



Multicom 1550nm CATV Erbium Doped Fiber Amplifier

MUL-EDFA-1550-X-x



User Manual v.2

www.multicominc.com | 800-423-2594 | 407-331-7779

1076 Florida Central Parkway, Longwood, FL 32750

SAFETY NOTIFICATION



The Multicom MUL-EDFA-1550 CATV EDFA is classified as Class 1M per IEC/EN 60825-1/A2:2001. This product complies with FDA/CDRH, 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50 dated 26 July, 2001.

Viewing the laser output with certain optical instruments (for example, eye loupes, magnifiers and microscopes) within a distance of 100 mm may pose an eye hazard.

Laser power up to 24 mW at 1550nm could be accessible if optical connector is open or fiber is broken.

CAUTION: Use of controls, adjustments, and procedures other than those specified herein may result in hazardous laser radiation exposure.

IMPORTANT SAFEGUARDS

Multicom strongly advises you to read the following safety instructions prior to installing and operating this equipment.

- **Read These Instructions First** – All safety and operating instructions should be read before installing or operating this equipment.
 - **Retain This Instruction Manual** – Safety and operating instructions must be retained for future reference.
 - **Ventilation** – Do not block or cover openings in this equipment. These are provided for ventilation and protection from overheating. **Maximum operating ambient temperature is 122°F (50°C).**
 - **Power Sources** – The Multicom MUL-EDFA-1550 CATV EDFA must have a grounding resistance of <4 ohms. All power must be provided via a three wire, grounded power supply and cord. The mains circuit should be a dedicated, unswitched supply. Keeps the unit away from high voltage or other interference creating devices such as motors, compressors, etc.
 - **Grounding or Polarization** – This equipment is equipped with a polarized AC line plug. This plug will fit into the power outlet only one way. This is a safety feature. Do not defeat the safety purpose of a polarized plug. This equipment must be installed and grounded per NEC regulations.
- ⚠ CAUTION: For continued protection against risk of fire, replace circuit breakers/fuses (if necessary) with one of only the same type and rating.**
- ⚠ Optical Output Safety: The Erbium Doped Fiber Amplifier units may emit harmful invisible laser radiation if powered on and the case is opened or the beam path is exposed.**



Table of Contents

1.0 PRODUCT DESCRIPTION

2.0 PRODUCT FEATURES

3.0 BLOCK DIAGRAM

4.0 1550nm EDFA LAYOUT

4.1 Front Panel Layout

4.2 Rear Panel Layout

5.0 CONTROLS, INDICATORS, AND ALARMS

5.1 Front Panel Operation

5.2 Start-Up Main Menu

5.3 Changing IP Address Settings

5.4 Laser LED Status Description

6.0 OPERATION NOTICE

7.0 WARRANTY AND REPAIR

8.0 PRODUCT SPECIFICATIONS



Multicom 1550nm CATV EDFA

MUL-EDFA-1550-X-x

1.0 PRODUCT DESCRIPTION

The Multicom 1550nm CATV Erbium Doped Fiber Amplifier (EDFA) is designed to amplify 1550nm optical signals to increase the optical transmission distance over fiber, and can be used in conjunction with the Multicom 1550nm optical transmitter. The product offering is flexible enough to perform in numerous upstream and downstream applications, including supertrunk transmission, hub interconnects, and 1310/1550 nm overlays.

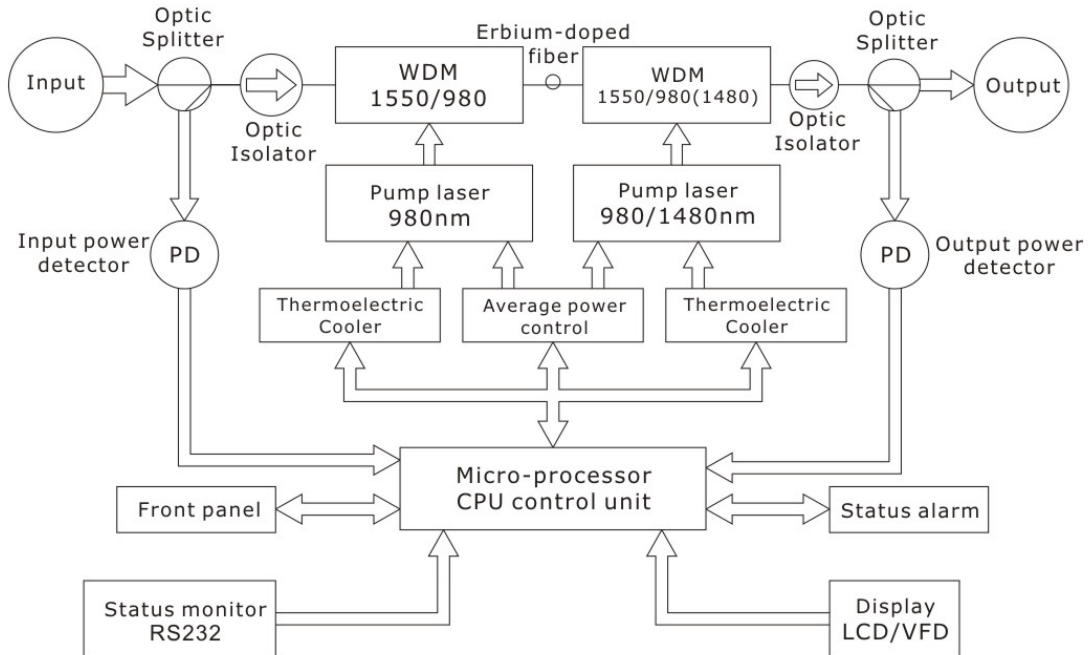
All internal laser parameters and monitoring functions are under microprocessor control. The front panel LCD displays status information related to laser operation, temperatures, laser pump status, comprehensive alarm information, as well as SNMP configuration where applicable.

The units are packaged in slim 1.75-inch high (1RU), 19-inch aluminum rack-mounted enclosures.

2.0 PRODUCT FEATURES

- Transmits NTSC, PAL, ATC, and related digital information for CATV and/or telephony applications
- Flexible selection of various optical output powers
- Radiation suppression while maintaining high-gain, high-power and low-noise figure
- Highly reliable 980nm or 1480nm pump laser with very low power dissipation
- Built-in microprocessor
- Easy operation and installation with LCD display on front panel
- RJ-45, RS-232 communication ports, with SNMP option available
- 19-inch (1 RU) standard chassis

3.0 BLOCK DIAGRAM



4.0 1550nm EDFA LAYOUT

4.1 Front of the Unit

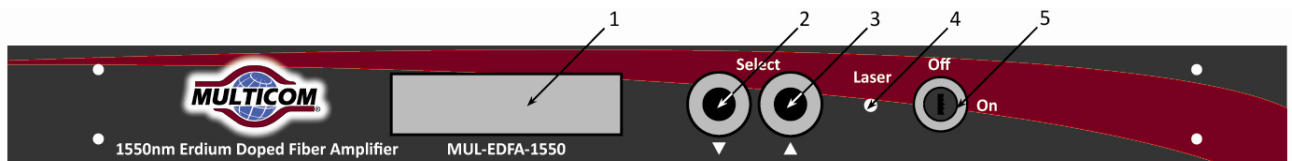


Figure 1 – Front Panel

1. LCD screen – See section 4.1 for Menu Operation
2. LCD menu down button
3. LCD menu up button
4. Laser LED – See section 4.3 for Laser LED Status Description
5. Key On/Off

4.1 Rear of the Unit

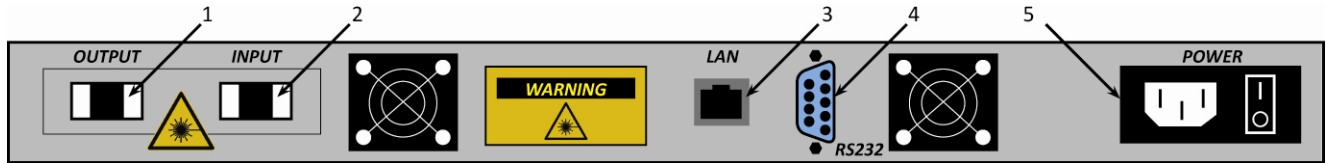


Figure 2 – Rear Panel

1. Output – SC/APC Fiber optic connector
2. Input – SC/APC Fiber optic connector
3. LAN Port – SNMP Network Interface
4. RS232 Port
5. Power Receptacle

5.0 CONTROLS, INDICATORS AND ALARMS

This section of the manual gives an overview of the available menus in the Multicom CATV EDFA. All instructions in section 3 refer to the image of the front panel (Fig 1). The user scrolls through the menus using the push buttons found on the front panel, these are located just to the right of the LCD screen.

5.1 Front Panel Operation

- A. With the power source turned on (power switch is located at the rear of the unit) and the unit working properly, the LCD screen will display 'MUL-EDFA-1550-XX-NN' on line 1, and 'KEY OFF!' on line 2. The Laser LED (4) will be solid red. In this mode the ▲ or ▼ buttons are not functional.
- B. In order to protect the laser, there is a time-delay function. After turning the laser on with the key On/Off switch (5), the laser will start to operate after about 10 seconds. The Laser LED will turn from solid red to blinking red until a fiber optic input is detected. When a fiber optic input of sufficient optical power is detected, the Laser LED will turn from blinking red to green.
- C. Once the self-test process completes successfully, the display will change to "MULTICOM, INC' on line 1, and '1-407-331-7779' on line 2. If idle for five minutes, the LCD backlight will turn off to conserve power.



5.2 Start-Up Main Menu

With the key on, pressing the ▲ or ▼ buttons will scroll through the menu with ▼ being 'next', or next item on the menu, and ▲ being 'last', or the previous item on the menu. Pressing the ▼ button will take you through the following sequence:

Menu #1 – Descriptor

Line 1: Read-only menu, model of this equipment

Line 2: Read-only menu, serial-number

Menu #2 – INPUT

Read-only menu, displays input optical power

Menu #3 – OUTPUT

Read-only menu, displays output optical power

Menu #4 – BIAS1

Read-only menu, displays laser pump output in mA

Menu #5 – TEC1

Read-only menu, displays the heating/cooling current of laser pump in A

Menu #6 – TEMP1

Read-only menu, displays the temperature of laser pump in °C

Menu #7 – +5V Reads

Read-only menu, displays the voltage +5V

Menu #8 – -5V Reads

Read-only menu, displays the voltage -5V

Menu #9 – UNIT TEMP

Read-only menu, tells the temperature of chassis in °C

- **Note: Menu items 10-14 apply only to units with factory installed optional SNMP**

Menu #10 – IP

Adjustable list, displays the IP address of SNMP

Menu #11 – Sub

Adjustable list, display the address of net mask

Menu #12 – GW

Adjustable list, displays the gateway address of SNMP



Menu #13 – TR1

Adjustable list, displays the TRAP1 address of SNMP

Menu #14 – TR2

Adjustable list, displays the TRAP2 address of SNMP

Pressing the ▲ button will take you through the sequence in reverse order.

5.3 Changing IP Address Settings

Menu items 10 – 14 require the optional factory installed SNMP. To change the IP address in any of these menu items

1. Use the Select button to scroll to **Menu # 10 – 14**
2. Press ▲ to move the cursor through the octets of the IP address
3. Stop in the field that you want to change
4. Press the ▼ to change the number
5. Press Select to leave the current menu item and move to the next menu item

5.4 Laser LED Status Description

When the Laser LED is green, the device is working properly and the laser is on

When the Laser LED is red, the laser is not in use

When the Laser LED is flashing red it is in alarm

In the case of an alarm, the unit's microprocessor will shut off the laser automatically and the LCD screen will display fault information.

6.0 OPERATION NOTICE

- Use only Single Mode Fiber (SMF) optic cable (9/125µM). Multi-Mode Fiber (MMF) is incompatible with the equipment and will result in unacceptable performance and possible damage to the equipment.
- All fiber splices should be fusion-type splices. Avoid mechanical or compression type connections.
- For optimum performance, fiber runs should be made directly to and from the EDFA. Minimize the use of adapters, patch panels, and additional points of failure and signal loss.
- In order to ensure return loss is maximum, use only SC/APC connectors. Clean and inspect connectors and fiber endfaces prior to installation, and every plug in/out cycle.
- Use only industry approved methods, materials, and solutions for cleaning.



Multicom 1550nm CATV EDFA

MUL-EDFA-1550-X-x

- Do not turn on the EDFA alone or without a protector cover at the unit connector end, otherwise the laser can do harm, especially to eyes. This is especially critical because the laser is invisible.
- Always turn off the laser prior to making connections to the EDFA. Failure to do so may cause irreparable damage to the laser and EDFA.

7.0 WARRANTY AND REPAIR - The Multicom MUL-EDFA-1550 CATV EDFA has a one year warranty and is subject to Multicom's standard warranty terms. There are no user serviceable components inside the unit. The warranty is void if the unit is opened or is damaged due to misuse.

8.0 PRODUCT SPECIFICATIONS

Specifications	Values			Notes	
	Min	Type	Max		
Optical	Operation wavelength (nm)	1540		1560	
	Input power range (dBm)	0	3	10	
	Total output power (dBm)	13		24	
	Each port output power (dBm)	10		24	
	Number of output ports	1		8	
	Noise figure (dB)	4.5		5.5	Pin=0dBm
	Gain flatness (dB)		0.8	1.0	Each output port
	CNR deterioration (dB)			1	6dBm
	Pol. dependence loss (dB)		0.1	0.4	
	Pol. dependence gain (dB)			0.4	
	Pol. mode dispersion (ps)			-40	
Connector type	SC/APC				
General	SNMP network interface	RJ45		Optional	
	Communication interface	RS232		Optional	
	Power supply (V)	90		265	-48 VDC optional
	Power consumption (W)			170	
	Working temperature (°C)	-5		50	23-122°F
	Storage temperature (°C)	-40		85	-40-185°F
	Operating rel. humidity (%)	5		95	
Size (W x D x H in inches)	19 x 14.25 x 1.75			1RU	

Product Series

Part#	Output Power (dBm)	Input Power (dBm)		Noise Figure (dB)
		Input Range	Typical	
MUL-EDFA-1550-17-1	≥17 (50mw)	0~+10	>+3	<4.5
MUL-EDFA-1550-24-1	≥24 (250mw)	0~+10	>+3	<5.5