GEPON SFU ONU

(1-PON Interface, 1-Port FE + 1-Port GE Interface)

EPN-103

User's Manual

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FCC Warning

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the Instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

CE Mark Warning

This is a Class B product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

Energy Saving Note of the Device

This power required device does not support Standby mode operation.

For energy saving, please remove the power cable to disconnect the device from the power circuit.

Without removing power cable, the device will still consuming power from the power source. In the view of Saving the Energy and reduce the unnecessary power consuming, it is strongly suggested to remove the power connection for the device if this device is not intended to be active.

WEEE Warning

To avoid the potential effects on the environment and human health as a result of the presence of hazardous substances in electrical and electronic equipment, end users of electrical and electronic equipment should understand the meaning of the crossed-out wheeled bin symbol. Do not dispose of WEEE as unsorted municipal waste and have to collect such WEEE separately.

Revision

GEPON SFU ONU (1-PON Interface, 1-Port FE + 1-Port GE interface)
For Model: EPN-103

Revision: 1.0 (December 2012)

Part No.: 2351-BA0090-000

Table Of Contents

1. Introduction

1.1 Checklist

Check the contents of your package for following parts:

- EPN-103 x 1

- User's Manual x 1

- Power Adaptor (12V, 1A) x 1

- 1.5m UTP Cable

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

1.2 Product Description

With growing network services such as HDTV, IPTV, voice-over-IP (VoIP) and Multimedia broadband applications, the demand of broadband grows quickly. The present Broadband environment has not already accorded with needing. Passive Optical Network (PON) is the most promising NGN (Next Generation Networking) technology. As compared to other broadband access technologies such as xDSL and cable modem, Passive Optical Network (PON) technology offers some competing advantages, including a long-term life expectancy of the fiber infrastructure, lower operating costs through the reduction of "active" components, support up to 20km distance between equipment nodes, and most importantly, provide much greater bandwidth.

PLANET EPN-103 is the GEPON SFU ONU devices. The EPN-103 designed with one GEPON port, one standard 10Base-T/100Base-TX and one standard 10Base-T / 100Base-TX / 1000Base-TX Ethernet ports. As residential device of users or access device of users, it offers economical connection system of GEPON users, and high broadband service by connected to gateway or PC. Well satisfying the high speed access demand, GEPON has a more prosperous perspective.

PLANET EPN-103 provides the core functionality of an 802.3ah Ethernet Passive Optical Network (EPON) Optical Network Unit (ONU) solution. In addition, the device also offers some advanced functions such as ACL, IGMP Snooping and MAC Filtering.

Features

● **GEPON Port**
  ■ 1 x SC type GEPON Port

  ■ Up to 1.25Gbps Upstream and Downstream

  ■ Up to 20Km maximum distance

  ■ Compliant with IEEE 802.3ah

  ■ LED indicators for link status

● **Physical Hardware**
  ■ 1 x 10/100Mbps Fast Ethernet Port

  ■ 1 x 10/100/1000Mbps Gigabit Port

  ■ 1 x Reset Button

  ■ 1 x Power Connector

● **EPN-103 Features**
  ■ Dynamic bandwidth allocation (DBA) support

  ■ PON interface complies with IEEE 802.3ah

  ■ IEEE 802.3ah compliant Forward Error Correction (FEC)

  ■ Supports up to 64 MAC Address

  ■ Enhanced IGMP features

  ■ 1.5 MB of integrated packet buffering

  ■ Supports layer-2/3/4 classification rules

  ■ Supports IEEE 802.3x flow control

  ■ Internal Management Information Base (MIB) counters for network statistics

1.3 Specification

Product		EPN-103
Hardware Specification		
Transmission speed		Downstream: 1.25 Gbps Upstream: 1.25 Gbps
Port	PON Port	1 x PON Port
	Ethernet Port	1 x RJ-45 (10/100Base-TX) 1 x RJ-45 (10/100/1000Base-T)
Fiber Maximum Distance		20km
Optic Wavelength		TX: 1310mm RX: 1490mm
Optical Receive Sensitivity		-27 dBm
Input Saturation Power		-3 dBm
Signal Detect – Assert Power		-27 dBm
Signal Detect – Deassert Power		-42 dBm
LED Indicators		1 x Power LED 1 x PON LED 1 x Link LED
EMS Utility Specification		
ONU Feature		MAC address learning Supports IGMP Snooping 64 MAC Addresses support Service Level Agreement (SLA) support Remote loop-back test Supports ACL and MAC Filtering IEEE 802.3ah compliant Forward Error Correction (FEC)

Environment Specification	
Dimension (W x D x H)	132 x 96 x 29mm
Weight	360g
Power Input	12V DC, 1A
Temperature	Operating temperature: -5 ~ 55 Degree C Storage temperature: -40 ~ 80 Degree C
Humidity	Operating Humidity: 10 ~ 90% non-condensing Storage Humidity: 5 ~ 95% non-condensing
Standards Conformance	
Standards Compliance	IEEE 802.3 10Base-T IEEE 802.3u 100Base-TX IEEE 802.3ab 1000Base-T IEEE 802.3x Flow Control and Back pressure IEEE 802.1w Rapid Spanning Tree Protocol
Safety	FCC Part 15 Class B, CE

2. Hardware Description

This product provides three different running speeds – 10Mbps, 100Mbps and 1000Mbps in the same ONU device and automatically distinguishes the speed of incoming connection.

This section describes the hardware features of EPN-103. For easier management and control of the ONU, familiarize yourself with its display indicators, and ports. Front and Back panel illustrations in this chapter display the unit LED indicators. Before connecting any network device to the EPN-103, please read this chapter carefully.

2.1 Front Panel

The Front Panel of the EPN-103 ONU device.

Figure 2-1: EPN-103 ONU Front Panel

2.1.1 LED Indicators

System

LED	Color		Function
PWR	Green	**Light**	Indicates the ONU has power.
		OFF	The ONU doesn't receiver power.
PON	Green	**Blink**	Indicates the port is not getting normal Optical Signal.
		Light	Indicates the port is getting normal Optical Signal.
Link	Green	**OFF**	No Link
		Blink	Indicates the link through that port is Registering.
		Light	Indicates the link through that port is Registering successfully and established.

2.2 Rear Panel

The rear panel of the EPN-103 indicates one DC inlet Power Jack, one PON, two TP Port and one Reset button.
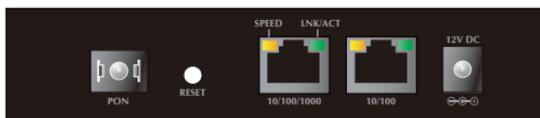

Figure 2-2: EPN-103 Rear Panel

2.2.1 LED Indicators

10/100Mbps RJ-45 Port

LED	Color		Function
Speed	Orange	**Light**	Indicates that the port is operating at 100Mbps.
		OFF	Indicates that the port is operating at 10Mbps.
LNK/ACT	Green	**Blink**	Indicates that the ONU is actively sending or receiving data.
		Light	Indicates the link through that port is successfully established.

10/100/1000Mbps RJ-45 Port

LED	Color		Function
Speed	Orange	**Light**	Indicates that the port is operating at 1000Mbps.
		OFF	Indicates that the port is operating at 10Mbps or 100Mbps.
LNK/ACT	Green	**Blink**	Indicates that the ONU is actively sending or receiving data.
		Light	Indicates the link through that port is successfully established.

3. Hardware Installation

This chapter offers information about installing your ONU. If you are not familiar with the hardware or software parameters presented here, please consult your service provider for the values needed.

3.1 Safety Requirement

- Make sure the GEPON service is enabled.

- Ensure that the optical fiber is long enough to achieve the desired installation place.

- Put the ONU on a sturdy table.

- Don't open the device when the ONU is operating.

- Contact your local agent for permission if you want to remove the chassis.

- Allow about 10 cm of clearance around the ONU chassis for heat dissipation.

3.2 Hardware Installation

Please connect the ONU to you devices as follow:

Step 1. Connecting the RJ-45 network cable.

> **a.** Plug-in the RJ-45 cable to 10/100/1000 GE Port or 10/100 FE Ports.
>
> **b.** Plug-in the other side to your host or devices.

Step 2. Connecting the fiber cable.

Before connecting, please note:

◆ Keep the optical connector and the optical fiber clean.

◆ Make sure the bending diameter of the fiber is more than 6cm. Otherwise; the optical signal loss may be increased.

◆ Cover a protective cap to guard against dust and water when the fiber is not used.

> **a.** Remove the protective cap of the optical fiber.
>
> **b.** Remove the protective cap of the ONU optical interface (PON interface). Insert the fiber into the PON interface.

Step 3. Connecting Power Adapter.

> **a.** Connect the power adapter to the power socket on the ONU.
>
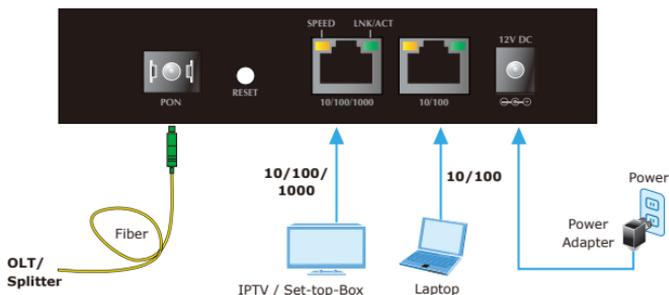> **b.** Insert the other end into a power outlet.

Figure 3-1: EPN-103 connection diagram

3.3 Verifying the Installation

After power on the ONU, the Power LED will be light and ONU system will start to check the Optical signal. If the ONU system receives the optical signal, the PON LED will be light and ONU system will start to register. If OLT and ONU register successful, the Link LED will be light which means that the connection is establishing.

Note	The PLANET GEPON Solution based on the Teknovus GEPON Technology. The ONU was designed with PLANET OLT EPL-2000 system. If your connection device is third party OLT system, even the OLT is Teknovus solution; the PON connection might be unstable and malfunction, due to the configurations of ONU must depend on the OLT settings. If the ONU can't work properly with other brand OLT, please make sure your PON system and contact the third party OLT vendor for technical support.

3.4 Application

The OLT device is deployed in the central office room. The ONU devices are connected to the OLT device through an optical splitter, which forms a P2MP (Point-to-Multipoint) topology, connect to the switches or the devices as computers, IP Phone, IP Surveillance for Triple Play Service. Shown as below Figure:
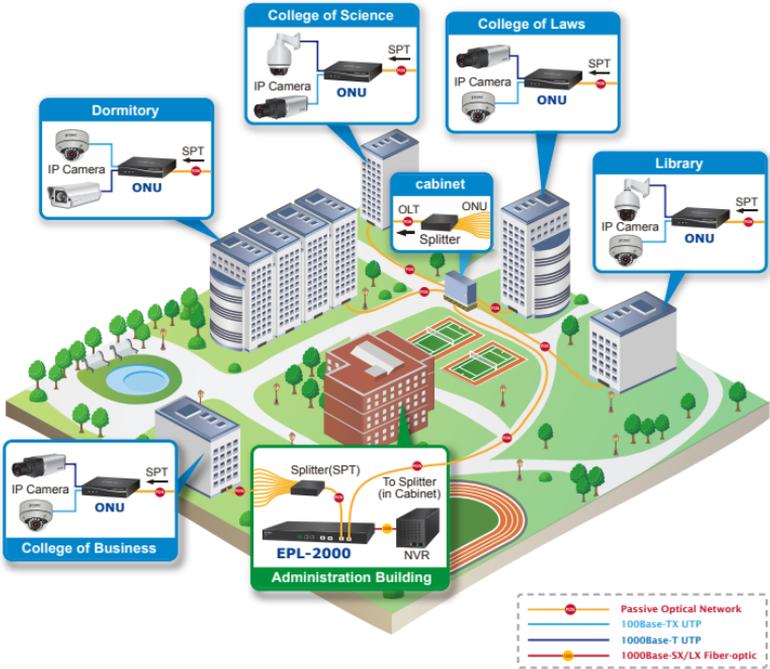
IP Surveillance System Application in University

Figure 3-2 IP Surveillance System Application
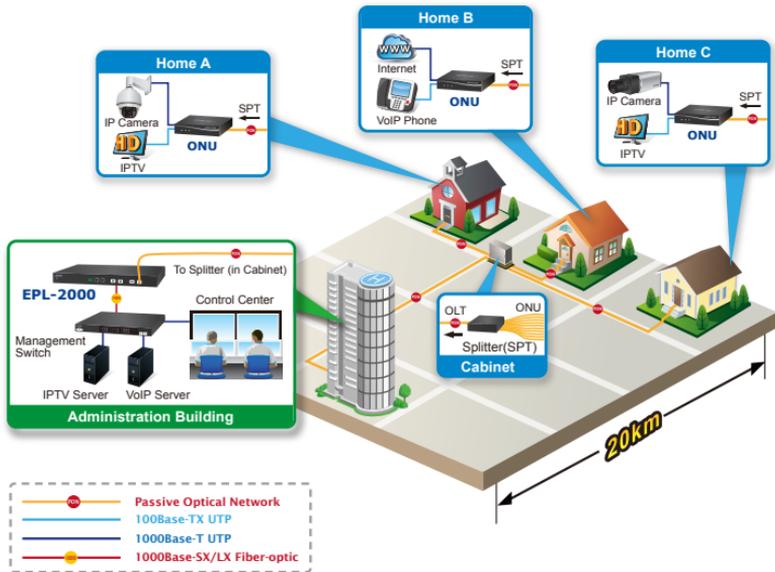
Fiber To The Home (FTTH) Application

Figure 3-3 Fiber to the House Application

Appendix A Networking Connection

A.1 Switch's RJ-45 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-

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

RJ-45 Connector pin assignment		
Contact	MDI Media Dependant Interface	MDI-X Media Dependant 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, RJ-45 pin assignment
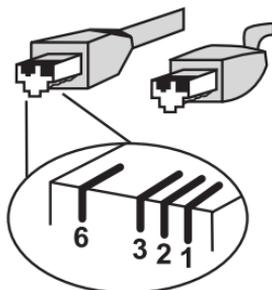
The standard RJ-45 receptacle/connector

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

Straight Cable		SIDE 1	SIDE 2
1 2 3 4 5 6 7 8	SIDE 1	1 = White/Orange	1 = White/Orange
		2 = Orange	2 = Orange
		3 = White/Green	3 = White/Green
		4 = Blue	4 = Blue
		5 = White/Blue	5 = White/Blue
1 2 3 4 5 6 7 8	SIDE 2	6 = Green	6 = Green
		7 = White/Brown	7 = White/Brown
		8 = Brown	8 = Brown
Crossover Cable		SIDE 1	SIDE 2
1 2 3 4 5 6 7 8	SIDE 1	1 = White/Orange	1 = White/Green
		2 = Orange	2 = Green
		3 = White/Green	3 = White/Orange
		4 = Blue	4 = Blue
		5 = White/Blue	5 = White/Blue
1 2 3 4 5 6 7 8	SIDE 2	6 = Green	6 = Orange
		7 = White/Brown	7 = White/Brown
		8 = Brown	8 = Brown

Figure A-1: Straight-Through and Crossover Cable

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

EC Declaration of Conformity

For the following equipment:

*Type of Product   : GEPON SFU ONU
*Model Number   : EPN-103

* Produced by:
Manufacturer's Name: **Planet Technology 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 + A1:2009 + A2: 2009)
EN 61000-3-3	(2008)
EN 55024	(2010)

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.**

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

Person responsible for making this declaration

Name, Surname   **Kent Kang**

Position / Title :   **Product Manager**

Taiwan   **15ⁿᵈ Jan., 2013**
Place   *Date*   *Legal Signature*

PLANET TECHNOLOGY CORPORATION

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