Parameter Muticast Group Port ONU Port Manage Port Miticast ONU VLAN Port Policying Port Egress	ONU Multicast Group Group Type USER ID Multicast Destination Source Mac Multicast Vlan	Muticast Destination IP

This page displays all of your multicast connection information.

Figure 4-42 Global Parameter Screen

4.4.4 ONU Port Management

In ONU Port Management, you can configure the settings of ONU ports to control the connection parameters like Port Speed, Duplex mode, Flow Control and Port Auto-Negotiation.

🗐 ONU Management					
	PON RESET	DEED LNK/ACT		e 0	EPN-103
OLT 020LT-	Port Management Status Port ONU Port1	•	Link Status	linkdown	
Pon Port PON Port-1	Port Status enable	-	Description		
ONU EPN-103-1	AutoNeg enable		Restart AutoNeg	disable	*
Basic Configure Global Parameter Muticast Group Port ONU Port Manage Port Miticast ONU VLAN Port Policying Port Egress	Flow Control	Refresh	Set		



Object	Description		
D . 4	ONU Port1: 10/100/1000Mbps Port.		
Port:	ONU Port2: 10/100Mbps Port.		
Link Status:	Indicates the ONU current ethernet Port stauts.		
Dort Statua	Enable: Open the ONU Port1/2 stauts.		
Port Status:	Disable: Close the ONU Port1/2 stauts.		
Description:	Allows user to fill in the words for ONU port 1 or 2 description		
AutoNea	Enable: Open the ONU Port1/2 Auto-Negotiation.		
Autoneg.	Disable: Close the ONU Port1/2 Auto-Negotiation.		
Restart AutoNeg:	Enable: Allows for restarting the ONU Port1/2 Auto-Negotiation.		
Restart Autoney.	Disable : Not allows for restarting the ONU Port1/2 Auto-Negotiation.		
Flow Control:	It is available for selecting when the Negotiation column is set as Disable. When		
	the Negotiation column is set as Enable, this column is read-only.		

4.4.5 Port Multicast

ONU Management		
	SPEED LNK/ACT	12V DC • • • • • • • • • • • • • • •
OLT 020LT- PON PON Card Pon Port PON Port-1 ONU EPN-103-1 Basic Configure Global Parameter Muticast Group Port ONU Port Manage Port Miticast ONU VLAN Port Policying Port Egress	Port ID ONU Port1 Max Groups 0+ Multicast Vlan Strip Muticast Vlan Strip Mode	Multicast Vlan Multicast Vlan list Add Delete
	Refresh	Set

Figure 4-44 ONU Bridging Mode Screen

The window includes the following fields:

Object	Description			
Port ID:	ONU Port1: 10/100/1000Mbps Port. ONU Port2: 10/100Mbps Port.			
Max Groups:	Allows user to configure how many groups.			
Multicast Vlan Strip	Allows user to configure the mode of VLAN strip.			
Mode:				
Multicast Vlan list:	List of Multicast VLAN.			
	(怎麼設定 Priority 都是 COS 0)			

4.4.6 ONU VLAN

This page allows the user to modify per port VLAN mode.

🗊 ONU Management					
CONCEPTION & CONTRACTOR	PO	SPEED	LNK/ACT	12V DC • • ©©®	EPN-103
OLT 020LT- PON PON Card Pon Port PON Port-1 ONU EPN-103-1 Basic Configure Global Parameter Muticast Group Port ONU Port Manage Port Miticast ONU VLAN Port Policying Port Egress	Port ID ONU Port Vian Sett	ort1 ing Transparent Transparent Tag Translate Trunk	Refresh	Set	

Figure 4-45 MAC Address Management Screen

Object	Description
Port ID :	ONU Port1: 10/100/1000Mbps Port.
	ONU Port2: 10/100Mbps Port.
VLAN Mode:	There are four modes, Transparent, Tag, Translate and Trunk mode.

4.4.7 Port Policying

This page allows user to modify the Port Policy configuration.

ONU Management	
PLANET Referencia & Communication	SPEED LNK/ACT 12V DC PON RESET 10/100/1000 10/100 0
OLT 020LT-	Port Policying Setting
PON PON Card	Port ONU Port1 Policying Enable enable
Pon Port PON Port-1	Cir[0~1000000] 0 + Cbs[0~1000000] 0 +
ONU EPN-103-1	Ebs 0 -
Basic Configure Global Parameter Muticast Group Port ONU Port Manage Port Miticast ONU VLAN Port Policying Port Egress	Refresh Set

Figure 4-46 Port Policying Screen

Object	Description
Port:	ONU Port1: 10/100/1000Mbps Port. ONU Port2: 10/100Mbps Port.
Policy Enable :	Allows user Disable or Enable the Policy mode.
Cir[0-1000000]:	Allows user to fill the Cir value, the range 0~1000000.
Cbs[0-1000000]:	Allows user to fill the Cbs value, the range 0~1000000.
Ebs:	Allows user to fill the Ebs value.
4.4.8 Port Egress

This page allows user to modify the Port Egress configuration.

🗐 ONU Management	
CONCEPTION OF COMPARISON	SPEED LNK/ACT 12V DC PON RESET 10/100/1000 10/100 0000
OLT 020LT- PON PON Card Pon Port PON Port-1 ONU EPN-103-1 Basic Configure Global Parameter Muticast Group Port ONU Port Manage Port Miticast ONU VLAN Port Policying Port Egress	Port Egress Setting Port ONU Port1 Egress Cir[0~1000000] Egress Pir[0~1000000]

Figure 4-47 Port Egress Screen

The window includes the following fields:

Object	Description	
Porte	ONU Port1: 10/100/1000Mbps Port.	
Port:	ONU Port2: 10/100Mbps Port.	
Egress Enable :	Allows user Disable or Enable the Egress mode.	
Egress Cir[0-1000000]:	Allows user to fill the Egress Cir value, the range 0~1000000.	
Egress Pir[0-1000000]:	Allows user to fill the Egress Pir value, the range 0~1000000.	

4.5 How to upgrade EPL-2000 firmware

For upgrading the EPL-2000 firmware, you need to have FTP server software. Here we are using Home FTP Server software for an example:

1. The following main screen of Home FTP Server appears:

📼 Home Ftp Serv	/er					
New account	Username user	Password user	Home directory C:\Program Files\FTPEditor	Address 192.168.1.10:1024	Last time 2012/10/26 下午 (
Modify account	Anonymous			-	-	
Delete account						
Sattings						
Settings						
Start Server						
Stop Server						
System Log Ftp S	erver Active Clients	File Monitoring	ile Transfers About			
Stopped	No Clients	- TCP comman	d interface started (60997).			

Figure 4-48 Home FTP Server Main Screen

2. Press the "**New account**" on the left column and the FTP Client Editor window appears below like. Please fill in the user name and password as "**user**".

💷 Ftp Client Editor				
General Virtual Direc	tories File Control	Directory Control		
User name:	user			
Password:	user		Generate	
Home directory:	C:\Program Files\H	lome Series\Home Ftp Server	Browse	
	Enabled			
Download Speed:	O B	ytes/s, 0 = No Limitation		
Upload Speed:	0 B	ytes/s, 0 = No Limitation		
Disk space:	0 Bytes, 0 = Limited to disk size			
Home Directory:		Virtual Directories (if any def	fined):	
Allow download fil	es	Allow download files		
Allow upload files	(dina shania a)	Allow upload files	Allow upload files	
Allow renaming rise	es (or directories)	Allow renaming riles (or o	lirectories)	
Allow change dire	 Allow cleicting files Allow change directory 			
Allow creating dire	Allow creating directories		ç 🔤	
Allow deleting directories			;	
Apply			Cancel	

Figure 4-49 FTP Client Editor Screen

- 3. Excute "Start Server" for making connection establish.
- 4. Copy the EPL-2000 firmware to the Home Ftp server directory.

For example: C:\Program Files\Home Series\Home Ftp Server

5. Operate EMS utility → click EPL-2000 once → excute "Device Upgrade" on the EMS toolbar of Config.



Figure 4-50 EPL-2000 Interface Screen



Figure 4-51 Device Upgrade Item Screen

🗊 Device Upgrade	
Top Tree->EPL-2000	Upgrade Configure FTP Configure IP 192.168.1.100 File Name File User Name user Password user
	Progress Status Non-authority Refresh Download to Device Upgrade

6. After executing the Device Upgrade, the following window will appear. Please fill in the user name and password as "user".

Figure 4-52 Device Upgrade Procedure (1) Screen

7. Press "Find File" button to get EPL-2000 firmware. Following Step 3, the file should be at "C:\Program Files\Home Series\Home Ftp Server".

8. Press "**Download to Device**" button for downloading the firmware. After a couple of seconds, the Progress Status "**TransmitOK**" will appear like the window below:

🗊 Device Upgrade		×
Top Tree->EPL-2000	Upgrade Configure FTP Configure IP 192.168.1.100 File Name File Name User Name user Password user Target Target Image Image Progress Status Image Refresh Download to Device Upgrade	

Figure 4-53 Device Upgrade Procedure (2) Screen

9. Press "Upgrade" button for upgrading the firmware. During the period, the Progress Status will show "Upgrading". After

finishing the upgrading, the Progress Status will show "Upgrade $\ensuremath{\mathsf{OK}}$ ".

🗊 Device Upgrade	
Top Tree->EPL-2000	Upgrade Configure FTP Configure IP 192.168.1.100 Find File User Name user Password user
	Status upgrading 0% Refresh Download to Device Upgrade

Figure 4-54 Device Upgrade Procedure (3) Screen

🗐 Device Upgrade		X
Top Tree->EPL-2000	Upgrade Configure	
	FTP Configure	
	IP 192.168.1.100 File Name (R1D100SP4.1-PL-M) Find File	
	User Name user Password user	
	Target ottmage	ן ר
		J
	Progress	
	Refresh Download to Device Upgrade	

Figure 4-55 Device Upgrade Procedure (4) Screen

10. After finishingh the firmware upgrade, please reboot the EPL-2000.

5. EPL-2000 OPERATION

5.1 Address Table

The OLT switch is implemented with an address table. This address table os composed of many entries. Each entry is used to store the address information on some nodes on the network, including MAC address, port number, etc.

5.2 Learning

When one packet comes in from any port, the OLT Switch will record the source address, port number, and other related information in the address table. This information will be used to decide either forwarding or filtering for future packets.

5.3 Forwarding & Filtering

When one packet comes from some port of the Ethernet Switching, it will also check the destination address besides the source address learning. The OLT Switch will look up the address table for the destination address. If not found, this packet will be forwarded to all the other ports except the port, which this packet comes in. And these ports will transmit this packet to the network it connected. If found, and the destination address is located at a different port from this packet comes in, the OLT Switch will forward this packet to the port where this destination address is located according to the information from the address table. But, if the destination address is located at the same port with this packet that comes in, then this packet will be filtered, thereby increasing the network throughput and availability

5.4 Auto-Negotiation

The STP ports on the Switch have built-in "Auto-negotiation". This technology automatically sets the best possible bandwidth when a connection is established with another network device (usually at Power On or Reset). This is done by detecting the modes and speeds at the second of both devices are connected and capable of. Both 10BASE-T and 100BASE-TX devices can connect with the port in either Half- or Full-Duplex mode.

If attached device is:	100Base-TX port will set to:
10Mbps, no auto-negotiation	10Mbps.
10Mbps, with auto-negotiation	10/20Mbps (10BASE-T/Full-Duplex)
100Mbps, no auto-negotiation	100Mbps
100Mbps, with auto-negotiation	100/200Mbps (100BASE-TX/Full-Duplex)

APPENDIX A

A.1 Switch's RJ45 Pin Assignments

1000Mbps, 1000BASE-T

Contact	MDI	MDI-X
1	BI_DA+	BI_DB+
2	BI_DA-	BI_DB-
3	BI_DB+	BI_DA+
4	BI_DC+	BI_DD+
5	BI_DC-	BI_DD-
6	BI_DB-	BI_DA-
7	BI_DD+	BI_DC+
8	BI_DD-	BI_DC-

Implicit implementation of the crossover function within a twisted-pair cable, or at a wiring panel, while not expressly forbidden, is beyond the scope of this standard.

A.2 10/100Mbps, 10/100BASE-TX

When connecting your 10/100Mbps Ethernet Switch to another switch, a bridge or a hub, a straight or crossover cable is necessary. Each port of the Switch supports auto-MDI/MDI-X detection. That means you can directly connect the Switch to any Ethernet devices without making a crossover cable. The following table and diagram show the standard RJ45 receptacle/ connector and their pin assignments:

RJ45 Connector pin assignment			
Contact	MDI	MDI-X	
	Media Dependent Interface	Media Dependent	
		Interface-Cross	
1	Tx + (transmit)	Rx + (receive)	
2	Tx - (transmit)	Rx - (receive)	
3	Rx + (receive)	Tx + (transmit)	
4, 5	Not used		
6	Rx - (receive)	Tx - (transmit)	
7, 8	Not used		

The standard cable, RJ45 pin assignment



The standard RJ45 receptacle/connector

There are 8 wires on a standard UTP/STP cable and each wire is color-coded. The following shows the pin allocation, color of straight cable and crossover cable connection:



Figure A-1: Straight-through and Crossover Cables

Please make sure your connected cables are with the same pin assignment and color as the above diagram before deploying the cables into your network.



EC Declaration of Conformity

For the following equipment:

*Type of Product	: GEPON OLT
*Model Number	: EPL-2000

* Produced by:

Manufacturer's Name:	Planet Techr	iology Corp.
Manufacturer's Address:	10F., No.96,	Minquan Rd., Xindian Dist.,
	New Taipei	City 231, Taiwan (R.O.C.)

is herewith confirmed to comply with the requirements set out in the Council Directive on the Approximation of the Laws of the Member States relating to Electromagnetic Compatibility (2004/108/EC).

For the evaluation regarding the Electromagnetic Compatibility, the following standards were applied:

EN 55022	(2010)
EN 61000-3-2	(2006 + A2: 2009)
EN 61000-3-3	(2008)
EN 55024	(2010)
EN 61000-4-2	(2009)
EN 61000-4-3	(2006 + A1: 2008)
EN 61000-4-4	(2004)
EN 61000-4-5	(2006)
EN 61000-4-6	(2009)
EN 61000-4-8	(2010)
EN 61000-4-11	(2004)

Responsible for marking this declaration if the:

⊠ Manufacturer Authorized representative established within the EU

Authorized representative established within the EU (if applicable):

Company Name: Planet Technology Corp.

10F., No.96, Minquan Rd., Xindian Dist., New Taipei City 231, Taiwan (R.O.C.) **Company Address:**

Person responsible for making this declaration

Name, Surname Kent Kang

Position / Title : Product Manager

Taiwan Place

16nd Nov., 2012 Date

Legal Signature

PLANET TECHNOLOGY CORPORATION