

C601A

■ Installation Guide



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Introduction

This is the user manual for UBIQUOSS ONT. Information contained in this manual is applicable for installation and maintenance of UBIQUOSS ONT C601A.

Features

- High speed INTERNET access.
- Full GPON bandwidth of up to 2.5 G bps downstream and 1.25 G bps upstream.
- 10/100/1000 Base-T Ethernet to provide Internet connectivity to all computers on your LAN.

System Requirements

In order to use UBIQUOSS ONT model, you must have the following:

- GPON service up.
- One or more computers each containing an Ethernet 10/100/1000 Base-T network interface card.

Using this Document

Notational conventions

For brevity, the UBIQUOSS ONT model C601A is referred to as “the ONT.”

Terms and Abbreviations

CLI	Command Line Interface
G-PON	Gigabit Passive Optical Network
LAN	Local area network
LED	Light-Emitting Diode
ME	Managed Entity
NV memory	Non-volatile memory
OLT	Optical Line Terminal
OMCI	ONT Management and Control Interface
ONT	Optical Network Terminal
ONU	Optical Network Unit
PON	Passive Optical Network
PWD	Password
SN	Serial Number
SSH	Secure Shell

Special messages

This document uses the following icons to call your attention to specific instructions or explanations.



CAUTION indicates a potentially dangerous situation that will cause injury and tells you how to avoid the problem.



NOTICE indicates potential damage and tells you how to avoid the problem.



LASER RADIATION indicates a potentially dangerous situation that will cause injury via thermal effects and tells you how to avoid the problem.



TIPS indicates important information that helps you make better use of your device.

Installation

In addition to this manual, your package contents should include:

- ONT
- One power adapter and power cord.
- One Ethernet Cable

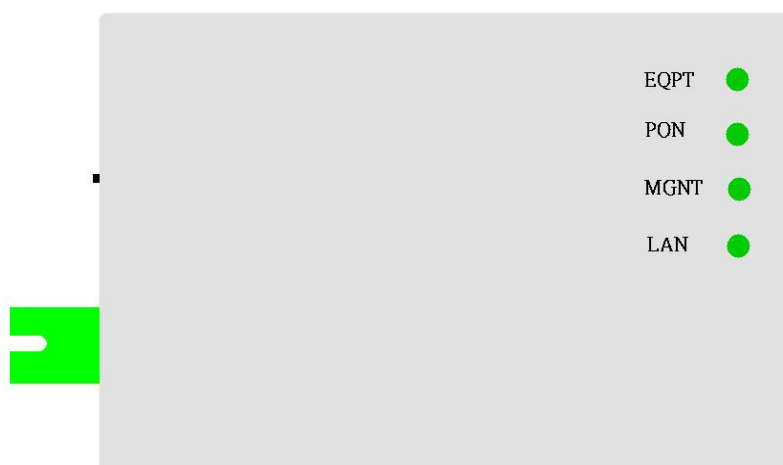


The Appearance

Front Panel

The front panel contains four LEDs that indicate the status of the ONT.

Fig 1. ONT Front Panel



Label	Color	Function
EQPT	Green	Power LED. Steadily On: Unit is powered on. Steadily Off: Unit is powered off.
PON	Green	PON Link Detection LED. Steadily On: PON link is established and active. Steadily Off: System Initialization and PON Link down. Blink: When no PON synchronization .
MGNT	Green	MGNT Status LED. Steadily on: Steadily off: Blink : During ONT software upgrade.
LAN	Green	LAN LED. On: 10/100/1000 Base-T link established and active. Off: No LAN link. Blink: Flashes during data transfer of 10/100/1000 Base-T .

Table 1. Front Panel Label

Left Panel

The left panel contains the ports for the ONT's data and power connections.

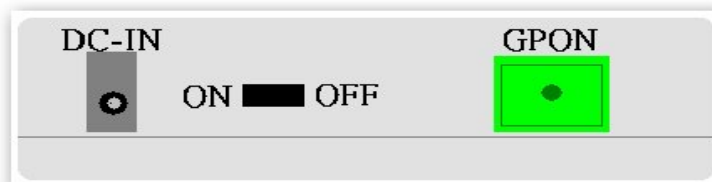


Fig 2. ONT Left Panel

Label	Function
GPON	SC Adapter. Connects the device to a SC/PC optical fiber with blue one and SC/APC optical fiber connector with green one.
On/Off	Power ON/OFF Push Bottom. Switches the device on and off
DC-IN	Power Jack. Connects to the supplied power converter cable (12V DC).

Table 2. Left Panel Label

Right Panel

The right panel contains the ports for the ONT's data connections.

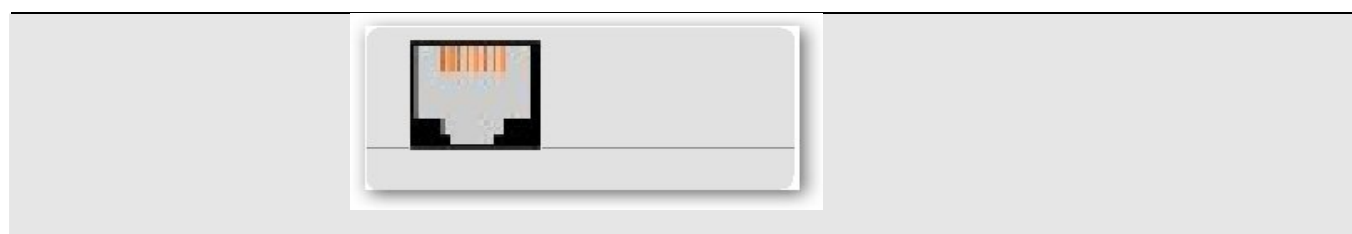


Fig 3. ONT Right Panel

Label	Function
LAN	RJ-45 Connector. Connects the device to your PC's Ethernet port, or to the uplink port on your LAN's hub, using the cable provided.

Table 3. Right Panel Label

Bottom Panel

There is a label on the bottom panel with the model name, the SN of the ONT, MAC address of the pon interface.



Fig 4. ONT bottom Panel

Hardware Connecting

Because OLT and ONT will launch high-power laser light, you should never expose PON-port output of OLT and ONT to the eyes directly.



LASER RADIATION

**DO NOT VIEW DIRECTLY WITH OPTICAL INSTRUMENTS
CLASS 1 LASER PRODUCT**

In this section, you should connect the ONT to the SC/PC or SC/APC GPON linked optical fiber, the power outlet, and your computer or network.



CAUTION

BEFORE YOU BEGIN, TURN THE POWER OFF FOR ALL DEVICES

These include your computer(s), your LAN hub/switch (if applicable), and the ONT.



CAUTION

BEFORE YOU BEGIN,

Make sure your connector of Optical Fiber is the same type with the ONT.

Figure 5 illustrates the hardware connections. Please follow the steps for specific instructions.



Fig 5. Overview of Hardware Connections

1. Connect the Ethernet cable.

If you are connecting a LAN to the ONT, attach one end of a provided Ethernet cable to the LAN port of PC or a regular hub port and the other to the LAN port on the ONT

2. Attach the power connector.

Connect the AC power adapter to the PWR connector on the back of the device and plug in the adapter to a wall outlet or power strip.

3. Connect the PON interface with Optical Fiber.

Make sure your connector on the optical fiber is the same type with the ONT. Connect one end of the optical fiber to the port labeled GPON, on the left panel of the ONT. Connect the other end to the GPON network.

4. Turn on the ONT and power up your systems.

Press the Power switch on the back panel of the device to the ON position. And now, you can turn on and boot up your computer(s) and any LAN devices such as hubs or switches.

Configure the laptop

Before you start to access the ONT via Ethernet, you must configure TCP/IP address of the laptop to be **172.18.61.x**, where **x** is any number between 1 and 254, in addition to 31. The subnet mask must be **255.255.255.0**. The default IP address of the ONT is **172.18.61.31**.

Maintenance

The ONT provide an engineer CLI shell for operator to get useful information. You can enter the CLI shell via local console or remote login through SSH/Telnet session. By default, the CLI shell is enabled when you remote login the ONT via SSH/Telnet session.

Login ONT via local console

In this section, you can login the ONT via a console cable. Please follow the steps for specific instructions.

1. Open the shell of the ONT

Open the shell of the ONT and find J3. Figure 6 illustrate the placement of the J3.

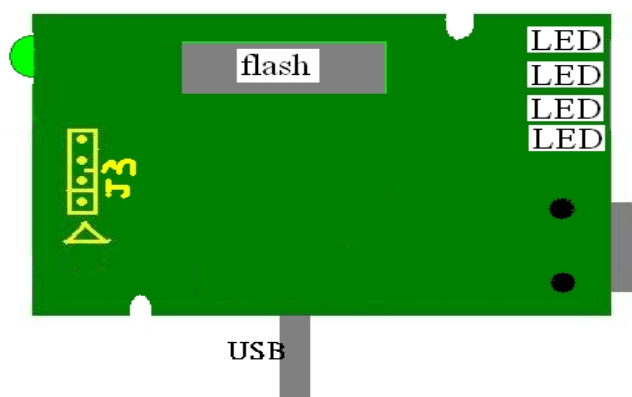


Fig 6. Open the shell of ONT and find J3

2. Connect console cable

Find the “◀” symbol, and connect console cable of pin-1 at it. Figure 7 illustrate how to connect the console cable.

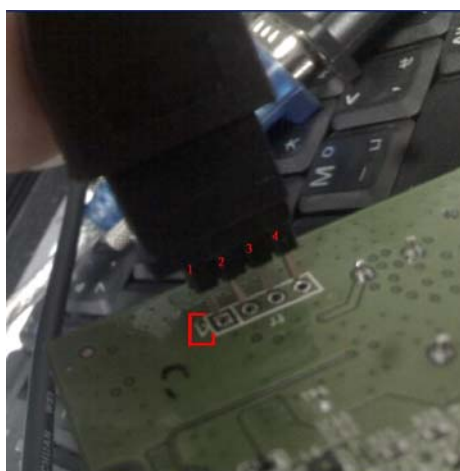


Fig 7. Connect console cable

3. Configure the application software.

Activate the application software for login and configure the related parameters. Figure 8 illustrate the configuration of the parameters.

Port:

Baud rate:

Data:

Parity:

Stop:

Flow control:

Transmit delay

msec/char msec/line

OK Cancel Help

Fig 8. Software configuration for local console

4. Turn the ONT

Turn on the ONT, when boot-up finish, the console will show as below.

```
BusyBox v1.14.3 (2009-08-12 20:59:20 IDT) built-in shell (ash)
Enter 'help' for a list of built-in commands.
```

```
/#
```

- Because the CLI shell was enabled when you remote login the ONT via Telnet session by default, so you need to enter "/usr/bin/passshell" to enable the CLI shell at console

```
/# /usr/bin/passhell
```

```
PAS74XXA>PASONU_QUEUE_default_config_set: default config mode is 4
DSCP Module initialized
PS: leaving cycles
NOTE: GPON STACK: reset gem ports,tconts and address table.
GMAC: REV A
```

```
FW (build on Dec 10 2010 at 14:36:15)
```

```
Major version : 2
Minor version : 5
Build No. : 0
Maintenance No. : 19
Vendor: PMC-Sierra
Switch Disabled
PASPAL: switch disabled
PASPAL: UNI port-count=1
```

```
PASPAL: PASPAL_management_tcont_set(), tcont=7
PASPAL_uni_enable_set(port=0, enable=1)...OK
PASPAL: set user defined VLAN type 0 to =0x8100
PASPAL: set user defined VLAN type 0 to =0x8100
PASPAL::PASPAL_us_cpu_queue_check: There is no alloc-id for TCONT 6
PASPAL::PASPAL_us_cpu_queue_check: CPU US Queue (24) would be disabled because of
alloc_id/enable (255/0)
This is a sample user mib reset callback function
PAS74XXA>
```

- Press "?", it will show available commands.

```
PAS74XXB>?
?          Display help
ls         Display commands
..         To upper directory
echo       echo [on/off] - change echo
exit       exit from passhell
ver        Display the GPON's HW and Image versions
dbg_level  FW printout debug level
g          g <address>- get HW address value
s          s <addr> [<data>/<s/c/t>] [All/bit #(0-31)]- set value of HW address
sleep      sleep [sec]
user       user - show user shell.
device     Enter the device management dir
peripheral Enter the peripheral access sub-dir
uni        Enter UNI MAC sub-dir
datapath   Enter the frame processing sub-dir
gpon       Enter GPON sub-dir
addr       Enter ADDRTBL sub-dir
traffic    Enter TRAFFIC sub-dir
stat       Enter STAT dir
power_save Enter Power save sub-dir
igmp       Enter IGMP dir
script     Enter script sub-dir
```

Shell is case insensitive

```
PAS74XXB>
```



TIPS

Please type "?" to get more information about the usage of commands

Login the ONT via telnet session

In this section, you can login the ONT remotely via an Ethernet cable. Please follow the steps that follow for specific instructions.

1. Configure the application software

Activate the application software for login and configure the related parameters. Figure 9 illustrate the configuration of the parameters.

Fig 9. Configuration of application software for remote login



NOTICE

Please make sure that the IP address of the laptop you use is within the same network segment as the ONT.

2. Turn on the ONT

Turn on the ONT, when boot-up finish, you can telnet into the ONT, and enter the CLI shell directly.

-
- PAS74XXB>
-
- Press “?”, it will show available commands.
-
- PAS74XXB>?
- | | |
|-----------|--|
| ? | Display help |
| ls | Display commands |
| .. | To upper directory |
| echo | echo [on/off] - change echo |
| exit | exit from passhell |
| ver | Display the GPON's HW and Image versions |
| dbg_level | FW printout debug level |
| g | g <address>- get HW address value |
| s | s <addr> [<data>/<s/c/t>] [All/bit #(0-31)]- set value of HW address |
| sleep | sleep [sec] |
| user | user - show user shell. |
-

device	Enter the device management dir
peripheral	Enter the peripheral access sub-dir
uni	Enter UNI MAC sub-dir
datapath	Enter the frame processing sub-dir
gpon	Enter GPON sub-dir
addr	Enter ADDR_TBL sub-dir
traffic	Enter TRAFFIC sub-dir
stat	Enter STAT dir
power_save	Enter Power save sub-dir
igmp	Enter IGMP dir
script	Enter script sub-dir

Shell is case insensitive

PAS74XXB>



TIPS

Please type "?" to get more information about the usage of commands

Configure example

Serial Number Configuration

Please follow the steps to query and set serial number.

1. Enter PASSHEL engineer shell by typing "**passhell**".
2. Type "**Peripheral**" to enter the director.
3. Type "**nvdb**" to enter the directory".
4. Type "**show**" and you can get all information stored in the NV memory. SN is composed of two parts, "**vendor_id**" and "**pon_mac**". Please check these two part to get current SN.
5. Assume that the SN you want is "**0xabcdefgijklmnop**" Type "**set vendor_id 0x30303030,0xabcdefgh**"
6. Type "**set pon_mac 00:19:ij:kl:mn:op**"
7. Then you may type "**show**" again to check the modification.

Password Configuration.

Please follow the steps to query and set Password:

1. Enter PASSHEL engineer shell by typing "**passhell**".
2. Type "**Peripheral**" to enter the director
3. Type "**nvdb**" to enter the directory"
4. Type "**show**" and you can get all information stored in the NV memory. Please check the item "**gpon_pwd**" to get current password.
5. Assume the password is "**1234567890ABCDEFGHij**", Type "**set gpon_pwd 0x12,0x34,0x56,0x78,0x90,0xAB,0xCD,0xEF,0xGH,0xIJ**"
6. Then you may type "**show**" again to check the modification.

Modify the configuration to support dual image.

Please follow the steps to get the information of the firmware on the ONT.

1. Enter PASSHEL engineer shell by typing "**passhell**"
2. Type "**Peripheral**" to enter the directory.
3. Type "**nvdb**" to enter the directory.
4. Type "**show**" to get all information stored in the NV memory.
5. Check the item "**bootmode**". If the value is 0, the ONT support single image only. If the value is 1, the ONT support dual image.
6. You may type "**set bootmode 1**" to change the configuration to support dual image.

Check the status of the firmware

Please follow the steps to get the information of the firmware on the ONT.

1. Enter PASSHEL engineer shell by typing "**passhell**"
2. Type "**Peripheral**" to enter the directory.
3. Type "**image**" to enter the directory.
4. Type "**info**" to get related information about the image on the ONT.

Upgrade firmware via tftp

Please follow the steps to upgrade firmware from tftp.

1. Prepare a tftp server on the laptop which you use to connect the ONT, and put the image with file name "basic.bin" into the tftp server.
2. Configure the IP address of the laptop as 172.18.61.100.
3. Login the ONT.
4. Enter PASSHEL engineer shell by typing "**passhell**"
5. Type "**Peripheral**" to enter the directory.
6. Type "**image**" to enter the directory"
7. Assume that you want to upgrade image 1 on the ONT, the you can type "**tftp 172.18.61.100 basic.bin 1**" to upgrade the image 1 on ONT.
8. After the upgrade is finished, type "**active 1**" modify the flag of the image.
9. Also type "**..**" to back to parent directory, then type "**nvdb**" and "**set committed_image 1**" to modify the commit flag of the image.



Please check the image status before you start to download, and make sure the image you want to upgrade is not activated.

Upgrade firmware via application(Teraterm) software

Please follow the steps to upgrade firmware via application software.

1. Prepare the application software on the laptop which you use to connect the ONT.
2. Configure the IP address of the laptop as **172.18.61.100**.
3. In this method, you can login the ONT via local console or telnet/SSH session.
4. Enter PASSHEL engineer shell by typing "**passhell**"
5. Type "**Peripheral**" to enter the directory.
6. Type "**image**" to enter the directory"
7. Assume that you want to upgrade image 1 on the ONT, the you can type "**write 1**" to upgrade the image 1 on ONT.
8. After you see following message, you can send the image via the application software.

PAS74XXA/peripheral/image>**write 1**

Ready to receive file.

Use 'Send File...' option to download file to target

Use ^C or ^D to abort

9. Please drag .uue file into the window, and you could see a window shown as figure 10.
10. Please press “Send file” and you could see that the file is downloading as figure 11.
11. After the upgrade is finished, type “**active 1**” modify the flag of the image.
12. Also type “**..**” to back to parent directory, then type “**nvdb**” and “**set committed_image 1**” to modify the commit flag of the image.

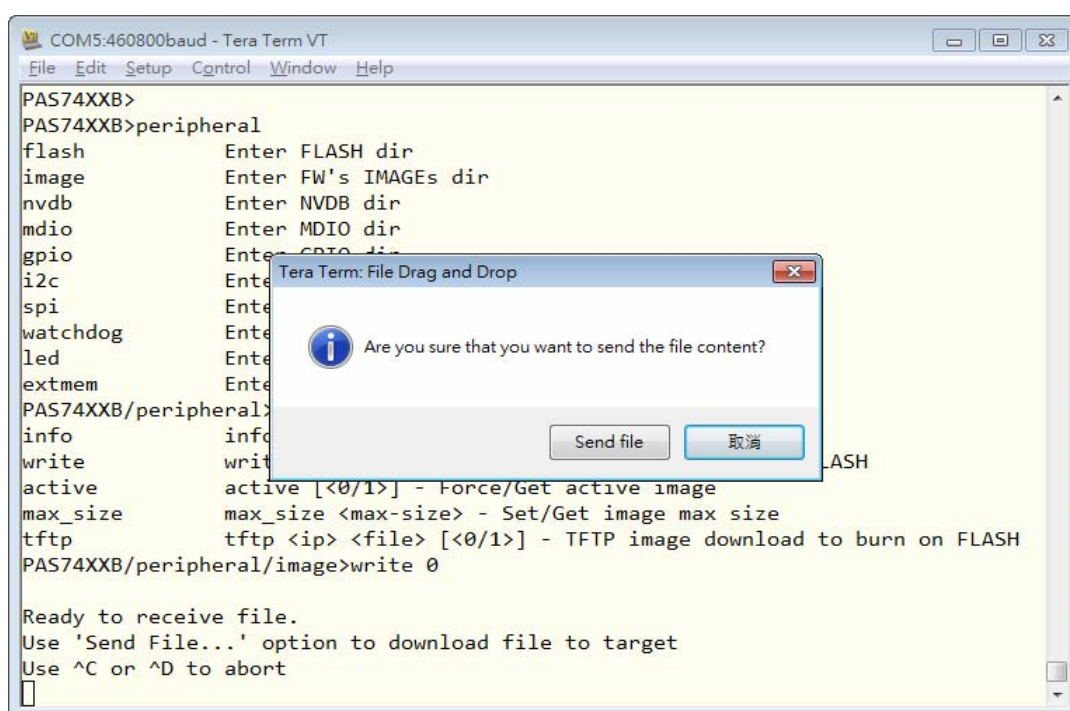


Figure.10 Send file to ONT

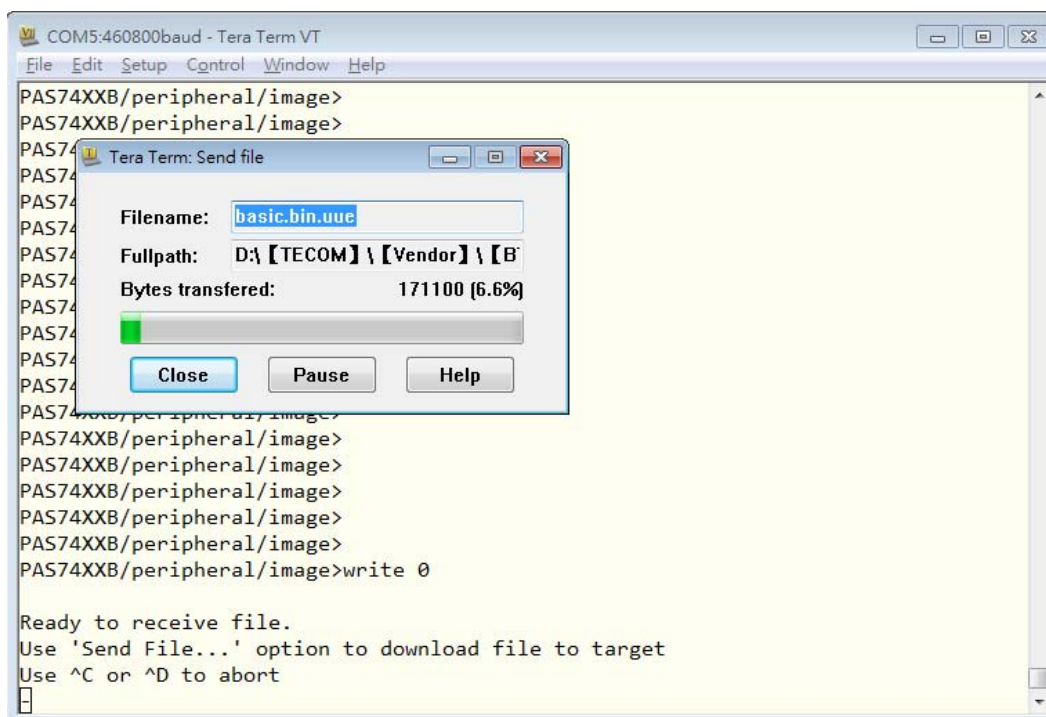


Figure.11 Downloading the file.



Please check the image status before you start to download, and make sure the image you want to upgrade is not activated.

Reboot the ONT

Please follow the steps to reboot the ONT.

1. After you login the ONT, enter PASSHEL engineer shell by typing "**passhell**"
2. Type "**device**" to enter the directory.
3. Type "**reboot**" to enter the directory.

Get Rx power via CLI

Please follow the steps to get Rx power via CLI.

1. Enter PASSHEL engineer shell by typing "**passhell**"
2. Type "**user**" to enter the directory.
3. Type "**Vendor**" to enter the directory.
4. Type "**Rx_Power**" to get the Rx power.

Get Tx power via CLI

Please follow the steps to get Tx power via CLI.

1. Enter PASSHEL engineer shell by typing "**passhell**".
2. Type "**user**" to enter the directory.
3. Type "**Vendor**" to enter the directory.
4. Type "**Tx_Power**" to get the Tx power.

Get Temperature of optical module via CLI

Please follow the steps to get temperature via CLI.

1. Enter PASSHEL engineer shell by typing "**passhell**".
2. Type "**user**" to enter the directory.
3. Type "**Vendor**" to enter the directory.
4. Type "**Temperature**" to get the temperature.

Get Laser bias current of optical module via CLI

Please follow the steps to get laser bias current via CLI.

1. Enter PASSHEL engineer shell by typing "**passhell**".
2. Type "**user**" to enter the directory.
3. Type "**Vendor**" to enter the directory.
4. Type "**Bias**" to get the laser bias current.

Get Power feed voltage of optical module via CLI

Please follow the steps to get power feed voltage via CLI.

1. Enter PASSHEL engineer shell by typing "**passhell**".
2. Type "**user**" to enter the directory.
3. Type "**Vendor**" to enter the directory.
4. Type "**Voltage**" to get the power feed voltage.

Capture Ploam message

Please follow the steps to get ploam message.

1. After you enter the CLI shell
2. Type "**gpon**" to enter the director
3. Type "**controll**" to enter the directory"
4. Type "**gs_log_show 2 1000**" to get the ploam message.

Capture OMCI message

Please follow the steps to get OMCI message.

1. To get complete OMCI message, please unplug the fiber before you start to capture OMCI message.
2. After you enter the CLI shell
3. Type "**user**" to enter the director
4. Type "**omci**" to enter the directory"
5. Type "**debug_level 3**" to change the log level.
6. After the configuration, please connect the fiber back, then you can see the OMCI message printed on the telnet session.

Appendix I

Physical Interfaces


- One Gigabits Passive Optical Network (GPON) interface (SC/APC).
- One 10/100/1000 BASE-T Ethernet ports (RJ-45).
- Power Requirement
- Input: 100 to 240 VAC, 50/60 Hz.
- Output: 12 VDC, 900 mA.
- Operating Environment
- Temperature: 0 ~40°C.
- Humidity: 10 to 90%, non- condensing.
- Physical Specification
- Dimension (exclude SC adapter) 50 (W) x 70 (L) x 23 (H) mm.

Appendix II Power Adapter Specification

Input:

Input Voltage Designing Range:	100 ~ 240 VAC.
Line Frequency Designing Range:	50 HZ to 60 HZ.
Input Current:	0.3 A max. at full output loading condition for any input voltage range.

Output:

Output Voltage	12V±5%
Minimum Load	0 Amp.
Maximum Load	1 Amp.
Connector Type	

Storage:

Ambient temperature:	-25 ~ +85 °C.
Relative Humidity:	10% ~ 95%.

Operation:

Ambient temperature:	0 ~ 40 °C.
Relative Humidity:	10% ~ 95%.