



**EDFA-PA-B
Pre-Amp Erbium-Doped Fiber Amplifiers
User Manual**

Caution: The user must read this manual before operating the EDFA-PA-B unit. Operations other than those described in this manual may result in personal injury and damage to the unit.

Note that any attempt to open or fix the equipment without prior approval by Optilab, LLC voids the warranty.

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1. General Information

This manual contains information on the installation and operation of the EDFA-PA-B Pre-Amp Erbium-Doped Fiber Amplifier unit.

1.1 Product overview

The Optilab EDFA-PA-B Pre-Amp Erbium-Doped Fiber Amplifiers is a high-gain benchtop unit for amplifying low input level signals that is an easy-to-use and cost-efficient solution for photonic subsystems, OEM integration, and fiber optic system integration. With options for C-band wavelengths, and using a high gain design, this benchtop provides over 25 dB gain with a 4.5 dB noise figure and is designed to amplify signal with a low input level as low as -40 dBm. Software control is standard via an RS-232 port for status monitoring and pump current adjustments, and pump laser protection and alarms are equipped to ensure the reliability and safety of the device. Contact Optilab for more information.

Features

- High gain of more than 25 dB
- C-band or L-Band wavelength options
- Low noise figure
- Designed for low input level
- RS-232 standard for remote control
- Wide wavelength operation range
- 10+ years of operation life

2. Installation

To install the EDFA-PA-B, please adhere to the following instructions. This section includes the following topics:

- Checking for possible damage of the equipment during transportation
- Preparing the executive setting environment
- Optical connection

2.1 Receiving

Upon receiving the EDFA-PA-B, inspect the packaging for visible signs of damage. Note any visible signs of damage. Remove the EDFA-PA-B from the

packaging and inspect for any signs of damage. Please contact Optilab immediately if the product is damaged.

The following items should be included:

- EDFA-PA-B
- Key
- Power Cord
- User Manual
- Test Datasheet

2.2 Installation

2.2.1 User and Equipment Safety

The EDFA-PA-B unit emits high intensity invisible light from the optical connector receptacle. Direct irradiation to skin and eyes should be avoided.

The user should avoid using any solvent or vaporizing chemical to clean the equipment panel or case. This may result in damage to the surface and internal circuits.

2.2.2 Electrostatic Sensitivity

The EDFA-PA-B units are **Electrostatic Sensitive Devices (ESD)**. Please observe the proper procedures for handling electrostatic sensitive devices when handling these devices.

Do not store or install the unit near strong electrostatic, electromagnetic, magnetic or radioactive fields.

2.2.3 Temperature and Humidity

EDFA-PA-B units are designed to operate within a temperature range of 0°C to 50°C and stored within a temperature range -40°C to 70°C.

EDFA-PA-B units are designed to operate in environments of up to 85% humidity. Higher humidity levels may damage the transmitter and its internal components.

2.2.4 Power Supplies

EDFA-PA-B can be powered by both 110 and 220V AC main supply using a three-pin standard power cord.

2.2.5 Housing Ventilation

EDFA-PA-B are housed in a bench top chassis, with precise size 14" x 12.5" x 3.5". Keep 6 inches (10cm) of space behind the unit if it is installed against a wall.

2.2.6 Optical Connections

Make sure all optical connectors are properly protected when not in use. Optical connector is FC/APC type.

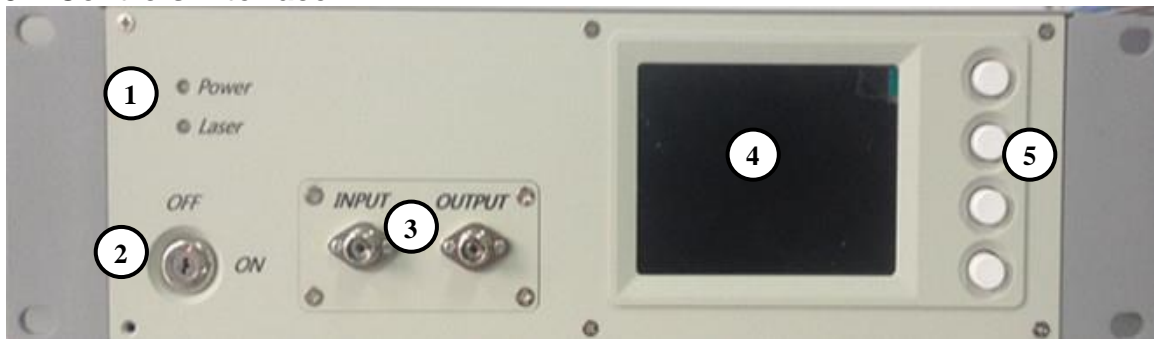
Proper care and maintenance of the optical connectors is crucial to maintaining the performance of the transmitter. Dirty or damaged connectors may result in the decrease in optical power.

Be sure to clean all optical connectors before they are connected to the transmitter. Always cover the connector adaptors with a clean cover, when the equipment is unused.

3. Operating Instructions

This chapter describes how to operate the EDFA-PA-B unit, and discusses the location and function of the controls and connectors.

3.1 Controls Interface.



Front Panel

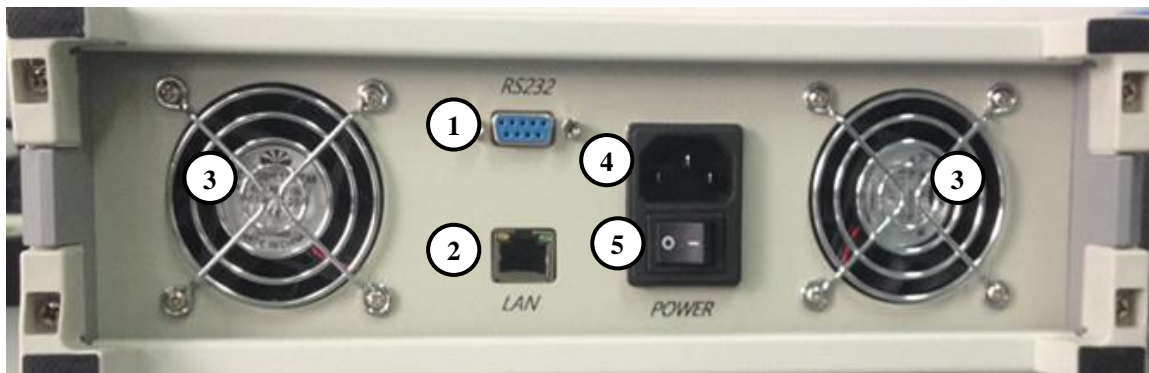
Feature	Function
① LED Indicator	This LED indicator displays the status of system power and pump laser. Blue indicates a normal / enabled status, while Red / Off indicates an abnormal / disabled status.

- ② Laser Enable Switch This switch enables/disables the pump laser for the EDFA-PA-B output.

- ③ Optical Input and Output port Multiple output ports are available upon request. The ports shown are FC/APC type.

- ④ Main Display The LCD display shows the parameters and optical & electrical settings of EDFA-PA-B unit.

- ⑤ Control Buttons These Buttons are used to control and edit the parameters displayed on the LCD. The functions of each button will be defined by system and displayed on the LCD located nearby.



Real Panel

Feature	Function
① RS232 Female Socket	Using an RS232 cable, this port allows for remote control and monitoring through a PC workstation.
② LAN Port	This terminal is used allow for Ethernet connection to the EDFA-PA-B for remote operation and monitoring. This feature is not enabled on all units.
③ Ventilation Fans	The ventilation fans ensure proper ventilation inside the unit. The back panel of this equipment should be placed at least 3 inches from the wall to dissipate heat effectively.
④ AC power socket	The AC power socket is the input for the AC power source. A three-pin standard power cord should be used to connect this equipment to any 110 or 220 V main supply.
⑤ Main AC Power Switch	This switch enables the electrical power to the EDFA-PA-B unit.

3.2 Power-On Sequence

1. Make sure the EDFA-PA-B unit is properly connected to the power supply.
2. Switch on the power switch located on the rear panel, next to the appropriate power supply. The Power LED monitors to the left of the screen will turn on blue, and the Laser LED monitors will turn on red. The following screen will be displayed:



3. At this point, the laser diode has not been turned on. Switch on the key switch located on the front panel to turn on the laser diode. The Laser LED will turn blue to indicate laser diode power, as below:



Once the laser diode power-on sequence is complete, the EDFA-PA-B unit is ready for operation.

3.3 Parameter Selection

The various parameters for the EDFA-PA-B unit can be accessed by pressing the control buttons on the front panel. The exact functions of each control button are set by system and displayed on right side of the screen near the buttons.

Certain parameters such as Temp can be viewed by scrolling through the LED screen using the arrow buttons, but cannot be changed.

3.3.1 Parameters description

Once the EDFA-PA-B unit have been powered-on, the LCD will display as below :



Most parameters displayed in this page is monitored by system and disable to be set by user, except the Pump Set and Pump Limit. More details refer to the below form:

parameter	description	Configurable
OUTPUT	The actual optical output level detected by system.	No
INPUT	The actual optical input level detected by system.	No
Pump Set	Set the Laser current, allows the user to set the desired current. The Laser current should not exceed the protection current.	Yes
Laser Temp	The actual LD operating temperature detected by system.	No

Push “->” button, and the next page will displayed:



parameter	description	Configurable
Pump Limit	Laser protection current is not	Contact Optilab

	recommended to be changed by end user, please contact Optilab for more information.	
IP	N/A	No
Model	The Model Type of the EDFA-PA-B	No
S/N	The Serial Number of the EDFA-PA-B	No

3.3.2 Laser Setting

The EDFA-PA-B unit is designed to allow the user to set the Laser current of the LD module to get a desired output level. However, to keep the LD module away from the damage by high current, set the Laser current no larger than the protection current.

At the parameters page, press “Down” button thrice to make the Laser current editable as follow:



Press “OK” button, the displays will select to the below state:



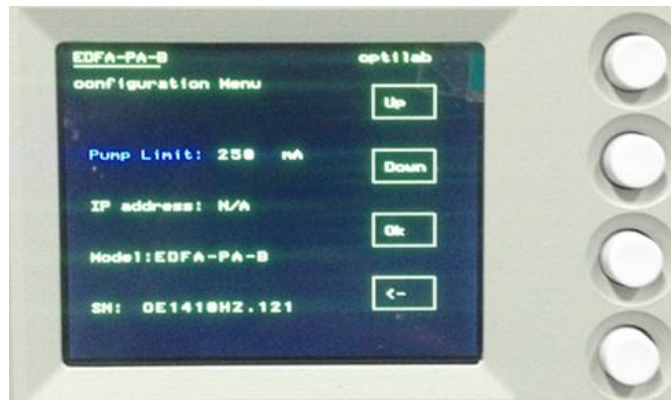
Using “inc” “shift” button to set the appropriate value, and then press “OK” button to keep the changes and exit the edit page. To exit the edit page without any changes, press the “Back” button.



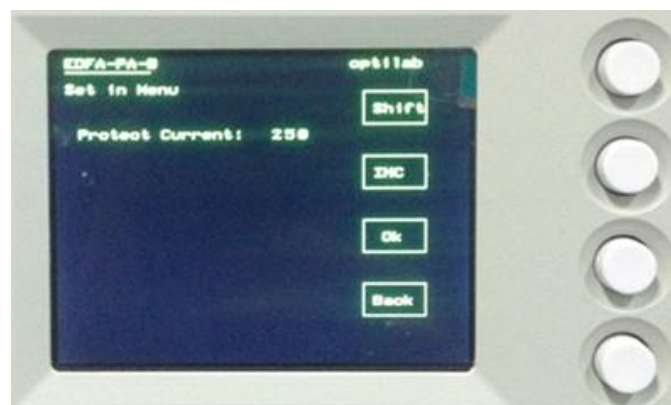
3.3.3 Pump Limit Setting

Laser protection current is not recommended to be changed by the end user, please contact Optilab for more information.

At the parameters page, press “Down” button to make the Laser current editable as follow:



Press “OK” button, the displays will select to the below state:



Using “inc” “shift” button to set the appropriate value, and then press “OK” button to keep the changes and exit the edit page. To exit the edit page without any changes, press the “Back” button.



4. Troubleshooting

4.1 Warnings

The EDFA-PA-B continuously monitors operation status of the system. Any undesirable or abnormal changes in operation conditions may result in warnings shown on the front panel display of the transmitter.

When the warning status occurs, a brief note of the warning status will be displayed on the front panel. Warning statuses will not shut down the unit, or prevent it from operating, rather only serve to inform the user of parameters that are outside the normal range.

In the event of an alarm status, please shut down the EDFA-PA-B unit and restart. If the alarm status continues to appear after several restarts, contact technical support for repair service immediately.

4.2 Precautions

The following precautions must be strictly followed to ensure proper operation of the EDFA-PA-B.

- Ensure that the surrounding temperature where the transmitter is installed is in the range of 0 °C to 50°C
- Ensure proper ventilation to the top, bottom and back of the transmitter. There must be a 6 inch clearance from the wall.
- Maintain a low dust environment.
- Maintain levels of relative humidity up to no more than 85%. Higher humidity levels may damage the unit.
- Always clean fiber connectors before inserting them into the unit.

5. Service and Support

5.1 Warranty

Optilab, LLC guarantees the EDFA-PA-B unit to be free of defects for 1 year from the date of shipment. The guarantee does not cover any damages resulting from the misuse or improper handling of the equipment, or any incidental or consequential loss. Note that the warranty will be void upon any attempt to open or to fix the equipment by the user without prior approval of Optilab, LLC

5.2 Service and Calibration

Your EDFA-PA-B unit has been designed to provide years of trouble-free operation. No internal maintenance is required provided that the equipment is properly handled, operated and kept away from contamination. For any questions regarding the operation and performance of the unit, please contact Optilab, LLC at:

Optilab, LLC

600 E. Camelback Road
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Appendix.1 RS-232 controls

Connect the RS232 port on the rear panel to a PC device, with the following serial port command settings:

- Set bit rate to 9600
- Set parity bit to none
- Set data bits to 8
- Set stop bit 1

Enter the desired commands to get the desired operating parameters. The commands are listed below in detail.

In order to send these commands, you will need an RS232 serial port program, which are widely available and free to use. Optilab recommends the Termite command software, which is a freeware title, located at the following link:

http://www.compuphase.com/software_termite.htm

RS232 Cnds	Elaboration	Description	Example	Response
1	READ	READ	READ{CR,LF}	Optilab,LLC Model Number:EDFA-PA-B SN:9070001 Version:V2.0.0 Input:Low Output :12.52 dBm Max Current: 200mA Current: 150mA Temp:26 C
2	READC	Read the working current of the laser	READC{CR,LF}	Current:130
3	SETC	Set the working current .The value to be set should be a three-digit integer number. For two-digit value, a "0" should be used at the start bit.	SETC:130{CR,LF}	Current:130