



Model: BD-2GPON-OEO

GPON Repeater User's Manual

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Preface

Overview

Chapter	Description
Preface	It introduces overview, version and scope of application.
Chapter 1 BD-2GPON-OEO Product Introduction	This chapter introduces BD-2GPON-OEO product.
Chapter 2 BD-2GPON-OEO Application	This chapter introduces application scenarios of BD-2GPON-OEO.
Chapter 3 Hardware Installation	This chapter introduces the installation of BD-2GPON-OEO.
Chapter 4 Description of LED Indicator Lights	This chapter introduces description of BD-2GPON-OEO indicator lights.
Chapter 5 Product Specifications	This chapter introduces product specifications of BD-2GPON-OEO.
Chapter 6 Precautions	This chapter introduces precautions for use of BD-2GPON-OEO.

Product Version

Product Number	Version Number
BD-2GPON-OEO	1.0







Target Readers

This manual is intended for the following engineers:



- (1) Network planning engineer
- (2) Hardware installation engineer
- (3) Test engineer
- (4) Field maintenance engineer
- (5) System maintenance engineer

Explanation of Special Symbols

The following symbols may appear in this manual, which respectively represent the following meanings:

Symbol	Description
 Danger	Special attention should be paid to the content. If the operation is improper, it may cause serious injury to the person.
 Attention	It reminds the matters for attention. Improper operation may cause loss of data or damage to the device.
 Hint	It represents the operation or information that requires special attention to ensure the success of the operation or the normal work of the device.
 Knack	A skill or a knack which helps to solve a problem and save time.
 Explain	The necessary supplement and explanation for the description of the text.
 Note	Notes contain helpful suggestions or references to material not covered in the manual.

Explain

1. It is not allowed to make modification if the input box or the drop-down box is grayed out.
2. The add, delete, modify and refresh buttons are all on the toolbar.
3. One and only one data in the table must be selected first while doing the modification operation.
4. At least one data in the table must be selected while doing the deletion operation.
5. The refresh button is used to refresh the table and the form. There are two refresh operations on the toolbar. When it shows "Refresh Table" on  icon, it will refresh the table. When it shows "Refresh Form" on  icon, it will refresh the form.

Change History

Modifying records accumulates a description of each update of the document. The latest version contains all updates made to previous versions of the document.

Author	Issued Date	Remarks

Lucy	2019-08-23	First release

Chapter 1 Product Introduction

1.1. Introduction

BD-2GPON-OEO is a ITU-T G.984.x & ITU-T G.988 standard-based GPON link amplifier developed by Baudcom with independent intellectual property rights. It has good compatibility and fully adapts to the mainstream OLT/ONU in the market. It can extend the coverage of GPON system from the previous 20km to 50km or even further. GPON can be integrated with the mainstream OLT/ONU manufacturers in the market, thus forming an efficient and flexible long-distance GPON solution.

BD-2GPON-OEO is an optical power amplifier for GPON lines developed by Baudcom. It uses OEO mode to amplify and shape the signals, and achieves 3R amplification of the signals.

BD-2GPON-OEO can effectively amplify the optical power of PON lines and extend the transmission distance of network. It has the features of compact structure and convenient installation. It can be widely used in various fields such as GPON cell access, GPON fiber-to-the-home and so on.

To realize distance extension function of BD-2GPON-OEO PON link amplifier, the corresponding logical distance of the OLT ports needs to be set. It can only be amplified within the range of the logical distance and it does not allow exceeding the logical distance.



Figure 0-1 BD-2GPON-OEO Appearance (DC Power)



Figure 0-2 BD-2GPON-OEO Appearance (AC Power)

Chapter 2 BD-2GPON-OEO Application

2.1. Extend Transmission Distance



Figure 0-1 Extend Transmission Distance

The original link cannot reach the maximum transmission distance of OLT due to line attenuation and other reasons. By using BD-2GPON-OEO device, the optical power can be enhanced to support the transmission distance of 50km.

In theory, BD-2GPON-OEO should be placed before the splitter where the optical power of OLT reaches its attenuation limit, so as to ensure sufficient optical power after splitting and further to ensure long-distance transmission of PON network.

2.2. Increase Splitting Ratio



Figure 0-2 Increase Splitting Ratio

The original link can only support a splitting ratio of 1:64 due to splitting attenuation and other reasons. By using BD-2GPON-OEO device, the optical power can be enhanced and the splitting ratio can be extended to 1:128.

Chapter 3 Hardware Installation

3.1. Packing Inspection

Before installing BD-2GPON-OEO, please make sure that the following items are contained in the packing box: a BD-2GPON-OEO amplifier, a DC48V power cord or a 220V to 12V power adapter and a manual.

3.2. Jumper

Use single mode SC fiber optic jumpers.

3.3. Front Panel Connection Diagram

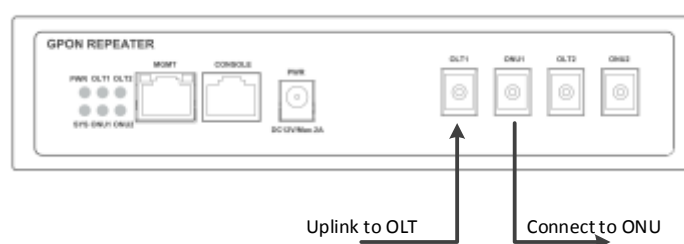


Figure 0-1 Front Panel Connection Diagram

3.4. DC Power Cord Connection

The DC48V power cord is as shown in the figure below. One end is a green phoenix terminal connector which is used to connect BD-2GPON-OEO device. The other end is two power cable connectors which are used to connect the DC power supply. As shown in the figure below, the power cable marked “RTN” is used to connect the DC positive pole and the power cable marked “N48V” is used to connect the DC negative pole.

⚠ Attention

Please do not plug the electrified power cord.



Figure 0-2 DC48V Power Cord



Figure 0-3 DC Power Cord Connection Diagram

3.5. Debugging Interface

MGMT interface and CONSOLE interface are debugging interfaces for equipment, which are only used for debugging and maintenance of equipment.

3.6. Mounting (Optional)

For easy installation in 19-inch standard cabinet, 1U tray bracket is an option for BD-2GPON-OEO equipment, as shown in the figure below. Two devices can be fixed on each tray bracket.



Figure 0-4 Rack Tray Bracket

If the equipment is planned to be installed in a 19-inch cabinet, please choose tray bracket. It is recommended that BD-2GPON-OEO be fixed on the tray bracket before the equipment is mounting. As shown in the figure below, two screws are used to fix the BD-2GPON-OEO equipment from the side to the tray bracket.



Figure 0-5 Install BD-2GPON-OEO on Tray Bracket

Use cabinet screws to fix the tray bracket on the slot of 1U height, as shown in the figure below. Then complete the mounting of the equipment.



Figure 0-6 Install Tray Bracket in Cabinet

Chapter 4 Description of LED Indicator Lights

4.1. Front Panel

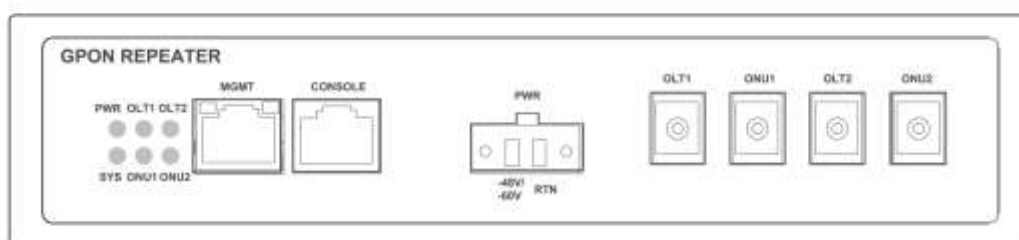


Figure 0-1 Front Panel (DC Power)

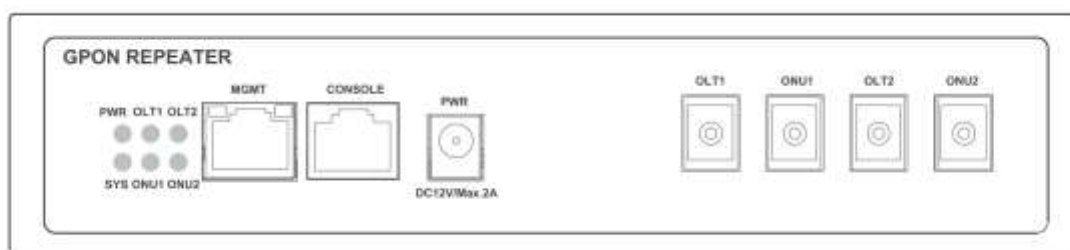


Figure 0-2 Front Panel (AC Power)

4.2. Indicator Status Description

Table 0-1 Indicator Status Description

Item	Meaning	Status	Description
PWR	Power Indicator Light	ON	normal power supply
		OFF	Abnormal power supply or the power is not turned on.
SYS	System Indicator Light	Always Green	The system works normally.
		OFF	The device is starting.
		Always Red	Warning of device failure or excessive temperature.
OLT1/OLT2	Port Status Indicator Light	Always ON	The connection of OLT is normal.
		OFF	OLT is not connected or cannot normally receive optical signals.

ONU1/O	Port Status Indicator	Always ON	ONU is online and registration is successful.
ONU2	Light	OFF	ONU is not online or ONU is under registration.

Chapter 5 Product Specifications

5.1. Specification Parameters

Table 0-1 Specification Parameters

Item	Description
Basic Function	Support Protocol: GPON (ITU-T G.984.x & ITU-T G.988) .
	Upstream rate: 1.244G burst signal.
	Downstream rate: 2.488G.
	It supports dual-channel concatenation.
	It supports 1:128 network extension.
	It is compatible with OLT and ONU from different manufacturers.
	It supports transparent transport of services.
	It supports a maximum distance of 50km (which cannot exceed the maximum logical distance supported by OLT).
	It supports power-off bypass (optional).
Interface Module	Single Fiber Bidirectional OLT/ONU Optical Module.
Optical Interface	Receiving sensitivity of OLT interface: -28 /-8 dBm.
	Receiving sensitivity of ONU interface: -30 /-12 dBm.
	Transmitting optical power of OLT interface: 0-5dBm.
	Transmitting optical power of ONU interface: 3-7dBm.
Working Temperature	0°C ~ 50°C
Working Humidity	5% ~ 95%
Storage Temperature	-20°C ~ 85°C
Power Consumption	<15W
Power Supply	DC -38V ~ -72V
	DC 12V (External AC 220V power adapter)

Dimensions	192mm (W) *240mm (D) *44mm (H)
Weight	1.6kg

Chapter 6 Precautions

6.1. Precautions



The optical fibers of the single board are straight out; please do not look directly at the core of the optical module, so as to prevent laser from burning eyes.

6.2. Maintenance of Single Boards

Fault Location Method

In case that failure such as business interruption or optical power instability occurs, the following steps are usually used to locate the fault:

1. Check and adjust the optical fiber connection. If the service returns to normal, the fault will be solved. If the optical fiber connection is normal, please continue with the next step.
2. Check and adjust the input optical power of the local and the opposite ends of the single board. If the service returns to normal, the fault will be solved. If the input optical power is normal, please continue with the next step.
3. Equipment failure, please replace the equipment.

Troubleshooting

Table 0-1 Single Board Maintenance--Troubleshooting

Item	Fault Causes
ONU cannot be registered.	Cause 1: OLT is not connected with ONU equipment. Cause 2: The receiving optical power of the optical module exceeds the threshold range (-8dBm~-27dBm). Cause 3: The optical interface is not clean. Cause 4: Business interruption due to inconsistent types of interworking services. Cause 5: Equipment failure.
Error Code of Equipment	Cause 1: The receiving optical power is abnormal. Cause 2: The aging and bending of the tail fibers between and the client and the user leads.

	<p>to greater loss.</p> <p>Cause 3: The equipment temperature is too high.</p> <p>Cause 4: The optical interface of the equipment is not clean.</p> <p>Cause 5: Equipment failure.</p>
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Chapter 7 Console management

7.1. Access to GPON repeater

You can access to OLT by CLI via console cable or telnet. This chapter introduces how to access to GPON repeater CLI via console cable.

1. Connect PC to GPON repeater console port by console cable.
2. Run hypertextual or other simulation tools such as secureCRT and Putty in PC. Set parameters as follows.

✧ Baudrate: **115200**

Data bits: **8**

✧ Parity: **none**

✧ Stop bits: **1**

✧ Follow control: **none**



COM port properties

After truned on the power, there is boot information printing. After startup, press enter and input username and password to login.

Notice:

The default username and password of CLI both are admin. For example,

Login: admin

Password: admin

7.2. Main Console Commands:

1. get device info //get the device information
2. get onu_module 0 //get the first channal ONU module working status
3. get olt_module 0 //get the first channal OLT module working status
4. get onu_module 1 //get the second channal ONU module working status
5. get olt_module 1 //get the second channal OLT module working status
6. set pn xxxxx //change PN number
7. get alarm info //checking current alarms
8. set bypass-on/off //set the bypass function enable or disable
9. system config factory //restore to defaut setting
10. system config save //save configuration