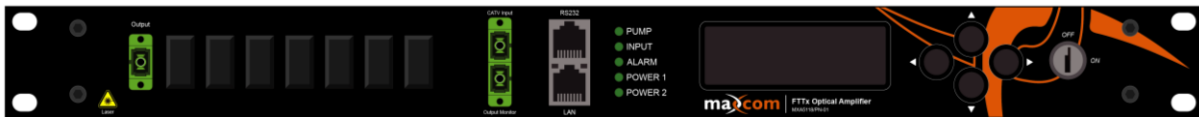




**1550NM ERBIUM DOPED FIBER  
AMPLIFIER · MX-A51 SERIES**

**USER MANUAL**



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## PRODUCT DESCRIPTION

The Maxcom MX-A51 Erbium Doped Fiber Amplifier (EDFA) has been designed for CATV, FTTH and HFC applications. The EDFA is suitable for long haul transmission networks or FTTH distribution networks. This optical amplifier is packaged in a 19", 1 RU rack mount housing, and can be optionally ordered with an outdoor casing to provide a complete optical communications solution. Maxcom also offers our MX-A54 platform which can be ordered with 4, 8, 16 and 32 output ports.

The output power available is from 13 dBm to 26 dBm.

The EDFA is designed to extend a 1550 nm CATV system fiber without the need to convert back to RF. Combined with our MX-T8500 series externally modulated laser transmitter, system ranges of over 200 km are possible when using multiple EDFA's.

The MX-A51 series is a CATV booster EDFA with a gain spectrum band within 1540~1565nm. The EDFA is designed for the application of single channel, or 1~8 continuous ribbon channels (ITU wavelength). Typically, a fiber CATV system operates in single wavelength in the 1550nm CATV range. The MX-A51 booster amplifier is featured with low NF and high-saturated output power. It is applicable for Primary Headends, Secondary Headends, Hubs, OTN's, as well as other optical communication networks. The MX-A51 is interchangeable and compatible with other 1550nm EDFA's and Transmitters in a CATV system.

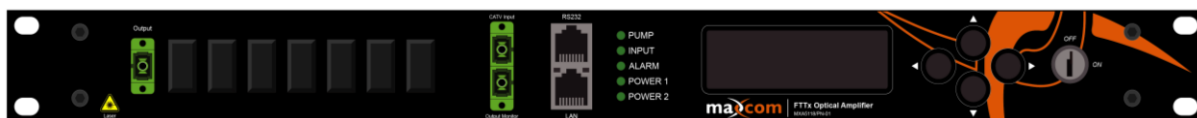
The MX-A51 series EDFA's have excellent performance, single wavelength EDFA's designed for analog and digital CATV QAM signals. Maxcom's 1550nm optical amplifiers and EDFA's adopt world class pump lasers and American OFS erbium-doped optical fiber components. Excellent APC, ACC and ATC control, superb design in the ventilation and heat-dissipation ensure long life and reliable operation of the pump laser.

The LCD at the front panel offers equipment status and warning alarms. Equipped with Dual power supplies, adjustable output power, SNMP monitoring, and port monitor. The laser will switch off automatically if optical power is lost offering protection for the laser.



## AMPLIFIER CONTROLS, INDICATORS, AND ALARMS

This section of the manual will give an overview of the available menus in the MX-A51 series amplifier. All instructions in Section 2.0 refer to the representation of the front panel shown in the diagram below. The user can scroll through the menus by using the push buttons that are on the front panel and are located in the right of the LCD screen.



### Operation of the control panel

#### Indicator lamps

- PUMP- Status lamp Red
- INPUT- Status lamp Red
- ALARM - Status lamp Red
- POWER1 - Status lamp Green (no light when power is off)
- POWER2 - Status lamp Green (no light when power is off)

#### Start-up main menu

Press ▲\▼ button, the following menu items will be displayed in sequence.

#### Start-up main menu

Press ◀▶ button and the following menu will be displayed in sequence.

- 1. Model**  
Read-only menu, indicates the type of this equipment
- 2. S/N**  
Read-only menu, indicates the serial number of this equipment
- 3. State of Laser**  
Adjustable parameter, displays the State of Laser ON/OFF
- 4. Input**  
Read-only menu, indicates the input optical power of EDFA (Recommended input optical power +3 ~ +8 for optimum performance)

**5. Set Output**

Adjustable parameter, set the output power

**6. Total Output**

Read-only menu, displays the total output power of EDFA

**7. Each Output**

Read-only menu, indicates the output power of each port.

**8. PA Current**

Read-only menu, indicates the PA current of the EDFA

**9. PA Temp**

Read-only menu, displays the PA temperature of the EDFA

**10. BA Current**

Read-only menu, displays the BA current of the EDFA

**11. Power1**

Read-only menu, displays the status of power1

**12. Power2**

Read-only menu, displays the status of power2

**13. Unit Temp**

Read-only menu, display temperature of the unit

**14. IP**

Adjustable list, IP address setting menu

**15. SUB**

Adjustable parameter, subnet mask setting menu

**16. GW**

Adjustable parameter, gateway address setting menu

**17. TR1**

Adjustable parameter, trap address setting menu

**18. TR2**

Adjustable parameter, trap address setting menu

**19. LCD Contrast Level**

Adjustable parameter, adjust the contrast level of the display

## 20. Reset Settings

Adjustable parameter, reset settings

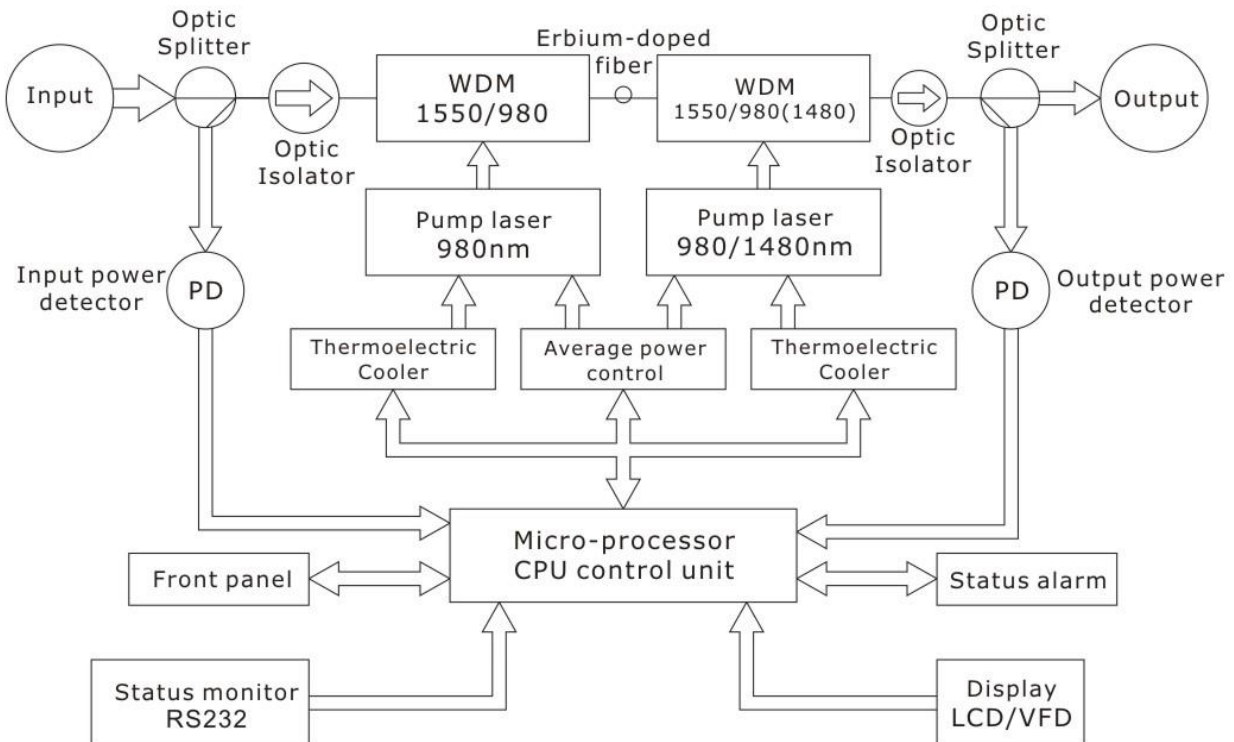
### Modifying Settings

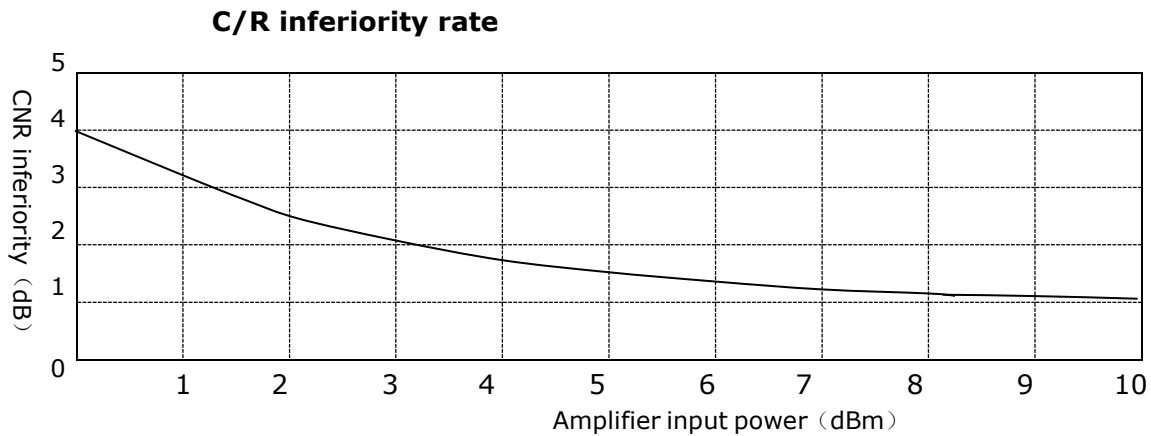
You can easily navigate the menu by using the arrow buttons to select and modify settings as desired.

For example, Press ► key to amend the address menu item that needs to be modified, press ► to shift the value, push ▲/▼ to increase/decrease value, then shift the value to the next digit as desired, press ► to the save, press ◀ all the way to the left and exit. For example, amend IP setup menu, IP: 192.168.000.015; if changing 5 to 6, use ► key to choose the place of 5, then press ▲ key to change 5 to 6, then press ► to save amended IP:192.168.000.016

## EQUIPMENT OPERATION PRINCIPLE

### MXA51 Series amplifier circuit principle





### DESCRIPTION OF STATUS ALARM

Working status indication (LED) is near the power supply switch in the front panel. When it is green, the device is working properly; when it is red, the laser does not operate; when it is blinking red, there is an alarm.

- A. With the power supply, if the unit is operating properly, the digital panel will display "READY: KEY OFF" and the red light will illuminate.
- B. Turn on with the key, the digital panel will display "KEY OFF". After a few seconds, the laser is turned on automatically and the indication light turns to Green from Red.
- C. Pressing ▲\▼ bottom will display parameters .
- D. If any fault listed above has occurred, there will be an alarm (Red light flashing), The Microprocessor will turn off the laser automatically, and digital panel will show the reason of the fault.
- E. To protect the laser, the power supply of the laser has a time-delay function. After turning on with the key, the laser will start to operate after 10 seconds.

### Assembly and Power Connections

- A. Equipment should be mounted in a 19-inch chassis or cabinet.
- B. The optical amplifier is designed to work within the temperature range  $-5^{\circ}\text{C}$  to  $+55^{\circ}\text{C}$  ( $23^{\circ}\text{F}\sim 131^{\circ}\text{F}$ ). Maxcom suggests a target environment temperature of  $25^{\circ}\text{C}$ ( $77^{\circ}\text{F}$ ). Humidity should not exceed 85%. A dust free environment is desirable, however if dust is present, clean the fans periodically as needed to maintain good air flow and cooling to prevent the unit from overheating.
- C. The equipment may operate with AC or DC power supplies and use dual power supplies for redundancy.
- D. Establish a good ground connection to the chassis. If using AC power, according to international standards, 120VAC connections adopt three-wire systems, the center wire is the ground.
- E. Clean Optical Connectors before use.



## Fiber Connections

Cleaning fiber-optic connectors can help prevent interconnect problems and therefore, aid system performance. When optical connectors are disconnected and reconnected, the fiber surface may become dirty or scratched. The goal of cleaning the fiber optic connectors is to remove all dust and contaminants without leaving any residue.

DO NOT connect or disconnect optical jumpers/connectors when unit is on and in operation (switched on)! Connector surface may become damaged or burned by HIGH LASER POWER Level. Unit must be switched to off position prior to any type of connection being made to unit. In case of accidental damage where levels are displayed normally on screen, but low on the output port, the optical connector may be changed or replaced to restore normal levels.



### CAUTION:

For high power optical levels, in particular to high power optical transmitters and EDFA's, extra caution should be used. Fiber connectors can be burned or melted, arcing may occur, damage may occur to any device that a connector comes in contact with. Extreme caution and safety practices should be observed to avoid contact with the eyes and skin. To avoid injury and microscopic damage to fiber mating surfaces, turn off optical power before making or breaking optical connection.



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