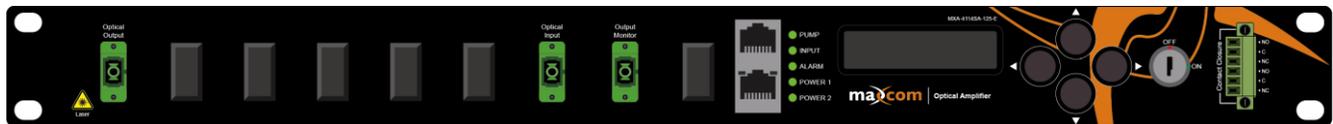




**1550NM ERBIUM DOPED FIBER
AMPLIFIER · MX-A41 SERIES**

DATA VERSION

EDFA TECHNICAL SPECIFICATION AND INSTRUCTION



PRODUCT DESCRIPTION

The Maxcom MX-A41 Data Series Erbium Doped Fiber Amplifier (EDFA) has been designed for single wavelength applications in a telecommunications network. The EDFA is suitable for long haul transmission networks. This optical amplifier is designed as a booster amplifier and is typically placed on the transmitter side of a network. Its purpose is to extend the transmission distance of the transmitter, system ranges of over 200 km are possible when using this EDFA.

This Maxcom optical amplifier is packaged in a 19", 1 RU rack mount housing. Units come standard with dual reliable hot swappable power supplies. AC (90~265V), -48 VDC, and -125 VDC power are available. Built for networks where reliability matters.

The MX-A41 series is a booster amplifier with a gain spectrum band within 1529~1562nm. It is designed for the application of single channel wavelength. The MX-A41 booster amplifier is featured with low NF and high-saturated output power. The MX-A41 is commonly applied and is widely compatible with other EDFA's and Transmitters in a telecommunication system operating in the 1529~1562nm range.

The MX-A41 Data series Optical Amplifiers are high performance and designed for telecommunication data signals. Maxcom's 1550 optical amplifiers incorporate 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 exceptionally reliable operation of the pump laser.

The LCD at the front panel offers equipment status and warning alarms. Maxcom EDFA's are also equipped with SNMP and Web access and come standard with monitoring ports. The laser will switch to a stand-by position automatically if optical power is lost, which offers protection for the laser.



EDFA CONTROLS, INDICATORS, AND ALARMS

This section of the manual will give you an overview of the available menus in the MXA41 series Optical Amplifier and their descriptions. The operator may scroll through the menus by pushing the bottoms found on the front panel of the amplifier, near the LCD screen.

Operation of the panel - Open Menu

A. Connect the power supply

B. Connect a 1550nm optical signal source to the input, then turn on the laser start-up key switch.

Front panel LED shows "**KEY ON...**",

PUMP- Status lamp is Red when OFF, Green when ON

INPUT- Status lamp will turn from Red to Green once input signal detected

ALARM - Status lamp is Red when alarm condition is met

POWER1 - Status lamp is Green (no light when power is off)

POWER2 - Status lamp is Green (no light when power is off)

Start-up main menu: By pressing the ▲/▼ buttons, the following menu items will be displayed. *Menu items may not be in the same sequence shown below.

Model

Read-only menu, indicates the model number

S/N

Read-only menu, indicates the serial number of the unit

INPUT

Read-only menu, indicates the input optical power in dBm

OUTPUT

Read-only menu, indicates the output optical power in dBm

SET OUTPUT

Adjustable list, allows user to attenuate the output optical power by up to -6 dBm

LASER CURRENT

Read-only menu, indicates the pre pump current

CORE TEMP

Read-only menu, indicates the internal temperature

AMBIENT TEMP

Read-only menu, indicates the case temperature

FAN

Read-only menu, indicates the fan speed

Power 1

Read-only menu, displays the status of PS 1



Power 2

Read-only menu, displays the status of PS 2

ETHERNET

Adjustable list, allow user to Enable or Disable Ethernet Port

CONFIQ IP

Adjustable list, allow user to select Static or DHCP

IP

Adjustable list, allow user to change the IP address

SUBMASK

Adjustable list, displays the address of net mask

GATEWAY

Adjustable list, displays the gateway address

TR1

Adjustable list, displays the TRAP1 address

TR2

Adjustable list, displays the TRAP2 address

MAC

Read-only menu, indicates the MAC address

CONSOLE BAUD

Adjustable list, select Baud rate speed

HW Version

Read-only menu, indicates the version

SW Version

Read-only menu, indicates the version

Reboot

Adjustable menu, Reboot the SW (Using this function will not shut off laser during reboot)

RESET SETTINGS

Adjustable list, restores device to factory default settings

LCD CONTRAST

Adjustable list, user may adjust display contrast

**Modifying Settings**

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

For example, press ► key to modify the address menu item that needs to be changed, 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, modify the IP setup menu, IP: 192.168.0001.050; if changing the number 0 to a 1, use ► key to choose the place of 0, then press ▲ key to change the 0 to 1, then press ► to save modified IP:192.168.0001.051

Web Interface

The Maxcom Optical Transmission Platform offers a web interface GUI (Graphic User Interface) for control, display, and monitoring features similar to the front panel LED and control features. The device/equipment management software allows the user to remotely monitor or adjust several parameters simultaneously, such as laser power, alarm parameters, temperature, voltages, etc...

For quick access, simply plug a laptop or PC into the RJ-45 LAN port on the front panel of the chassis. Open a web browser. The default IP address is 192.168.1.50. Enter **192.168.1.50** into the browser and hit enter. The GUI Screen should appear with a log-in box. The default username is **admin**, the default password is **admin** (Once a new password is set, you must use at least one Letter, Number, and Special Character). *Note, network settings and IP address on your laptop or other device may need to be adjusted in order to communicate with the device. Standard network protocols should be followed when connecting via a network connection.

Below are illustrations of category screens available once logged in:



The screenshot shows the Maxcom web interface for an Optical Amplifier (MXA-4114-SA-125-E). The 'System Summary' menu item is circled in red. The main content area displays the following information:

Product Name:	Optical Amplifier
Model:	MXA-4114-SA-125-E
Serial Number:	2507040102
Hardware Version:	V1.0
Software Version:	V2.51.6324
MAC Address:	44:03:77:B4:26:C1
IP Address:	192.168.1.50
System Uptime:	25 Minutes 58 Seconds
Time Zone:	UTC - 7:00
Time:	12/31/2022 7:31:58 PM
Refresh Settings:	6s



The screenshot shows the Maxcom web interface for an Optical Amplifier (MXA-4114-SA-125-E). The 'Device Status' menu item is circled in red. The main content area displays the following information:

Equip Key State:	ON
Input:	-7.5 dBm
Output:	8.0 dBm
Laser Current:	110 mA
Core Temp:	23.5 °C
Ambient Temp:	21.7 °C
Fan 1 Status:	5250 RPM
Fan 2 Status:	5327 RPM
Fan 3 Status:	5027 RPM
Fan 4 Status:	5132 RPM
Power Supply 1:	Online
Power Supply 2:	Online
Contact Closure:	Inactive
Alarm Contents:	Key Input Output Ambient Temp
Fan:	Power 1 Power 2
Refresh Settings:	6s



maxcom Optical Amplifier

MXA-4114-SA-125-E

System Summary

Device Status

Device Configuration

Network Configuration

System Setting

Event Log

Control Mode: APC

Set Output: 8.0 dBm

Contact Closure Function: Enable

Contact Closure Alarm Item Selections:

- Key
- Input
- Ambient Temp
- Power 1
- Output
- Fan
- Power 2

maxcom Optical Amplifier

MXA-4114-SA-125-E

System Summary

Device Status

Device Configuration

Network Configuration

System Setting

Event Log

HostName: OpticalAmplifier_26C1

IP Setting

Connection Type: Static

IP Address: 192.168.1.50

Subnet Mask: 255.255.255.0

Gateway: 192.168.1.1

SNMP

Name:

Location:

Contact:

Community RO: public

Community RW: private

Trap Address 1: 0.0.0.0

Trap Address 2: 0.0.0.0

Trap Address 3: 0.0.0.0

Trap Address 4: 0.0.0.0

Trap Address 5: 0.0.0.0

Trap Address 6: 0.0.0.0

maxcom Optical Amplifier

MXA-4114-SA-125-E

System Summary

Device Status

Device Configuration

Network Configuration

System Setting

Event Log

Serial Baud Rate: 9600

System Time

Set Automatically: OFF

NTP Server IP: 132.163.96.1

Time Zone: UTC + 7:00

Date Setting: 12/31/2022

Time Setting: 07:37:24 PM

User Configuration

User Name:

Password:

New Name:

New Password:

Confirm Password:

Upgrade

Current SW Version: V2.51.6324

Please select upgrade file

Restart Browse Upgrade

maxcom Optical Amplifier

MXA-4114-SA-125-E

System Summary

Device Status

Device Configuration

Network Configuration

System Setting

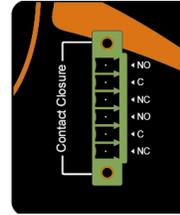
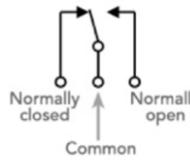
Event Log

Refresh Settings: 5s

Item	Time	Alarm Status
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Contact Closures



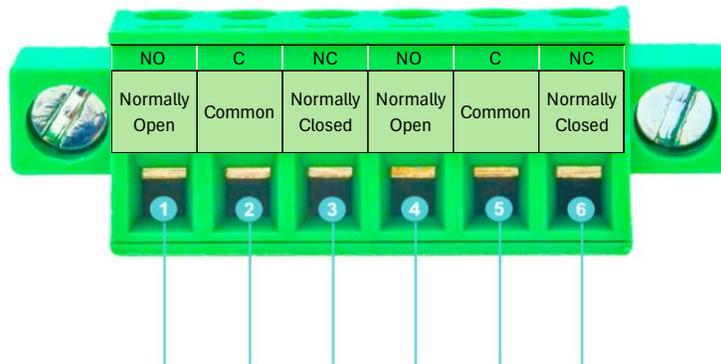
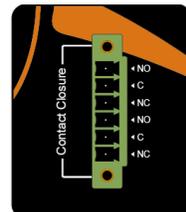
Units equipped with this option have a Phoenix type connector on the front panel that provides an indication for an Alarm. Alarm parameters/triggers may be selected by the user when accessing the Web GUI Interface.

Users may select the type of alarm notification (Normally Open, or Normally Closed) depending on their preference. There are two sets of connections providing duplicate alarms for the user's convenience.

*Note: Normally Closed is the recommended connection as this allows the user to be notified in the case of input power being interrupted.



Contact Closure 1			Contact Closure 2		
NO	C	NC	NO	C	NC
Normally Open	Common	Normally Closed	Normally Open	Common	Normally Closed



Wire Insertion Hole

Technical index

 Performance			Index			Supplement
			Min.	Typ.	Max.	
Optical feature	Wavelength range	(nm)	1529		1562	C-Band
	Input power	(dBm)	-20	-10	-1	"D" Data version
	Maximum output power ¹⁾	(dBm)	0		+14	Pin= -18dBm (based on model#)... 4100 = 0dBm out 4105 = +5dBm out 4110 = +10dBm out 4114 = +14 dBm out
	Output power adjustable	(dBm)	-6		0	MXA4100/P
	Number of output ports	Quan	1 standard output (additional available)			1 standard 2,4,8,16,32 optional
	Fiber ports	Type	SC/APC			(Or customer specified)
	Noise figure	(dB)			6.3	Max output/gain
	Polarization dependence	(dB)			0.3	
	Polarization dependence	(dB)			0.3	
	Polarization mode	(ps)			0.3	
	Input/output isolation	(dB)	30			
	Pump power leakage	(dBm)			-30	
	Echo loss	(dB)	55			APC
General feature	SNMP network		RJ45			
	Serial interface		RS232			
	Power supply (Dual Hot Swappable)	(V)	90		265	120VAC standard
			-48VDC		125VDC	-48VDC, or 125VDC optional
	Power consumption	(W)			100	
	Operating temp.	(°C)	-20		+65	
	Storage temp.	(°C)	-40		80	
	Oper. Relative Humidity	(%)	5		95	
Size (W)×(D)×(H)	(")	19×11.75×1.75 (19×13.5×1.75 w/connectors and fans)			1RU (19")	

Remark: User may customize output power

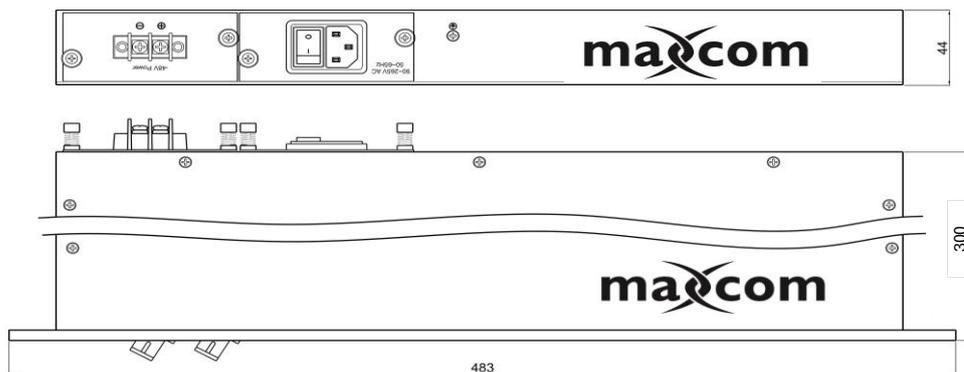


Software Functions, Monitors and Alarms



Functions	In service firmware upgrades
	Auto shut down when loss of input
	Fixed Gain Control mode and Power limiting (FGA)
	Output power control mode (APC)
	Pump current control mode (ACC)
	Pump Maximum Working Current Limit Protection
Monitors	Total input power
	Total output power
	Pump status
	Chassis temperature
Alarms	Loss-of-signal alarm
	Chassis temperature alarm
	Pump temperature alarm
	Pump bias alarm

TYPICAL DESIGN EXAMPLE



EDFA Model Number Ordering Matrix

Product Series	Operating Wavelength		Production Type		Saturation Output Power (dBm)		Output Port Connector type		Power Supply		Operating Temperature (Celsius)		Number of output ports	
Model Series	4	1529-1562nm (C-Band)	1	Booster Amp	00	0 dBm	SA	SC/APC	11	110VAC	E	Extended -20 to +65	1	Single Output
					05	5 dBm	LA	LC/APC	22	220VAC			2	Dual Output
					10	10 dBm	FA	FC/APC	48	-48VDC			*	Custom number of outputs
					14	14 dBm			25	125 VDC				



Please consult with your Maxcom Rep for ordering options

Output Monitor port - Included
Adjustable Output feature - Included
Dual Hot Swappable Power Supplies -
SNMP - Web GUI access- Included

All units come **standard** with SC/APC connectors for **input, output, and monitor ports**. Specify alternative connector types
Standard Dual AC powering, or specify as needed.

Warranty Maxcom provides a 2-year warranty on the MXA5 series EDFA. Warranty is from date of purchase. Additional warranty details are available from Maxcom or your Sales Partner.

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