



**ACT AT5200
FTTX Multiport
EDFA**

**Quick Reference
Guide**

Revision L

ACT AT5200 Multiport Erbium-Doped Fiber Amplifier

Quick Reference Guide

ACT Document Number: AT5200 Multiport EDFA QRG

Quick Reference Guide Revision L

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This document is produced to assist professional and properly trained personnel with installation and maintenance issues for the product. The capabilities, system requirements and/or compatibility with third-party products described herein are subject to change without notice.

For more information, contact ACT: support@ascentcomtec.com



Revision History

Revision	Date	Reason for Change
A	02/01/2012	Initial release
B	06/01/2012	Update front panel design
C	06/01/2014	Update EMS and GUI
D	04/20/2015	Format control
E	08/15/2016	Minor updates
F	02/14/2017	Updated specifications
G	02/15/2017	Updated GUI section
H	05/13/2019	Updated section 5.4
I	10/13/2020	Updated sections 3 and 4
J	12/08/2020	Updated with OTDR
K	05/03/2022	Minor updates
L	10/25/2023	Update section 3.2

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Precautions



Exposure to class 1M laser radiation is possible. Access should be restricted to trained personnel only. Do not view exposed fiber or connector ends when handling optical equipment.

- Ensure adequate cooling and ventilation as specified.
- The installation and operation manual should be read and understood before units are put into use.
- Always replace protective caps on optical connectors when not in use.
- The typical connectors fitted are SC/APC 8°. **Note:** 8° angle polished connectors must be used.

Cleaning

Use only a damp cloth for cleaning the front panel. Use a soft dry cloth to clean the top of the unit.

Do not use spray cleaner of any kind.

Overloading

Overloading wall outlets and extension cords can result in a risk of fire or electric shock.

Use approved electrical cords.

Damage requiring service

Unplug unit and refer servicing only to Ascent Communication Technology qualified service personnel.

Servicing

Do not attempt to service this unit yourself. Refer all servicing only to Ascent Communication Technology qualified service personnel.

1. Introduction

1.1 Overview

AT5200 2RU Erbium-Doped Fiber Amplifier (EDFA) offers a flexible and scalable optical amplification for high quality video transmission in CATV networks. Together with ACT AT5000 series 1550nm transmitter, the AT5200 EDFA provides an ideal video overlay solution in high density FTTX networks to bring the video services to business and home premises.

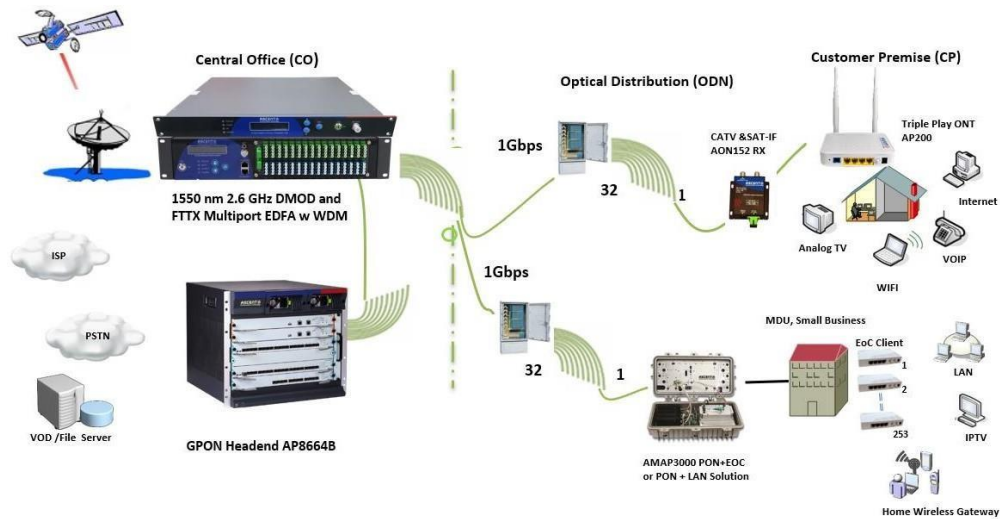
AT5200 EDFA series simplifies the application by offering low noise, high output power, and intuitive front panel LCD display to make operator's life easier. The optical amplifier is packaged in a self-contained 19" sub-rack of 1 or 2 RU with redundant universal mains power supply and SNMP management.

The optical output power level can be ordered from 13 dBm to 26dBm with variable output features available. Multiport EDFAs accommodates up to 16 output ports in 1RU setting and 64 output ports in 2RU setting. Combined with our AT5000 1550nm direct or externally modulated laser transmitter, MSOs can quickly deploy and activate advanced multi-media services in long distance video transmission and high subscriber count FTTH networks.

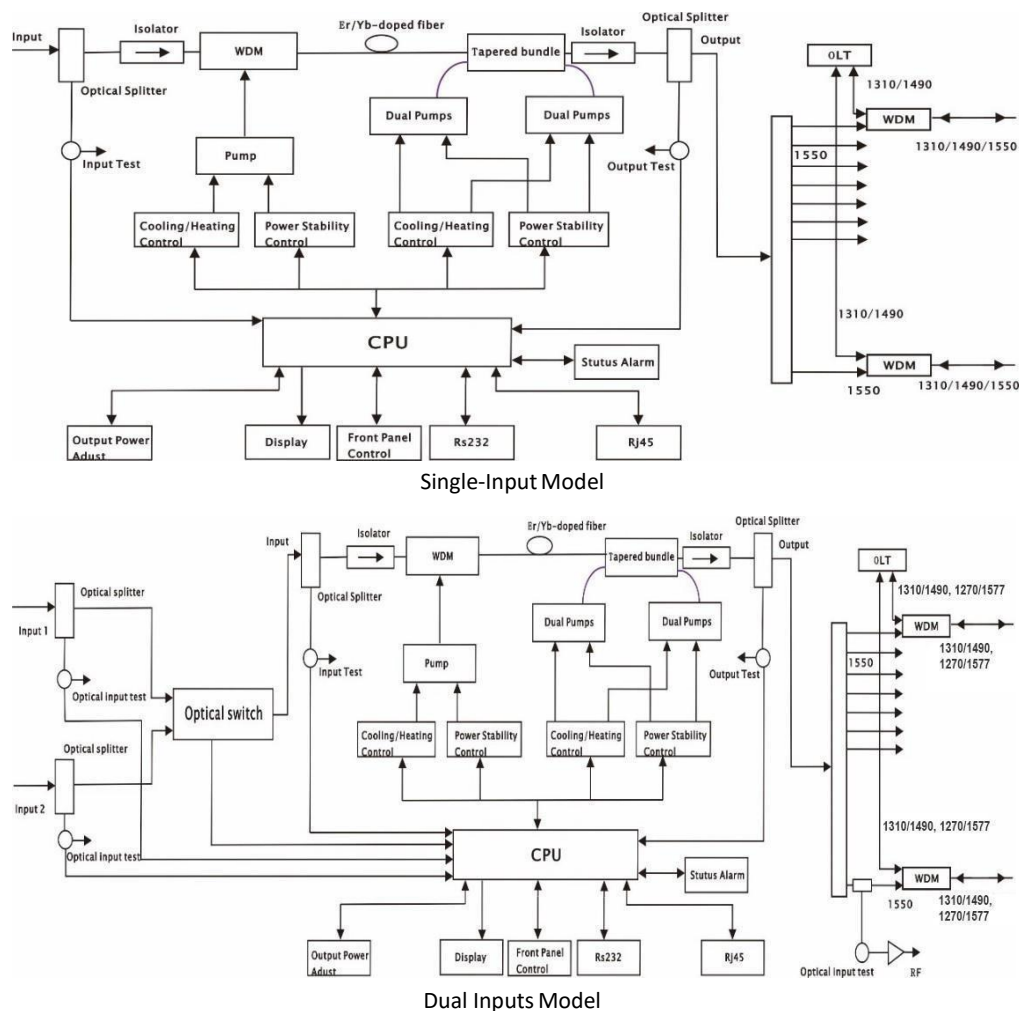
1.2 Features

- Low noise, high performance with JDSU & IPG pump laser
- FTTX high power multi-ports optical amplifier with gain spectrum band within 1540 to 1563nm
- Built-in WDM to connect PON OLT Uplink and Combined PON + CATV output
- Up to 64 uplink optical ports (OLT 1310/1490nm)
- Up to 64 combined output ports (1550nm CATV + 1310/1490nm data stream)
- Suitable for analog and digital CATV systems, DOCSIS, FTTH and more applications
- Suitable for 1550 nm DWDM applications for multiple wavelengths on single fibre
- Nominal output powers from 13dBm to 26dBm per port
- Adjustable output power
- Laser cooling: Thermoelectric Cooler (TEC)
- Extend analog and digital CATV to suit long distance feeders or larger FTTH distributionsystems
- Local or remote monitoring and configuration
- SNMP/HTTP monitoring, management and control

1.3 Application Diagram



1.4 Diagram



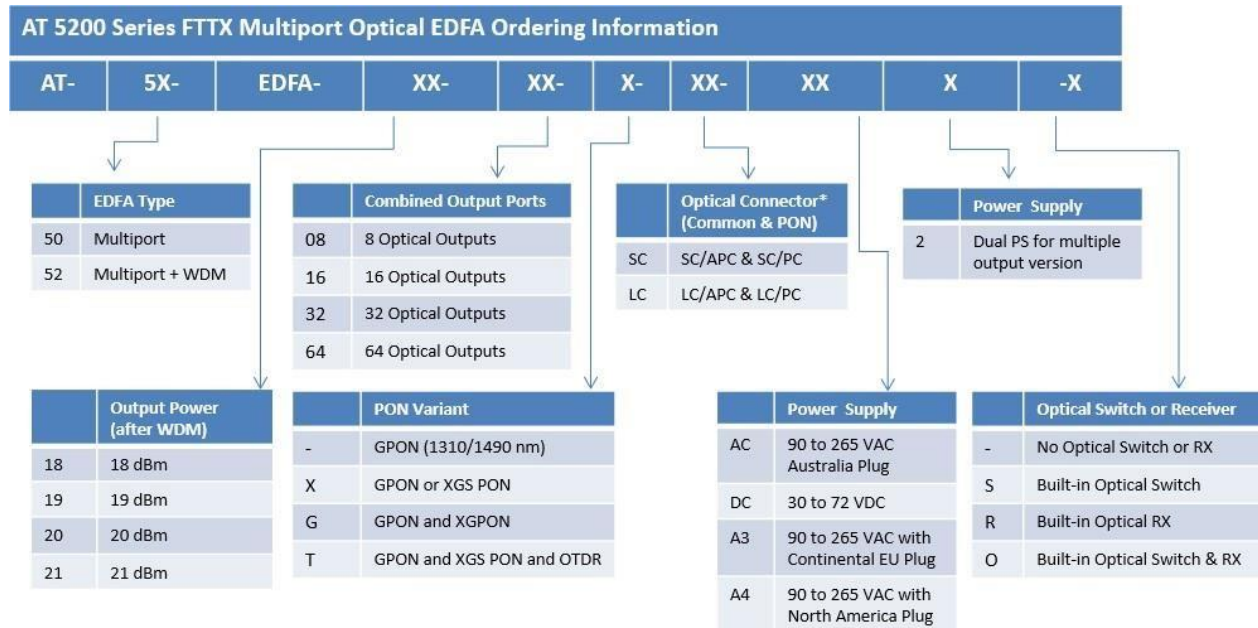
1.5 Specifications

AT5200 EDFA Erbium-Doped Fiber Amplifier - 19" 1 or 2RU

Parameter	Unit	Min.	Typ.	Max.	Note
Optical Index					
CATV Operating Wavelength	nm	1545		1565	
GPON Pass Wavelength	nm		1310/1490		
XGPON Pass Wavelength	nm		1270/1577		
OTDR Pass Wavelength	nm		1625 to 1650		
Optical Input Range	dBm	-8		+10	
Output Power	dBm			41	1 dBm interval
Output Adjustment Range	dB	-4		0	Adjustable, each step 0.1 dB
Output ATT	dB		-6		Output ATT at one time And recover
Output Ports Uniformity	dB			0.7	
Output Power Stability	dB			0.3	
Max No. of OLT PON Ports 2RU				32	SC/APC
				64	LC/APC
Max No. of COM Ports 2RU				32	SC/APC
				64	LC/APC
CATV Pass Loss	dB			0.8	
OLT Pass Loss	dB			0.8	
Isolation between CATV and OLT	dB	40			
Switching Time of Optical Switch	ms			8.0	Optional
Insertion Loss of Optical Switch	dB			0.8	GPON
	dB			1.1	XGPON
	dB			1.4	OTDR
Noise Figure	dB			6.0	Pin: 0 dBm
PDL	dB			0.3	
PDG	dB			0.4	
PMD	ps			0.3	
Remnant Pump Power	dBm			-30	
Optical Return Loss	dB	45			
Fiber Connector		SC/APC			FC/APC LC/APC
General Characteristics					
RF Test	dBμV	78		82	Optional
Network Management Interface		SNMP, WEB supported			
Power Supply	V	90		265	AC
		-72		-36	DC
Power Consumption	W			100	Dual PS, 1+1 standby, 40dBm
Operating Temperature	°C	-5		+65	
Storage Temperature	°C	-40		+85	
Operating Relative Humidity	%	5		95	

Dimensions (D×W×H) mm 370 × 483 × 88
Weight kg 7.5

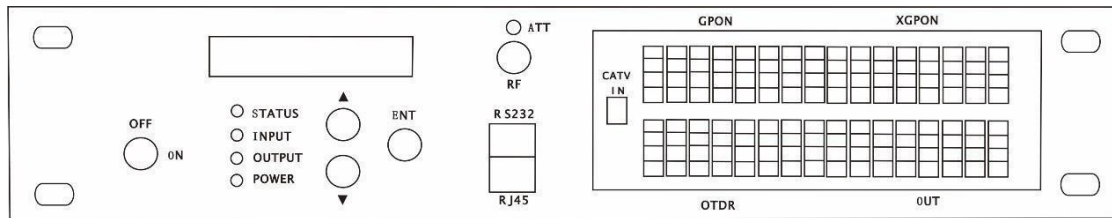
1.6 Models and Options



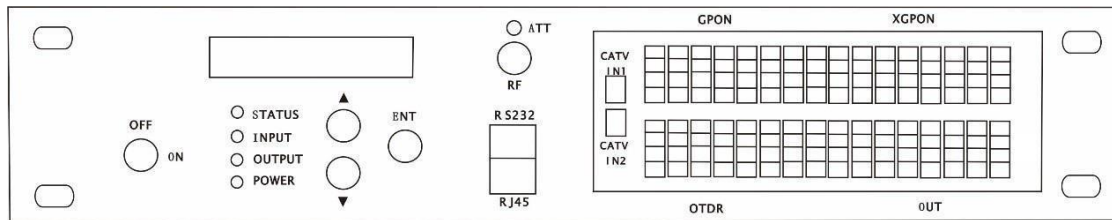
* The maximum output power per port is 26dBm. Output power is measured after WDM. Contact ACT Sales Representative for more information.

Total Output Power		No. of Output Port	Output Power per Port
dBm	mW		
35	3200	16	20.5
		32	17.0
36	4000	16	21.5
		32	18.0
37	5000	16	22.5
		32	19.0
38	6400	32	20.0
39	8000	32	21.0
40	10000	32	22.0

1.7 Front Panel Layout (Layout May Vary)



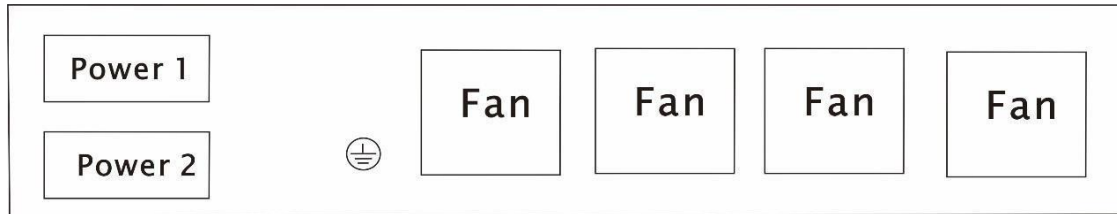
Single Input




Dual Inputs

Identification	Name	Remarks
LCD	LCD Display	To display the parameters of the device
STATUS	Device Status	LED Green, Device working LED Red, Device alarming or faulty
INPUT	Fiber Input	LED Green, Input within requested range LED Red, no input or out of the requested range or only single input connected in dual inputs model
OUTPUT	Fiber Output	LED Green, Fiber output is within normal range LED Red, Fiber output is out of normal range
POWER	Power Supply	LED Green, Dual power supply working LED Yellow, Single power supply working
CATV IN	CATV Input	1550nm fiber input Single input
CATV IN1	CATV Input 1	1550nm fiber input 1 Dual Inputs
CATV IN2	CATV Input 2	1550nm fiber input 2 Dual Inputs
GPON	GPON Data Input	OLT Input CWDM
XGPON	XGPON Data Input	OLT Input CWDM
OTDR	OTDR Signal Input	
OUT	Fiber Output	Fiber Output
▲▼	Buttons	Start menu page turning and set the device
ENT	Enter	Confirmation after menu page turning and device setting
OFF/ON	Key	ON pump laser on, OFF pump laser off
RF TEST	RF test point	Output level 78 dBμV to 82dBμV Optional
RS232	RS232 Port	Local programming
RJ45	RJ45 Port	Remote SNMP and WEB supported

1.8 Rear Panel Layout



Identification	Items	Remarks
Fan	Fan	For cooling the device
	Grounding Port	For grounding
Power1	Power Socket 1	Hot plug in/out supported
Power2	Power Socket 2	Hot plug in/out supported

2. Installation

2.1 Preparation before installation

Please examine the machine to see if there is distinct

Please examine if the accessories is complete and the quality cards is here. If not, please contact sales or dealer

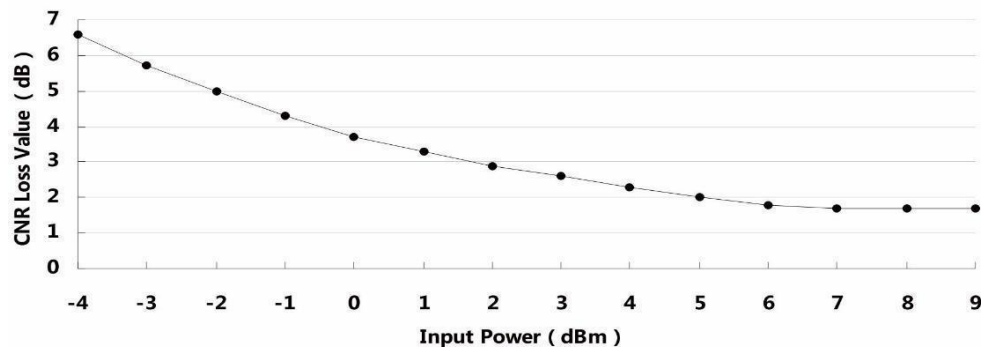
2.2 Installation

- Keep a space about 4.5cm between machines for ventilation.
- Make sure that the socket works very well and well grounded; The impedance $\leq 4\Omega$; 220V power with three cables, the middle one should be connected to the ground 。 Incorrect grounding may hurt the device or influence the quality of signal.
- Make sure the power supply button in the rear panel turn to OFF before the power supply cable connected.
- Keep the interface of the fiber clean before connecting the fiber.

2.3 Notes

1. Static-sensitive pump laser is applied in the EDFA, please note that electrostatic protection should be applied in the storage of the EDFA and it should not be stored with corrosive material, and the storage temperature should be between - 40 °C and + 85 °C.
2. As the output power of EDFA is high, please do not turn on the power supply before the EDFA is connected to the system or the output ports are not equipped with protection sleeves. Please do not to plug in/out the patch cord when the device is working, otherwise it may burn the output interface, resulting the decrease of the output power.

3. Please don't now attempt to look into the optical connectors when power applied, eye damage may result.
4. Please don't block the cooling holes of the device and keep it in good ventilation
5. Please use anhydrous industrial alcohol instead of medical alcohol to wash the fiber connector if necessary after the power supply of the device is turned off.
6. For high power EDFA, it is easy to burn the fiber output interface and decrease the output power, so the advised best value on each port is lower than 19dBm.
7. Please don't test the EYDFA repeatedly, otherwise the fiber connector interface may be hurt and the output power decreased.
8. The change of input optical power has a great influence on CNR. The higher input power, the higher the CNR, the lower input power, and the worse the CNR, as shown in the following figure:



CNR loss value/Input Power

3.1 Front Panel Operation

```

graph TD
    A[XXXXXXXXXX  
Each OutPwr] --> B[Total OutPwr]
    B --> C[Working Channel  
Channel 1/2]
    C --> D[Input 1 Power]
    D --> E[Input 2 Power]
    E --> F[Input Power]
    F --> G[Pump 1 Current]
    G --> H[Pump 1 Temp]
    H --> I[Pump 1 TEC  
Current]
    I --> J[Pump 2 Current]
    J --> K[Equipment Temp]
    K --> L[Switch Mode  
Auto]
    L --> M[Switch Mode  
Manual]
    L -- ENT --> N[Switch To  
Disabled]
    M -- ENT --> O[Switch To  
Channel 1/2]
    N --> P[Parameters Info]
    O --> P
    P -- ENT --> Q[+5V Power]
    Q --> R[Power 1  
Power 2]
    R --> S[Serial Number]
    S --> T[Firmware Version]
    T --> U[EXIT]
    P --> V[ ]
    style V fill:none,stroke:none
    V --> W[ ]
    style W fill:none,stroke:none
    
```

XXXXXXXXXX
Each OutPwr

Total OutPwr

Working Channel
Channel 1/2

Input 1 Power

Input 2 Power

Input Power

Pump 1 Current

Pump 1 Temp

Pump 1 TEC
Current

Pump 2 Current

Equipment Temp

Switch Mode
Auto

Switch Mode
Manual

Switch To
Disabled

Switch To
Channel 1/2

Parameters Info

+5V Power

Power 1
Power 2

Serial Number

Firmware Version

EXIT

Model No.

Current working channel
Channe 1/2
(Do not display in single input model)

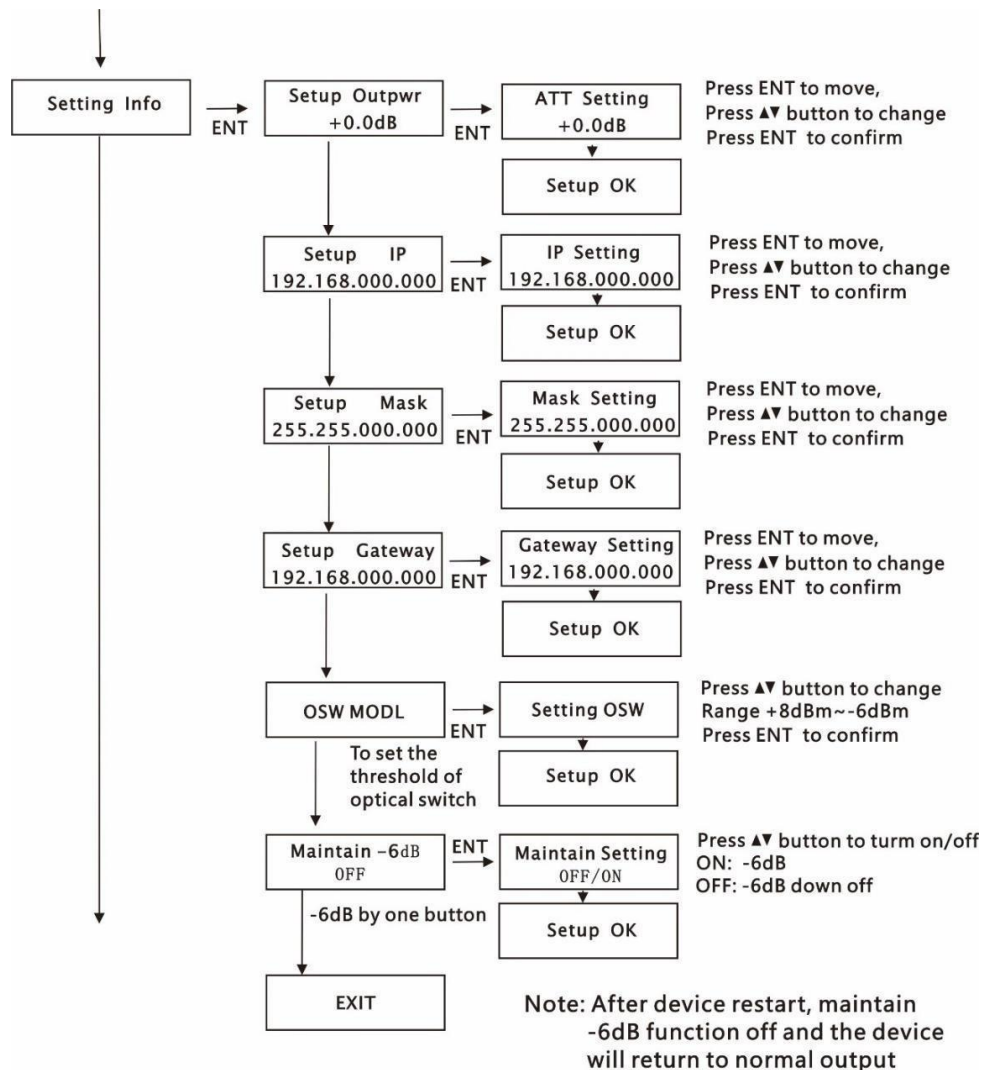
(Do not display in single input model)

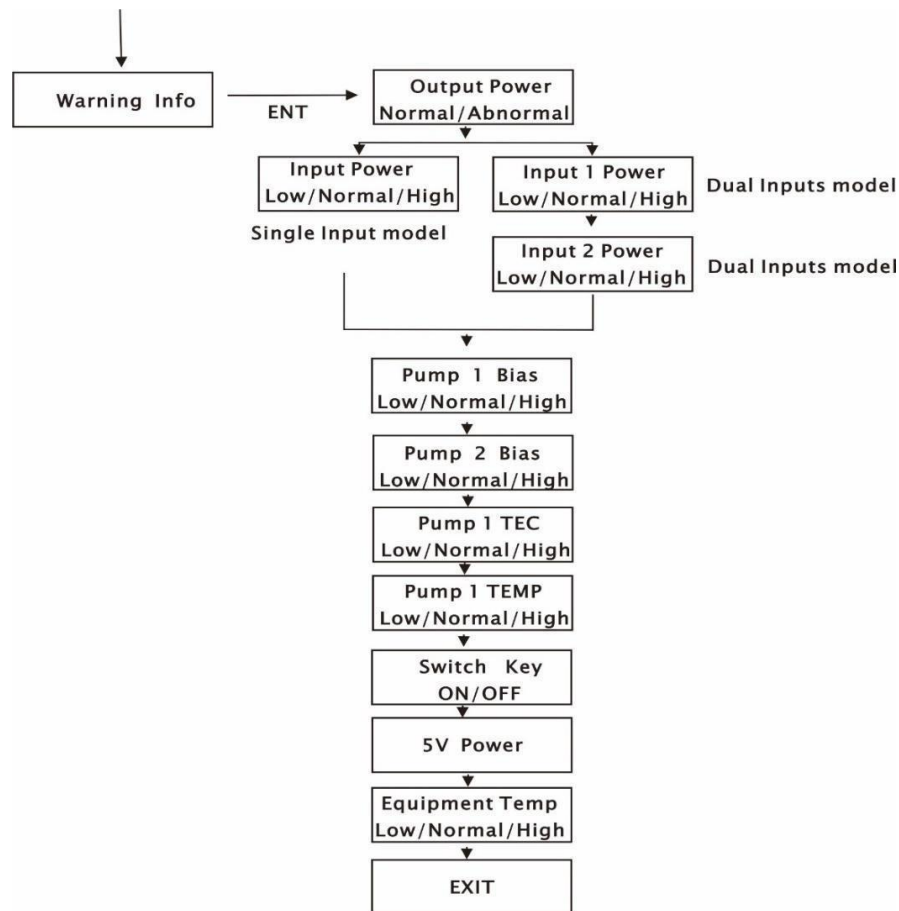
(Do not display in single input model)

Input power (single input model)
Input power after optical switch (Dual input model)

Mode switching Manual/Auto

Press ENT to switch to Input 1 or Input 2

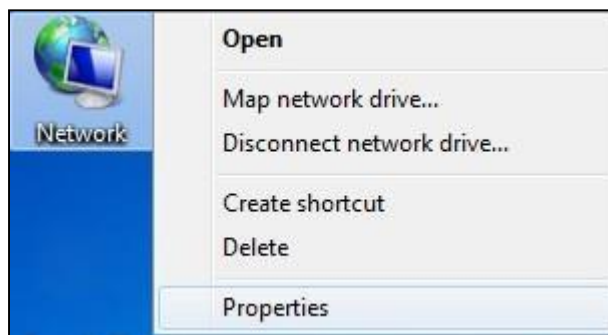




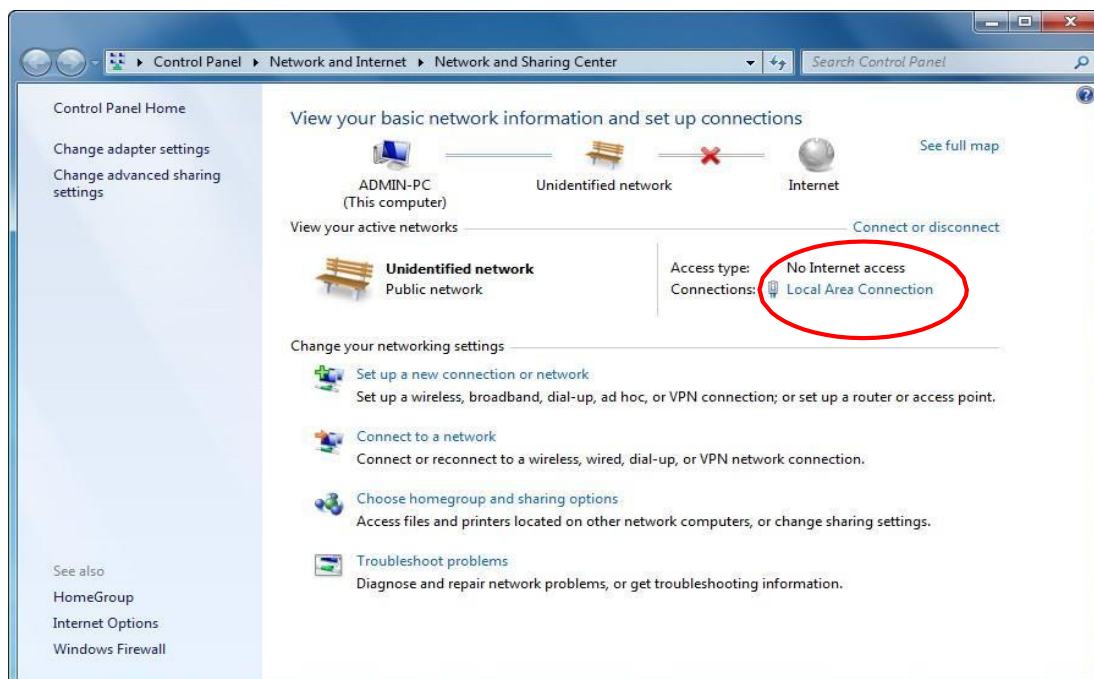
3.2 WEB Management Interface (Web GUI)

Web server is built in SNMP module. Users can directly view the basic operating parameters and network parameters of the device through the web browser. Popular web browsers include IE of Microsoft, Chrome of Google, Firefox of Mozilla, Opera of software ASA's, etc. The built-in web server of SNMP supports these popular browsers very well. The following diagrams are illustrated by opera browser.

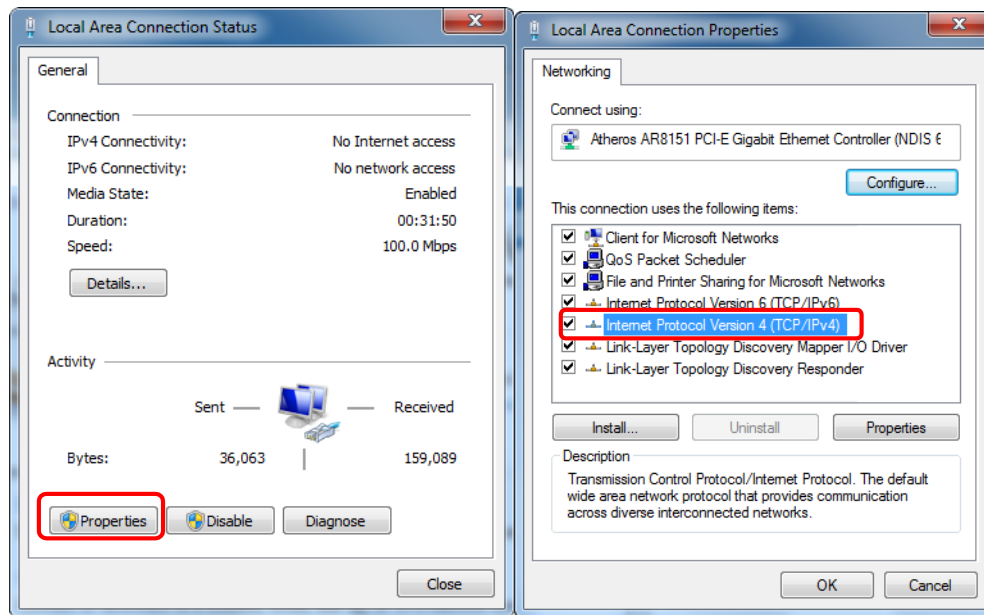
1. Find the IP address of the device in the LCD panel menu. The default IP address is 192.168.0.22. Set the IP address of the computer to the same network segment as the device, find the "network" icon on the desktop of windows system, select the icon, right-click the mouse, and select "properties" in the pop-up menu



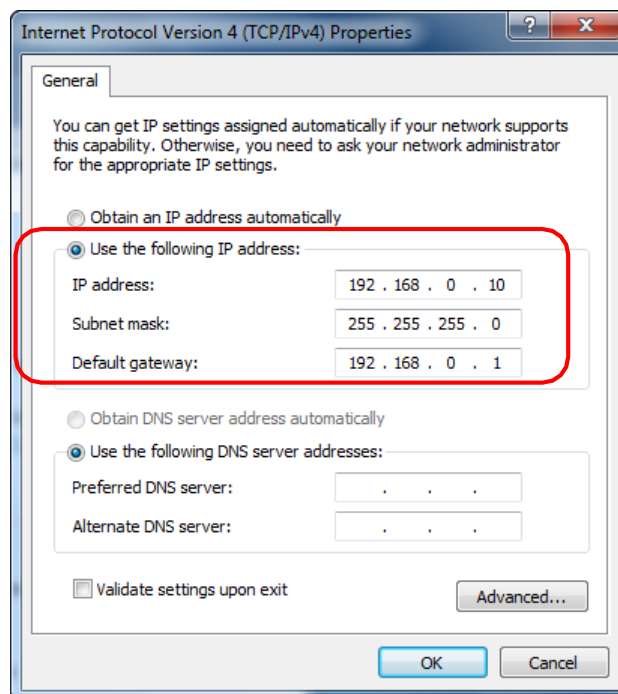
Click "Local Area Connection" in the pop-up version



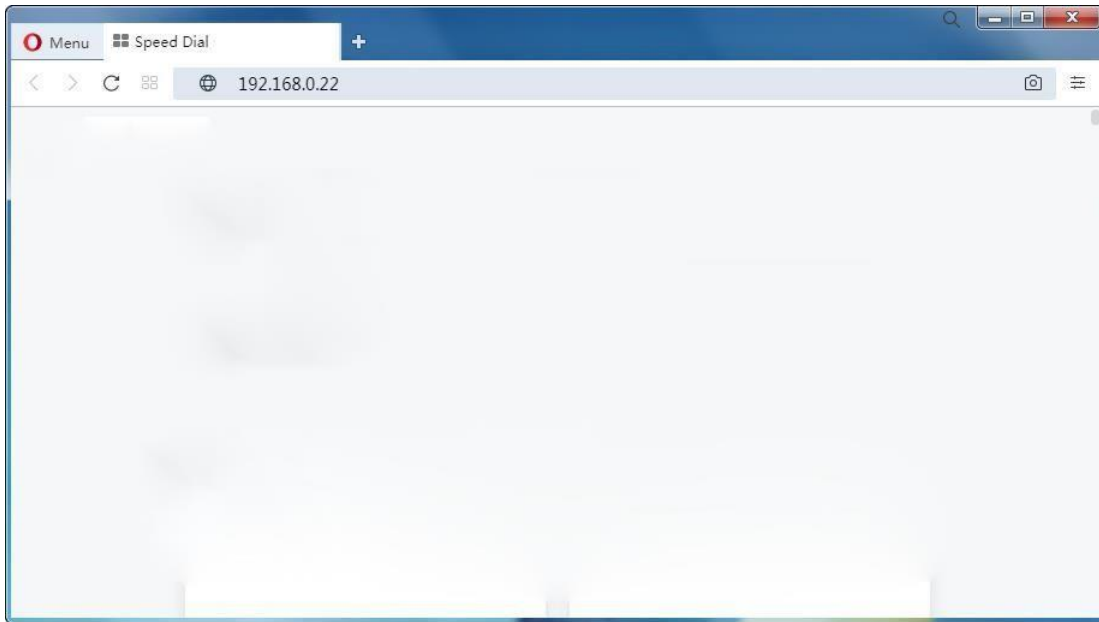
In the "Local Area Connection Status" menu, select "Properties", and then double-click "Internet Protocol Version 4 (TCP / IPv4)".



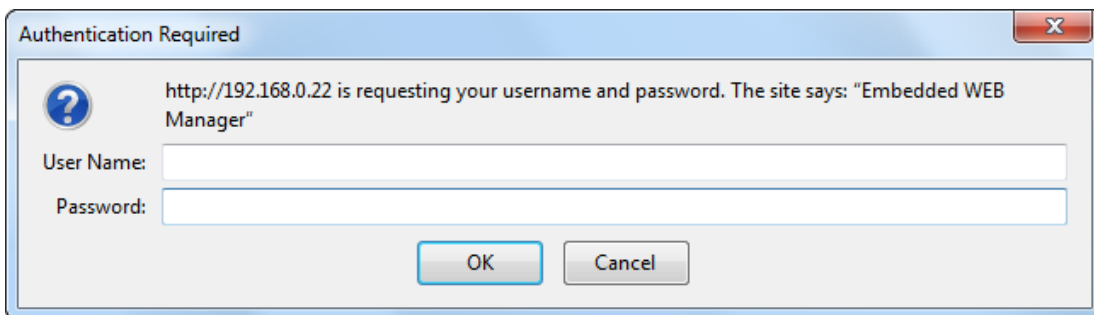
Set the IP address to make the IP address and the device in the same network segment, so that the computer can access the device.



2. Open the web browser and enter the IP address of the device in the address bar of the browser, such as 192.168.0.22



The browser will pop up a login box



First Time Log-in to WEB Manager

The username/password for the first time log-in to the WEB Manager is **admin/ascent**, we recommend that the customer change the username and password as soon as possible.

Restore Factory Setting

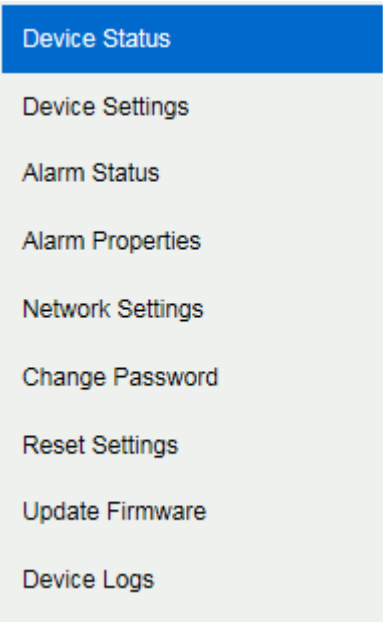
If in future you forget the user name and password you set up, or for any other reasons in need to change to default, the product can be restored to factory setting, click Reset Settings on the left-bar, then click Restore Factory, the setting will revert to default state, and the username and password will become **admin/123456**.

3. The browser displays the device status page by default



Real Time Device Status Page


4. The left side of the page is the menu navigation bar. Click to enter the corresponding menu page



Page Navigation Bar

Embedded WEB Manager x +

< > ↺ ⌂ ☆ http://192.168.0.22/


**AT5000 EDFA
WEB Manager**

- Device Status
- Device Settings**
- Alarm Status
- Alarm Properties
- Network Settings
- Change Password
- Reset Settings
- Update Firmware
- Device Logs

Device Settings

PUMP Status:


Set Output ATT: dB

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Device Settings Page

Embedded WEB Manager x +

< > ↺ ⌂ ☆ http://192.168.0.22/


**AT5000 EDFA
WEB Manager**

- Device Status
- Device Settings
- Alarm Status**
- Alarm Properties
- Network Settings
- Change Password
- Reset Settings
- Update Firmware
- Device Logs

Alarm Status

Index	Parameter Name	Alarm Status
1	Output optical power	Nominal
2	Input optical power	Nominal
3	Power Supply 1	Nominal
4	Power Supply 2	Nominal
5	Internal Temp	Nominal
6	Pump1 BIAS	Nominal
7	Pump2 BIAS	Nominal
8	Pump1 TEC	Nominal
9	Pump1 Temp	Nominal
10	DC +5V	Nominal

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Alarm Status Page

Embedded WEB Manager x +

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**AT5000 EDFA
WEB Manager**

Device Status

Device Settings

Alarm Status

Alarm Properties

Network Settings

Change Password

Reset Settings

Update Firmware

Device Logs

Alarm Properties

Index	Parameter Name	HHH	HI	LO	LOLO	Deadband	Action
1	Output optical power (dBm)	<input checked="" type="checkbox"/> 27.0	<input checked="" type="checkbox"/> 26.0	<input checked="" type="checkbox"/> 11.0	<input checked="" type="checkbox"/> 10.0	0.5	Set
2	Input optical power (dBm)	<input checked="" type="checkbox"/> 10.0	<input checked="" type="checkbox"/> 8.0	<input checked="" type="checkbox"/> -6.0	<input checked="" type="checkbox"/> -10.0	0.2	Set
3	Internal Temp (°C)	<input checked="" type="checkbox"/> 85	<input checked="" type="checkbox"/> 70	<input checked="" type="checkbox"/> 5	<input checked="" type="checkbox"/> 0	2	Set
4	Pump1 BIAS (mA)	<input checked="" type="checkbox"/> 900	<input checked="" type="checkbox"/> 800	<input checked="" type="checkbox"/> 100	<input checked="" type="checkbox"/> 80	20	Set
5	Pump2 BIAS (mA)	<input checked="" type="checkbox"/> 15000	<input checked="" type="checkbox"/> 10000	<input checked="" type="checkbox"/> 100	<input checked="" type="checkbox"/> 80	20	Set
6	Pump1 TEC (A)	<input checked="" type="checkbox"/> 2.00	<input checked="" type="checkbox"/> 1.50	<input checked="" type="checkbox"/> -1.50	<input checked="" type="checkbox"/> -2.00	0.10	Set
7	Pump1 Temp (°C)	<input checked="" type="checkbox"/> 35.0	<input checked="" type="checkbox"/> 30.0	<input checked="" type="checkbox"/> 20.0	<input checked="" type="checkbox"/> 15.0	1.0	Set
8	DC +5V (V)	<input checked="" type="checkbox"/> 6.5	<input checked="" type="checkbox"/> 6.0	<input checked="" type="checkbox"/> 4.0	<input checked="" type="checkbox"/> 3.5	0.2	Set

Index	Parameter Name	Control	Action
1	Power Supply 1	EnableMajor	Set
2	Power Supply 2	EnableMajor	Set

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Alarm Properties Settings Page

Embedded WEB Manager x +

< > ↺ ⌂ ☆ http://192.168.0.22/

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**AT5000 EDFA
WEB Manager**

Device Status

Device Settings

Alarm Status

Alarm Properties

Network Settings

Change Password

Reset Settings

Update Firmware

Device Logs

Network Settings

Device MAC: D8: 29: 16: 57: 05: D7

Update Identifier: OA138SG04

Agent Version: V3.2.0 Refresh

Static IP Address: 192 168 0 22 Set

Subnet Mask: 255 255 0 0 Set

Default Gateway: 192 168 0 1 Set

Trap Address 1: 0 0 0 0 Set

Trap Address 2: 0 0 0 0 Set

Trap Address 3: 0 0 0 0 Set

Trap Address 4: 0 0 0 0 Set

Trap Address 5: 0 0 0 0 Set

Trap Address 6: 0 0 0 0 Set

Trap Address 7: 0 0 0 0 Set

Trap Address 8: 0 0 0 0 Set

IPv6 Global Unicast:

IPv6 Local Link: fe80::da29:16ff:fe57:5d7

Trap IPv6 Host1: :: Set

Trap IPv6 Host2: :: Set

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http://192.168.0.22/

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**AT5000 EDFA
WEB Manager**

Device Status

Device Settings

Alarm Status

Alarm Properties

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Change Password

Reset Settings

Update Firmware

Device Logs

IPv6 Local Link: fe80::da29:16ff:fe57:5d7

Trap IPv6 Host1: Set

Trap IPv6 Host2: Set

Trap IPv6 Host3: Set

Trap IPv6 Host4: Set

Trap IPv6 Host5: Set

Trap IPv6 Host6: Set

Trap IPv6 Host7: Set

Trap IPv6 Host8: Set

NTP: Set

NTP Host: Set

DNS1: Set

DNS2: Set

Read Community: Set

Write Community: Set

Trap Community: Set

SNMP Version: Set

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Network Settings Page

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http://192.168.0.22/

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**AT5000 EDFA
WEB Manager**

Device Status

Device Settings

Alarm Status

Alarm Properties

Network Settings

Change Password

Reset Settings

Update Firmware

Device Logs

Change Password

Username:

Password:

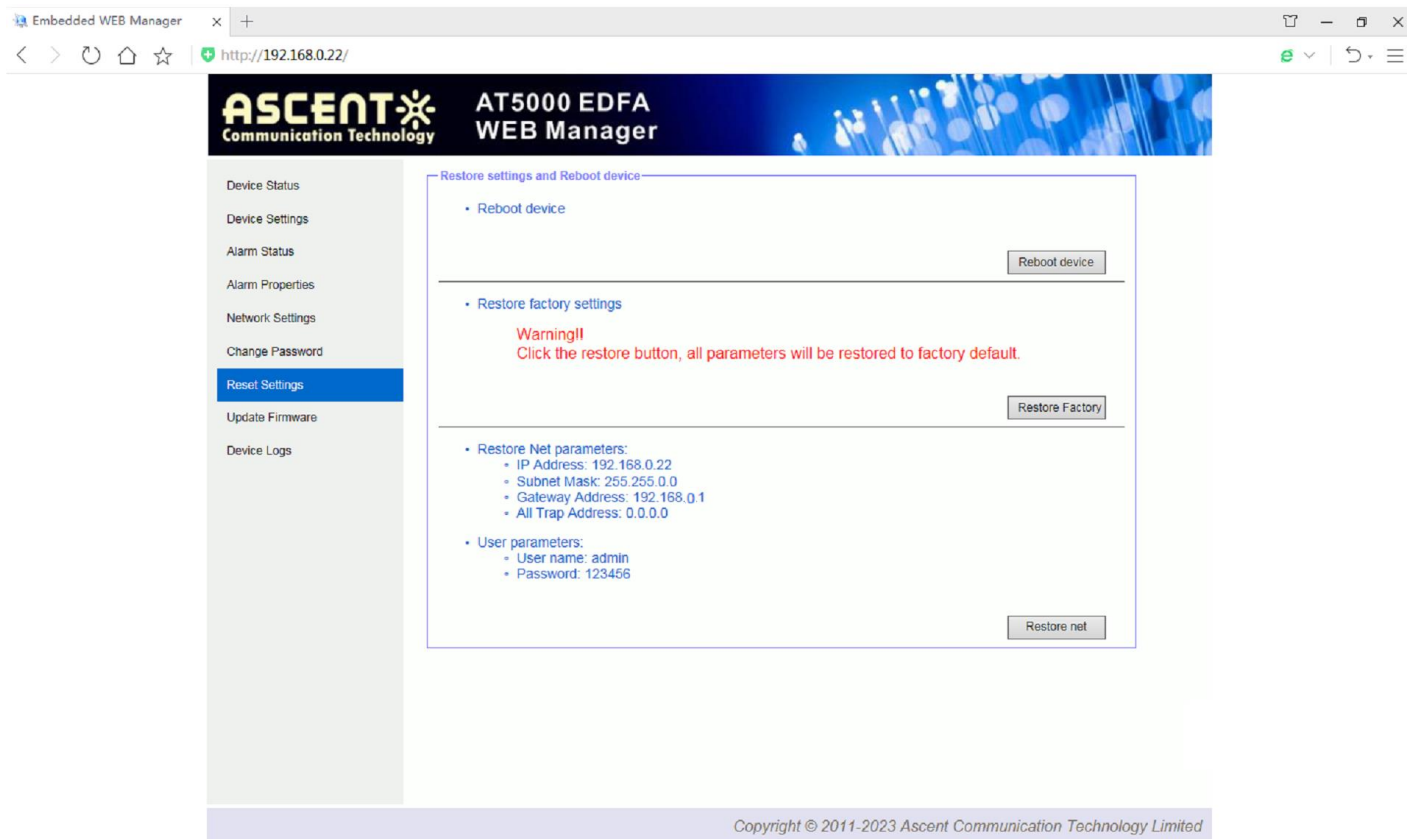
New Username:

New Password:

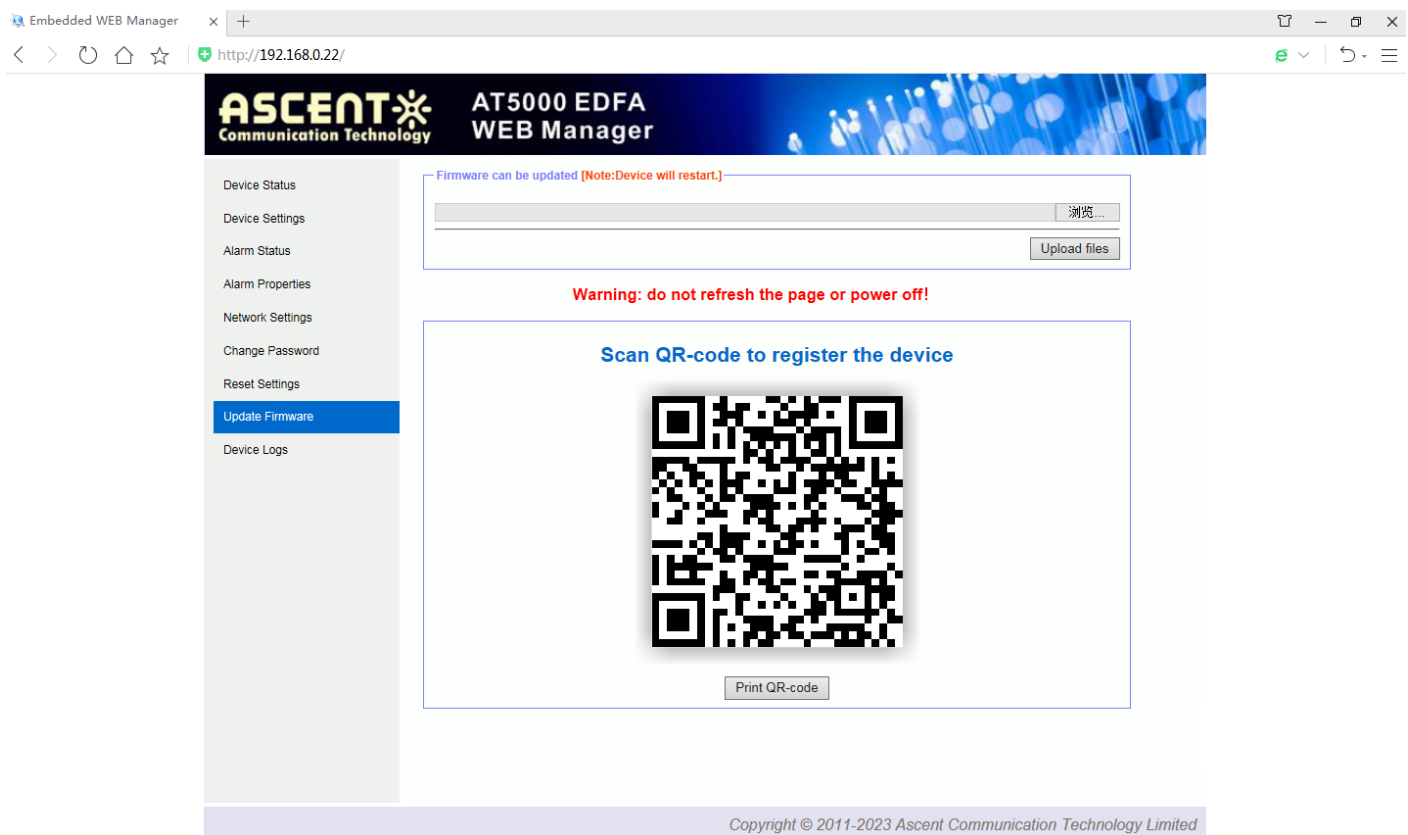
Confirm Password:

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Change Password Page



Restore Settings Page



Update Firmware

Embedded WEB Manager
+
http://192.168.0.22/

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Device Logs

4. Troubleshooting

4.1 Fiber Optic Maintenance

Any time the fiber leads to the amplifier are disconnected, there is the potential for contamination of the ends of the fiber connectors. Dirt or other contaminants on these components can reduce the amplifier's performance and can result in permanent damage to the device. It is recommended that the fiber connectors be cleaned prior to connection, or reconnection, to the system.

4.2 Troubleshooting Conditions

S/N	Fault Phenomenon	Faulty Reason	Solution	Remarks
1	Power Yellow	Single power supply working	Connect another power supply	
2	STATUS Green INPUT Yellow OUTPUT Green	Single optical input	Connect another input	Dual Model
3	STATUS Red INPUT Yellow OUTPUT Red	No input or input too low	Adjust the value of input power	
4	STATUS Red INPUT Green	The key turned to OFF	Turn the key to ON	

	OUTPUT Red LCD Display "KEY OFF"			
5	Output power LCD displays normal value, but low value by power meter	Fiber interface hurt caused by wrong operation such as plug in/out patch cord when the power supply is on, it will cause the output lower than LCD display Output interface of EYDFA or patch cord is dirty.	Replace the fiber connector Clean the output interface with industrial anhydrous alcohol or dust-free paper	The advised optical power per port ≤ 19 dBm
		Power meter error	Change power meter	Top brand power meter is advised
6	LCD display shows output is about 0 to 4dB lower than specified value	The wavelength deviation of input optical signal is far from 1550nm Checking if the ATT attenuation in "setting info" is enabled	Adjust the wavelength of optical transmitter Turn off "ATT" function	
7	LCD display shows output is about 6dB	Checking if the "Maintain -6dB" function in "Setting Info" enabled	Turn off "-6dB" function	
8	The optical power of the output end of the optical amplifier is normal, but the index of the user end is deteriorated	Optical power to fiber is high	Decrease the power to fiber under 19 dBm	



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Ver. ACT_2RU_Multiport_EDFA_QRG_V2I_Oct_2023