ASCENT
Communication Technology

ACT AT5200 FTTX Multiport EDFA

Quick Reference Guide

Revision K

ACT AT5200 Multiport Erbium-Doped Fiber Amplifier

Quick Reference Guide

ACT Document Number: AT5200 Multiport EDFA QRG

Quick Reference Guide Revision K

Copyright © 2023 Ascent Communication Technology Limited.

All rights reserved. Reproduction in any manner whatsoever without the express written permission of Ascent Communication Technology is strictly forbidden.

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	11/10/2023	Minor updates/Update section 3.2

Table of Contents

Precautions 4

1. Introduction 5

1.1 Overview 5

1.2 Features 5

1.3 Application Diagram 6

1.4 Diagram 6

1.5 Specifications 7

1.6 Models and Options 8

1.7 Front Panel Layout (Layout May Vary) 9

1.8 Rear Panel Layout 10

2. Installation 10

2.1 Preparation before installation 10

2.2 Installation 10

2.3 Notes 10

3. Management – Operation 12

3.1 Front Panel Operation 12

3.2 WEB Management Interface (Web GUI) 15

4. Troubleshooting 22

4.1 Fiber Optic Maintenance 22

4.2 Troubleshooting Conditions 22

Precautions

Warning

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.

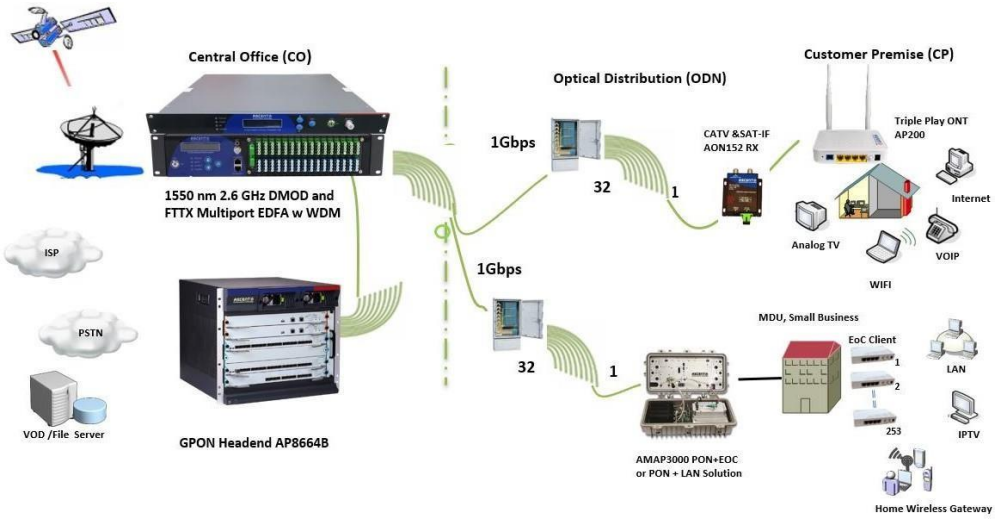
AT5200 EDFA series simplifies the application by offering low noise, high output power, and intuitive front panel LCD display to make operator's life easier. The optical amplifier is packaged in a self-contained 19" sub-rack of 1 or 2 RU with redundant universal mains power supply and SNMP management.

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.

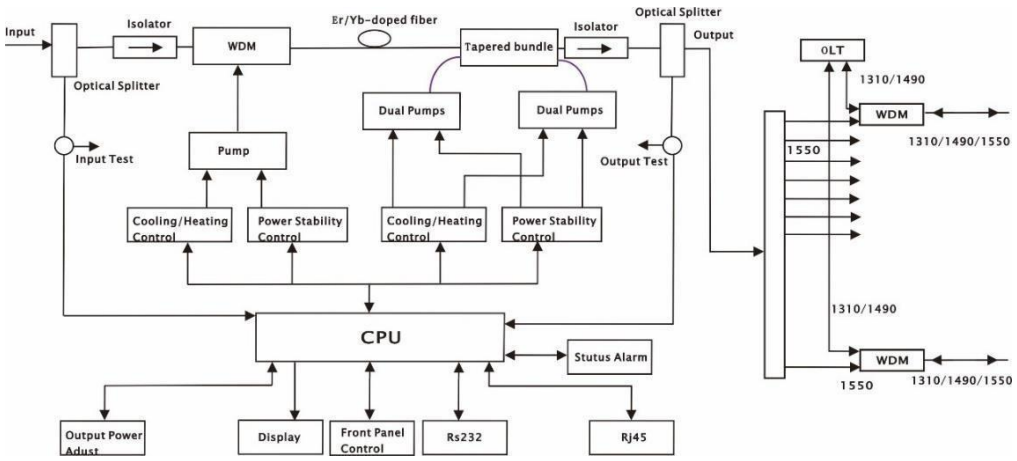
1.2 Features

- Low noise, high performance with JDSU & IPG pump laser
- FTTP 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 distribution systems
- Local or remote monitoring and configuration
- SNMP/HTTP monitoring, management and control

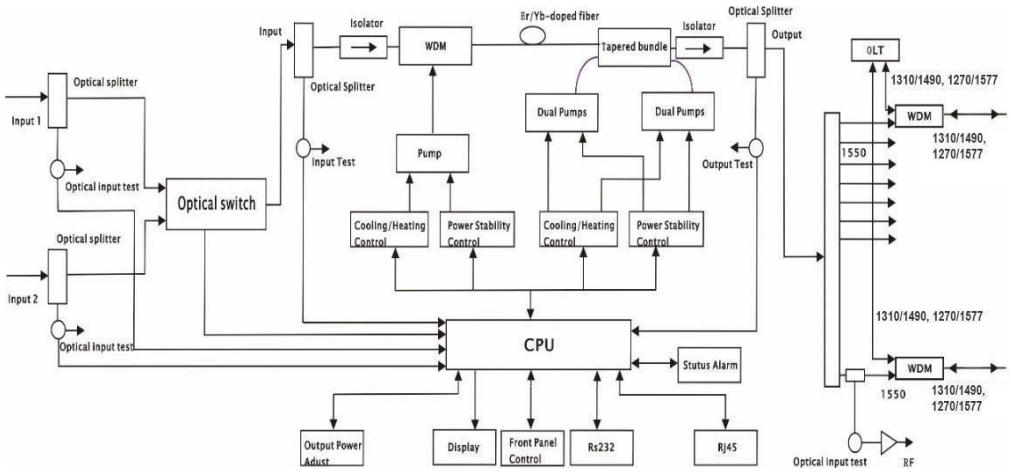
1.3 Application Diagram



1.4 Diagram



Single-Input Model



Dual Inputs Model

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

AT 5200 Series FTTX Multiport Optical EDFA Ordering Information

AT-	5X-	EDFA-	XX-	XX-	X-	XX-	XX	X	-X

	EDFA Type
50	Multiport
52	Multiport + WDM

	Combined Output Ports
08	8 Optical Outputs
16	16 Optical Outputs
32	32 Optical Outputs
64	64 Optical Outputs

	Optical Connector* (Common & PON)
SC	SC/APC & SC/PC
LC	LC/APC & LC/PC

	Power Supply
2	Dual PS for multiple output version

	Output Power (after WDM)
18	18 dBm
19	19 dBm
20	20 dBm
21	21 dBm

	PON Variant
-	GPON (1310/1490 nm)
X	GPON or XGS PON
G	GPON and XGPON
T	GPON and XGS PON and OTDR

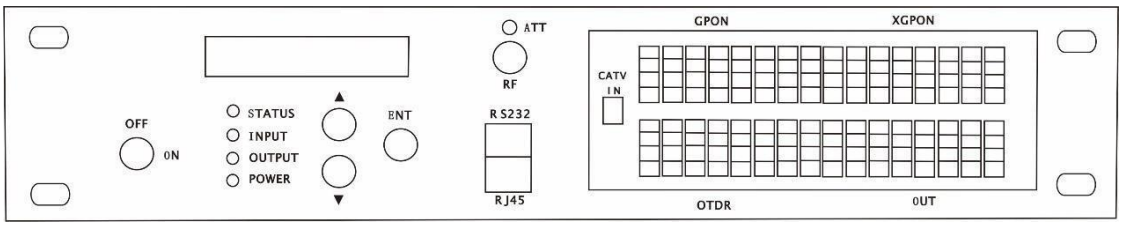
	Power Supply
AC	90 to 265 VAC Australia Plug
DC	30 to 72 VDC
A3	90 to 265 VAC with Continental EU Plug
A4	90 to 265 VAC with North America Plug

	Optical Switch or Receiver
-	No Optical Switch or RX
S	Built-in Optical Switch
R	Built-in Optical RX
O	Built-in Optical Switch & RX

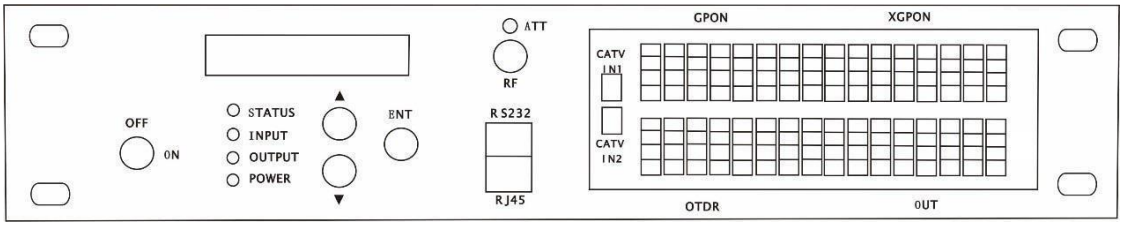
* The maximum output power per port is 26dBm. Output power is measured after WDM. Contact ACT Sales Representative for more information.

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)



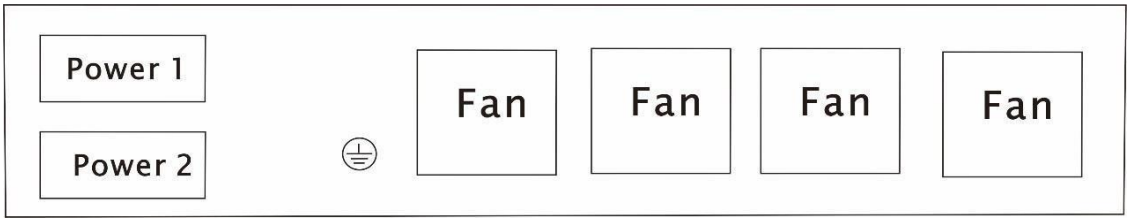
Single Input



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

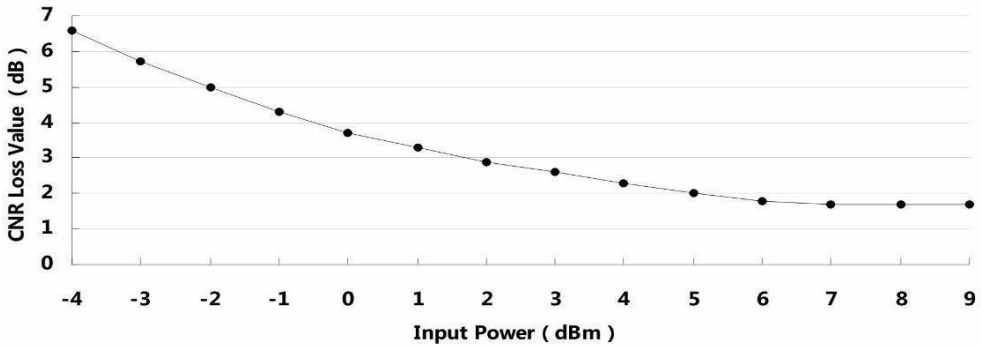
2.2 Installation

- Keep a space about 4.5cm between machines for ventilation.
- Make sure that the socket works very well and well grounded; The impedance ≤4Ω; 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 interfacemay 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:

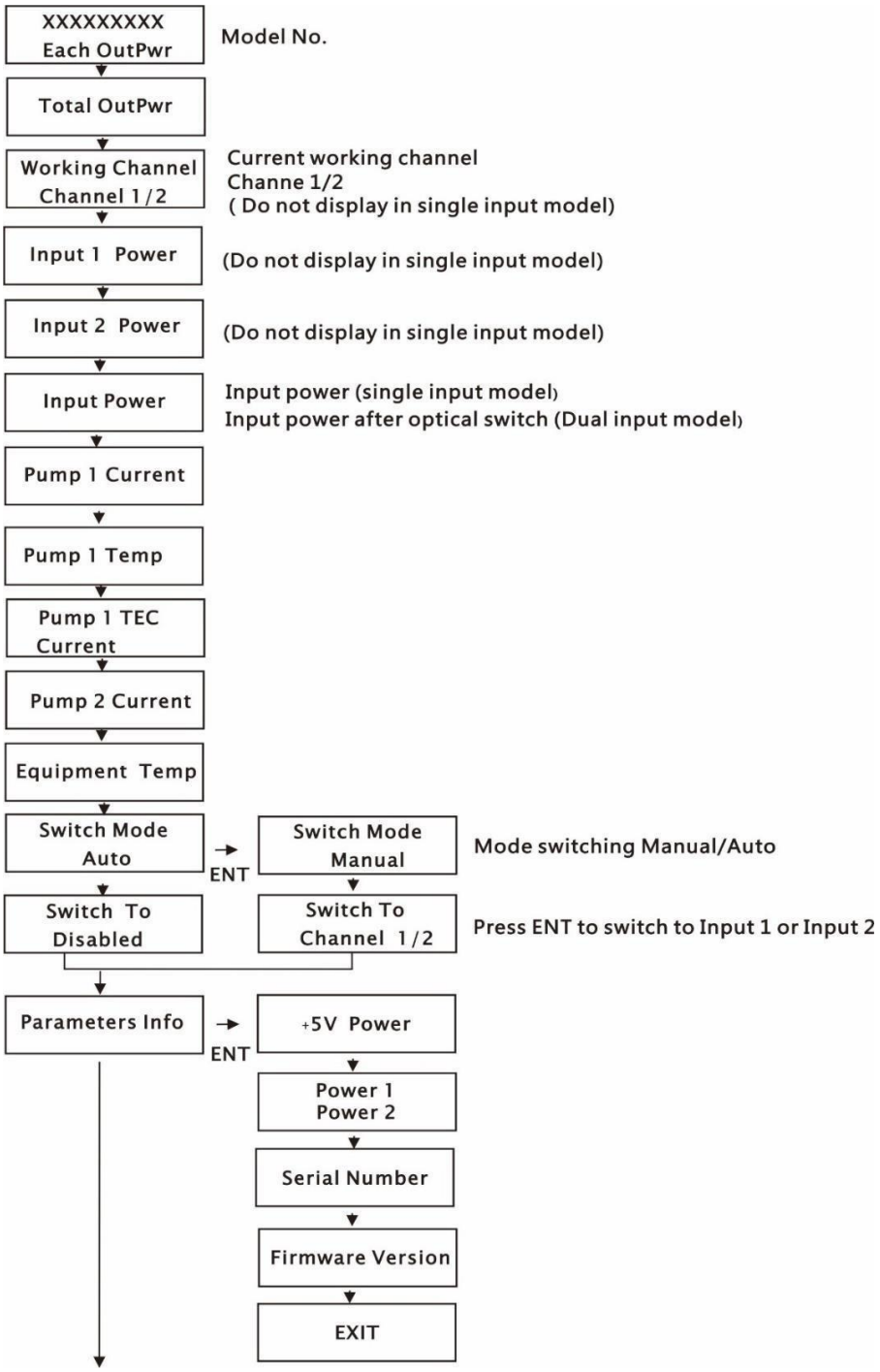


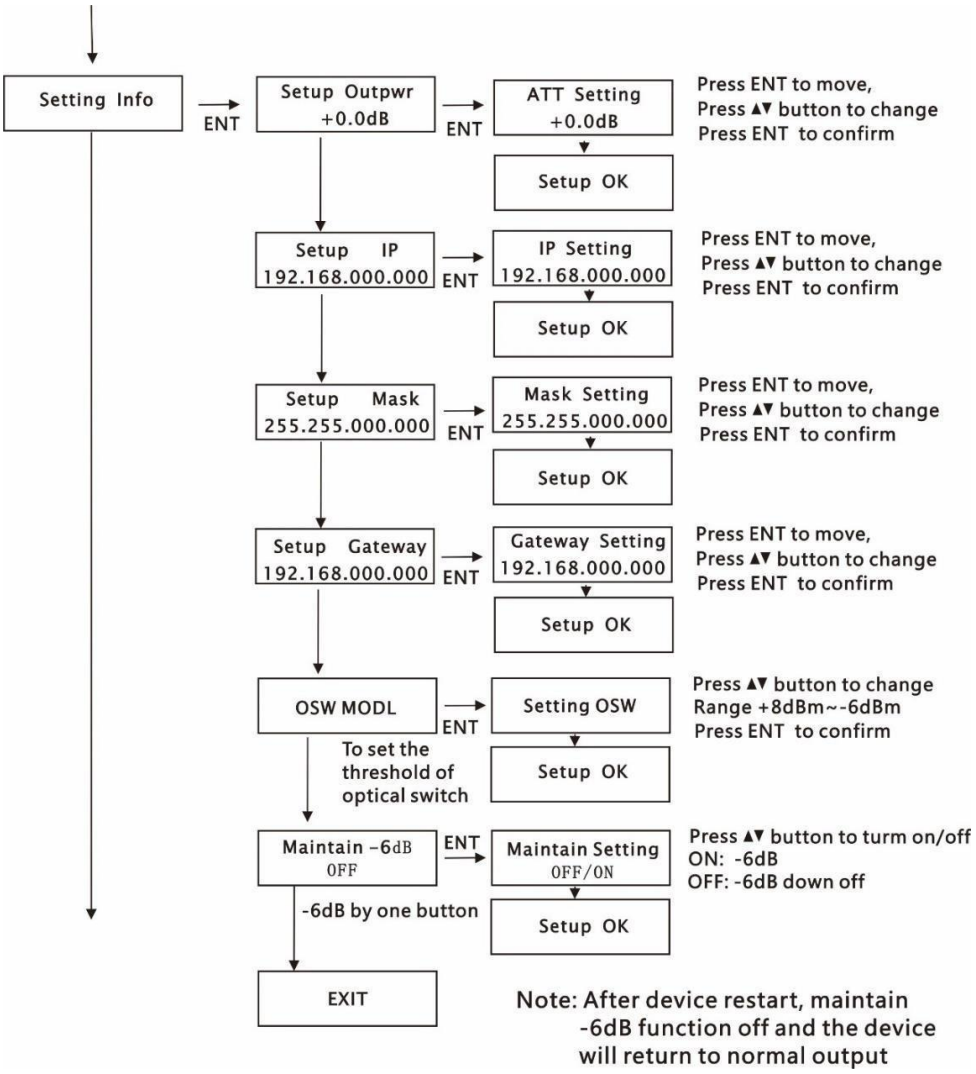
CNR loss value/Input Power

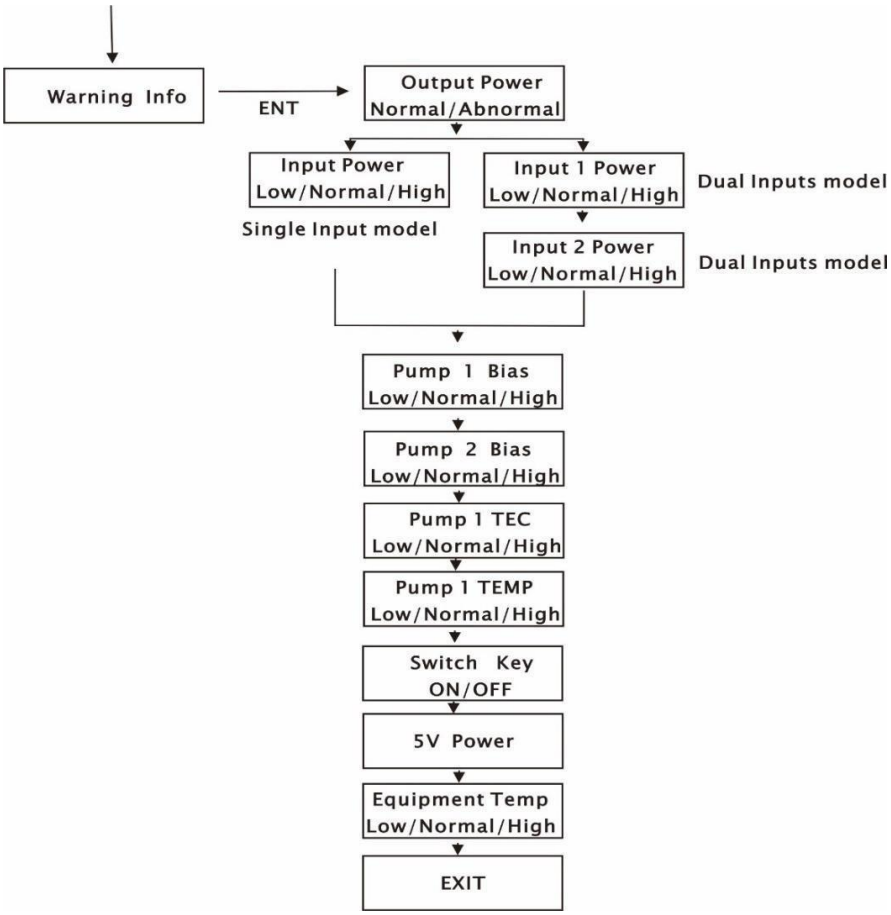
3. Management – Operation

3.1 Front Panel Operation

Press the ▼ to display the following menus in turn, and press the ▲ to reverse the cycle



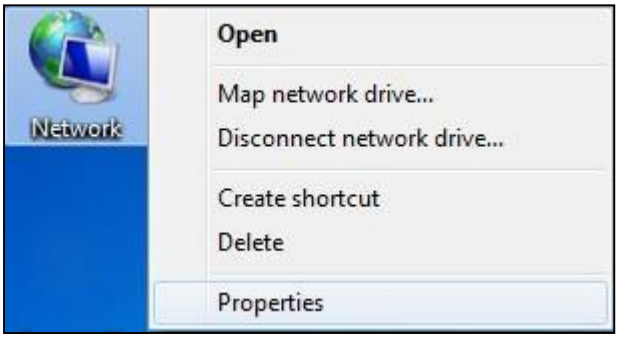

Setting Info
ENT
Setup Outpwr +0.0dB
ENT
ATT Setting +0.0dB
Setup OK
Press ENT to move,
Press ▲▼ button to change
Press ENT to confirm
Setup IP 192.168.000.000
ENT
IP Setting 192.168.000.000
Setup OK
Press ENT to move,
Press ▲▼ button to change
Press ENT to confirm
Setup Mask 255.255.000.000
ENT
Mask Setting 255.255.000.000
Setup OK
Press ENT to move,
Press ▲▼ button to change
Press ENT to confirm
Setup Gateway 192.168.000.000
ENT
Gateway Setting 192.168.000.000
Setup OK
Press ENT to move,
Press ▲▼ button to change
Press ENT to confirm
OSW MODL
ENT
Setting OSW
Setup OK
Press ▲▼ button to change
Range +8dBm~-6dBm
Press ENT to confirm
To set the threshold of optical switch
Maintain -6dB OFF
ENT
Maintain Setting OFF/ON
Setup OK
Press ▲▼ button to turm on/off
ON: -6dB
OFF: -6dB down off
-6dB by one button
EXIT
Note: After device restart, maintain -6dB function off and the device will return to normal output


Warning Info
ENT
Output Power
Normal/Abnormal
Input Power
Low/Normal/High
Single Input model
Input 1 Power
Low/Normal/High
Dual Inputs model
Input 2 Power
Low/Normal/High
Dual Inputs model
Pump 1 Bias
Low/Normal/High
Pump 2 Bias
Low/Normal/High
Pump 1 TEC
Low/Normal/High
Pump 1 TEMP
Low/Normal/High
Switch Key
ON/OFF
5V Power
Equipment Temp
Low/Normal/High
EXIT

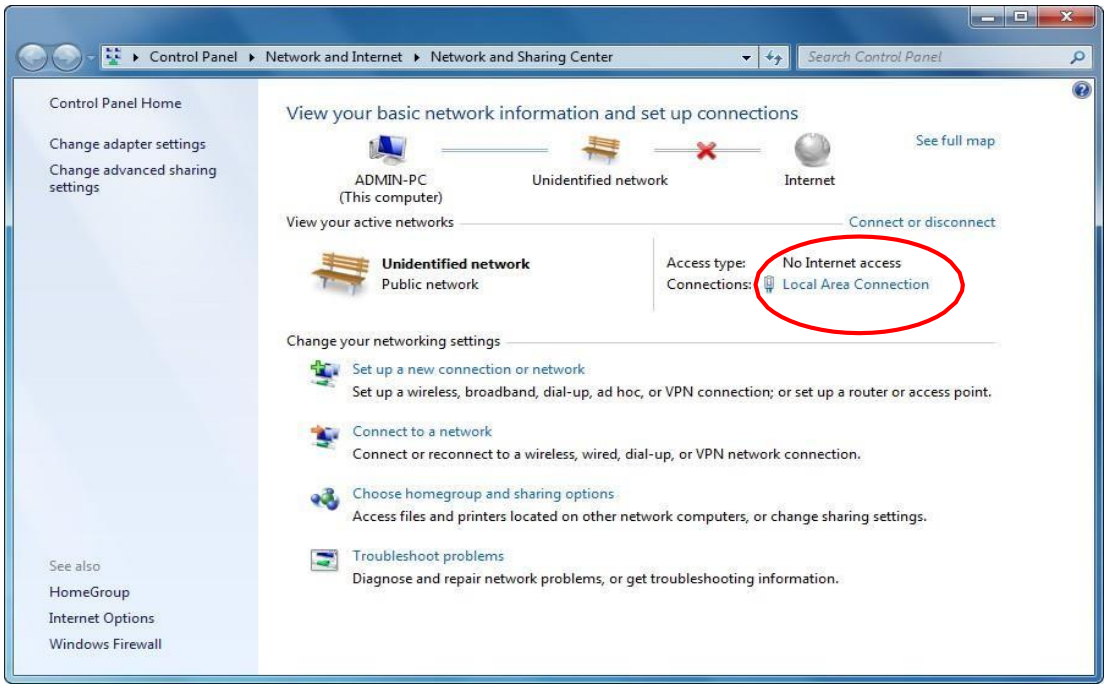
3.2 WEB Management Interface (Web GUI)

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.

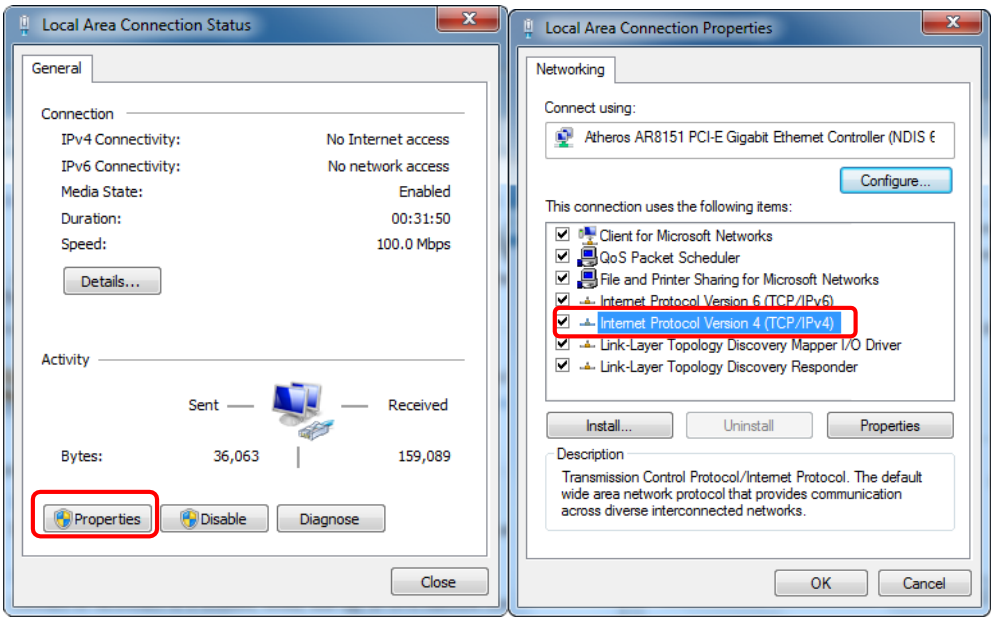
1. Find the IP address of the device in the LCD panel menu. The default IP address is 192.168.0.22. Set the IP address of the computer to the same network segment as the device, find the "network" icon on the desktop of windows system, select the icon, right-click the mouse, and select "properties" in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



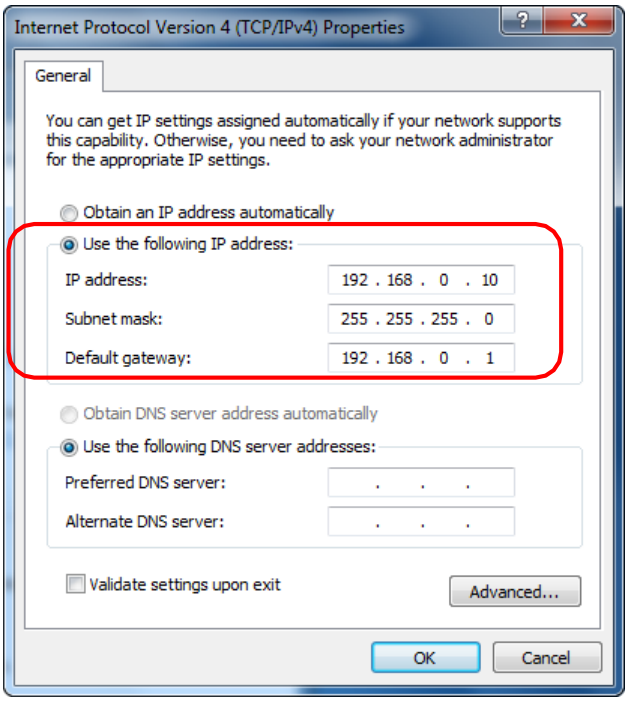
Click "Local Area Connection" in the pop-up version



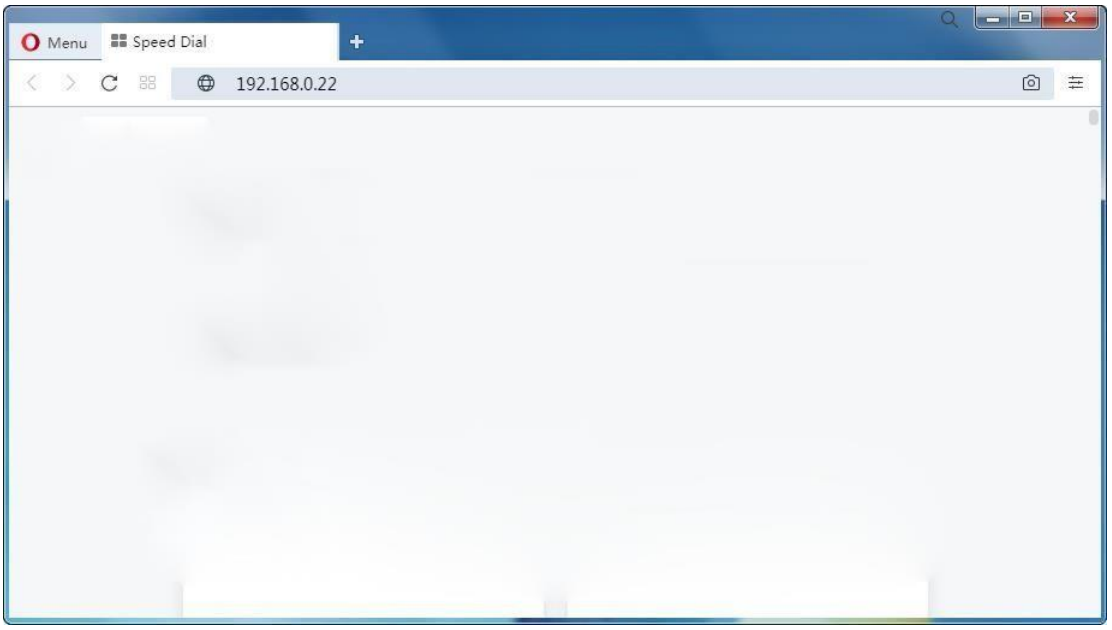
In the “Local Area Connection Status” menu, select “Properties”, and then double-click “Internet Protocol Version 4 (TCP / IPv4)”.



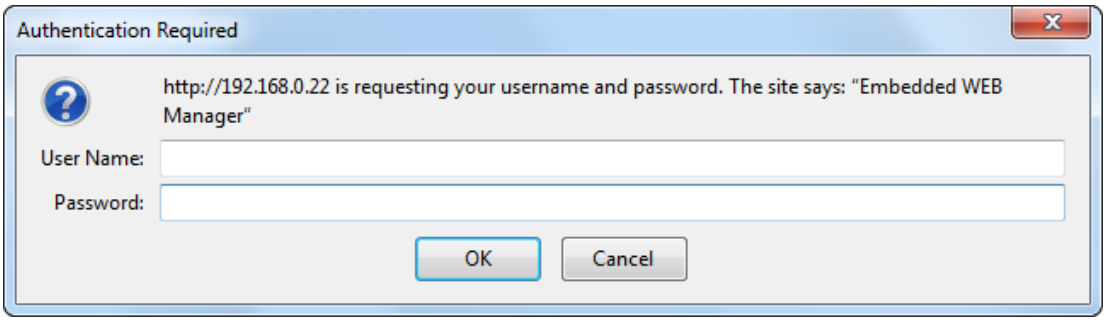
Set the IP address to make the IP address and the device in the same network segment, so that the computer can access the device.



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



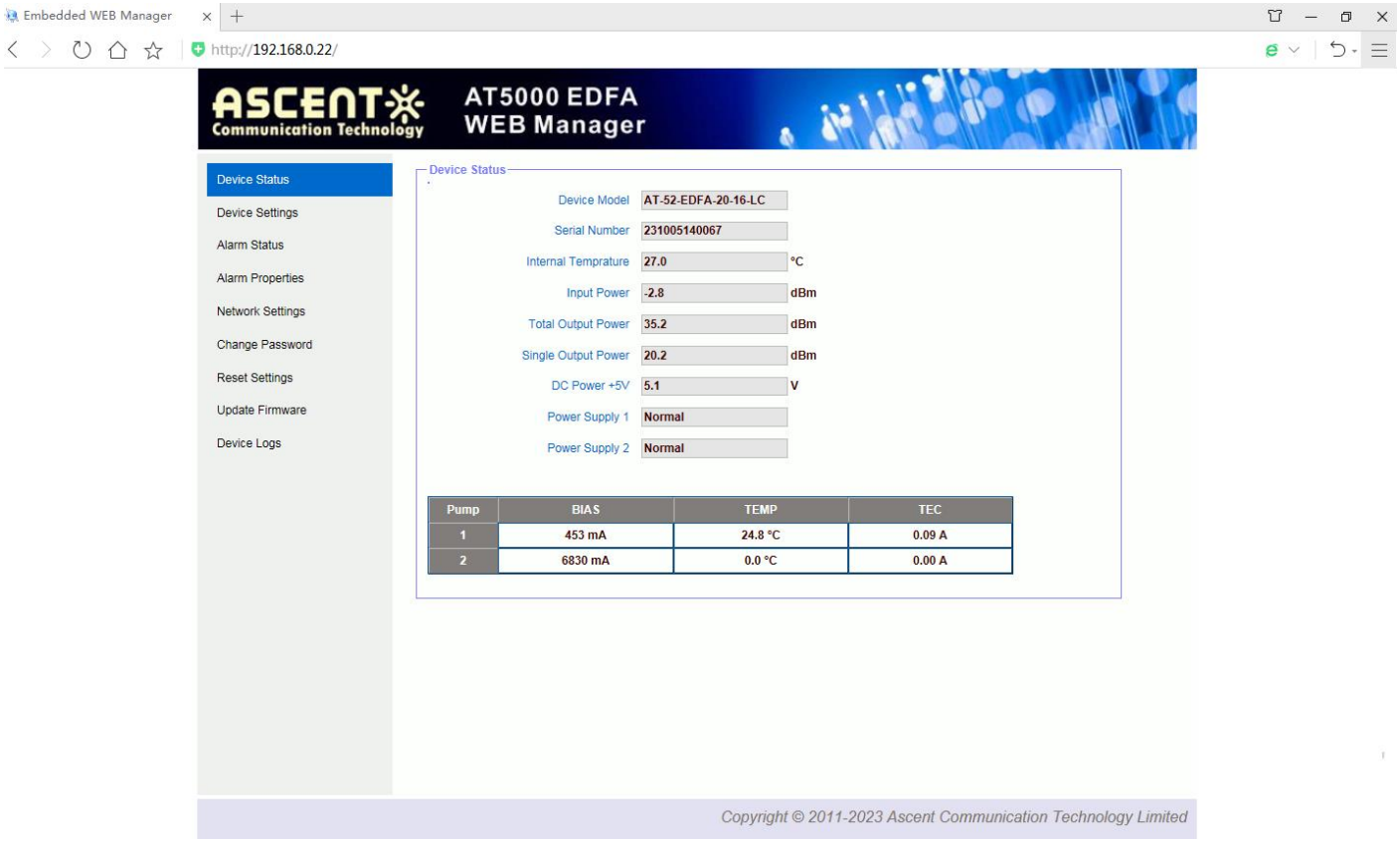
First Time Log-in to WEB Manager

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

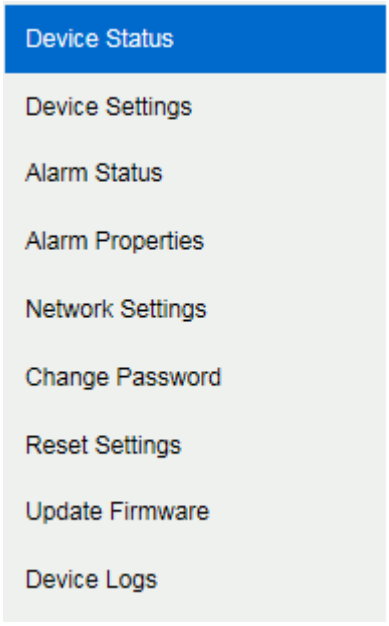
If in future you forget the user name and password you set up, or for any other reasons in need to change to default, the product can be restored to factory setting, click Reset Settings on the left-bar, then click Restore Factory, the setting will revert to default state, and the username and password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

3. The browser displays the device status page by default

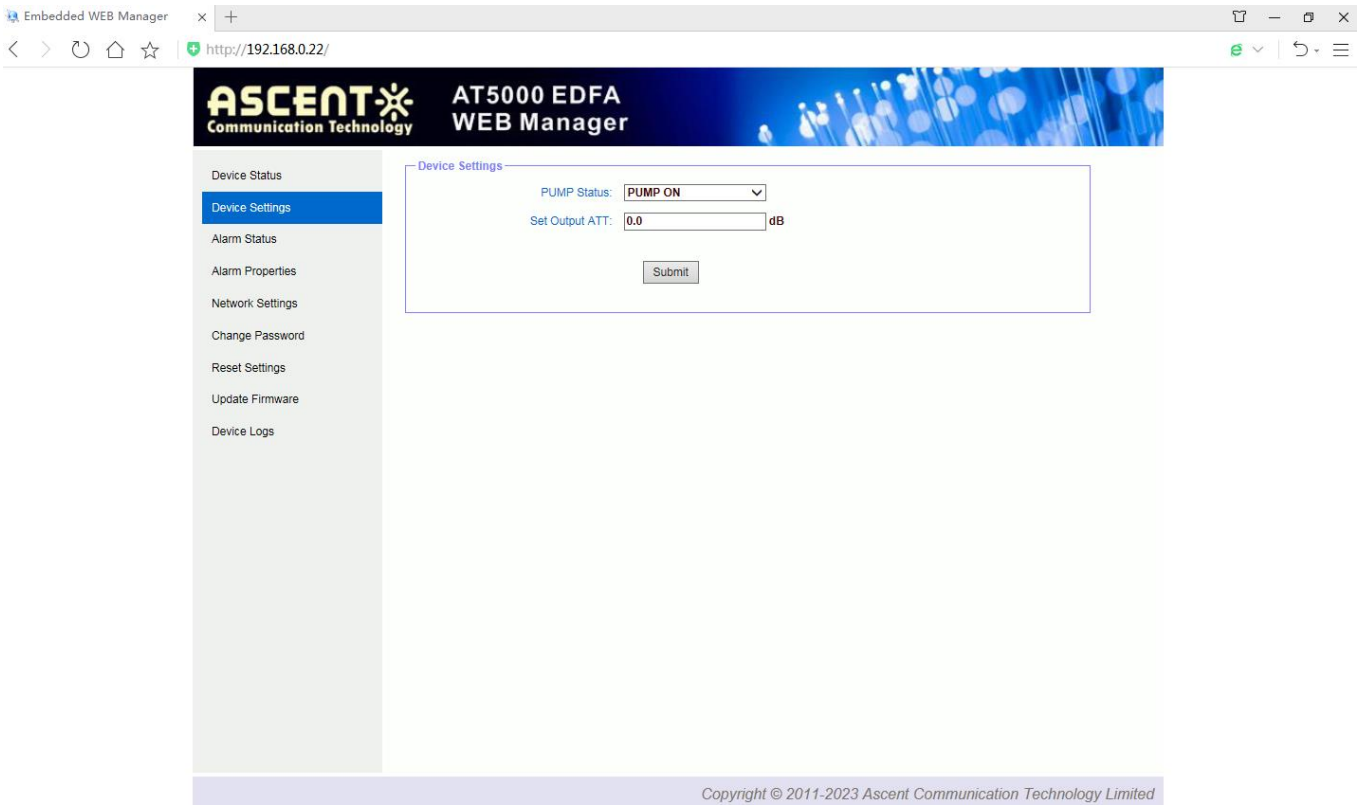


Real Time Device Status Page

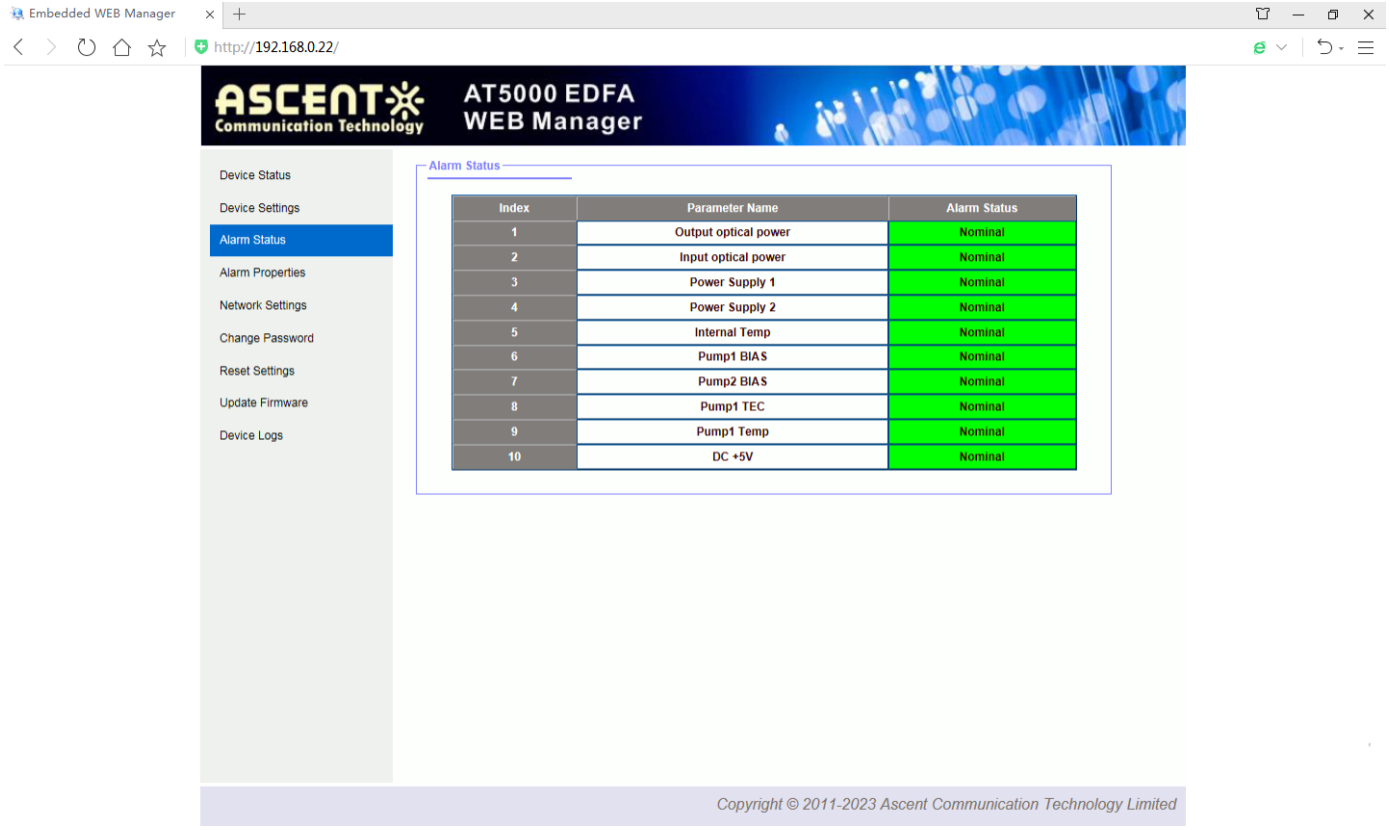
4. The left side of the page is the menu navigation bar. Click to enter the corresponding menu page



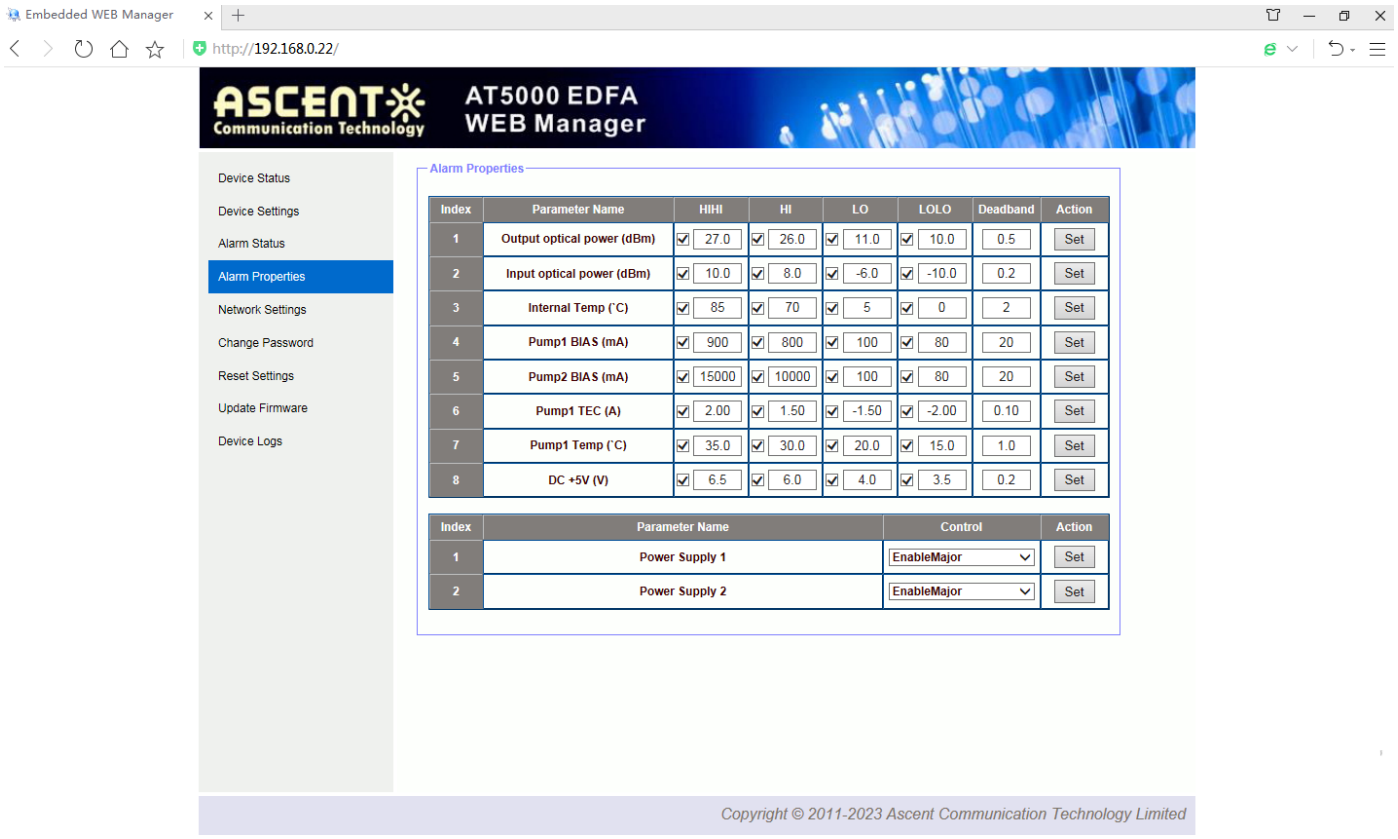
Page Navigation Bar



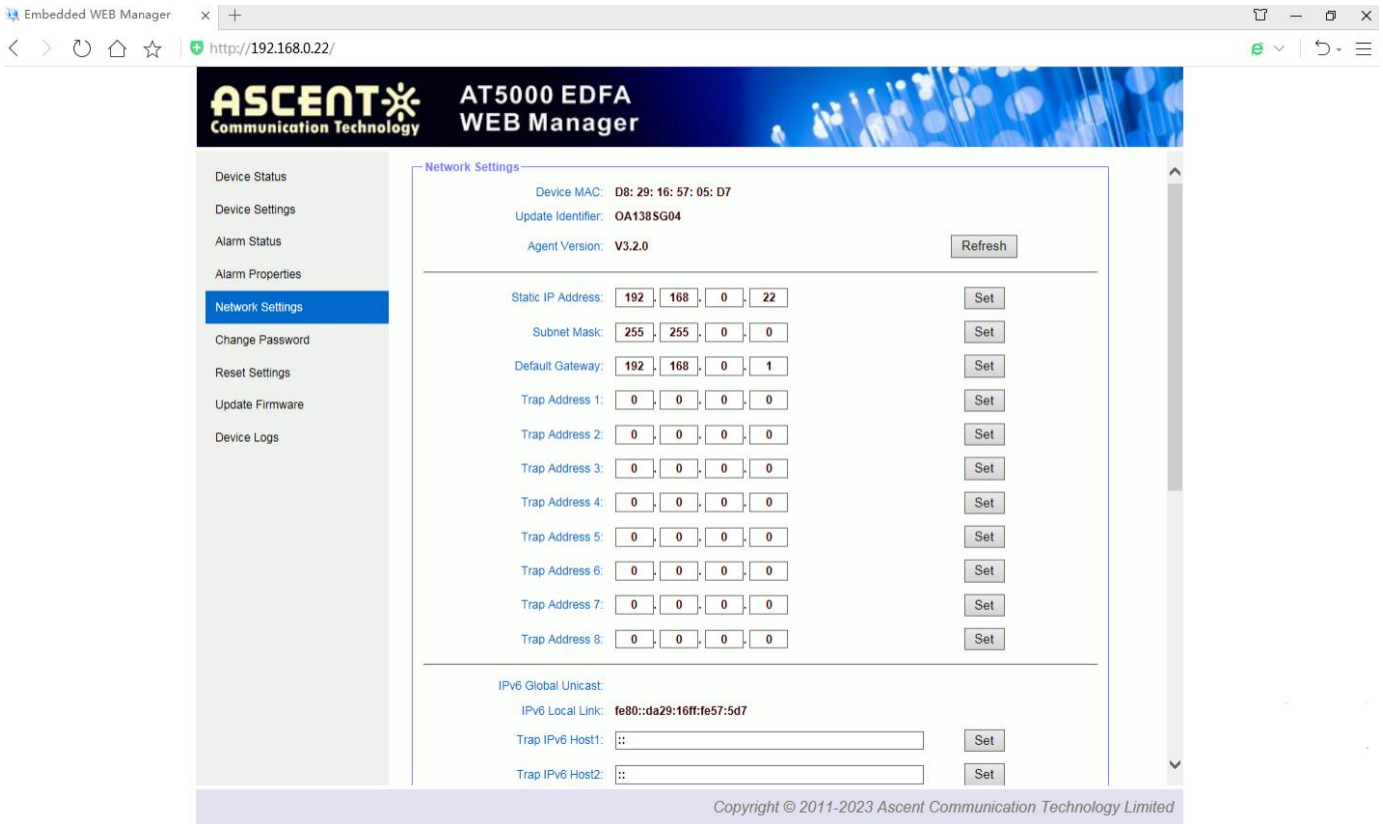
Device Settings Page

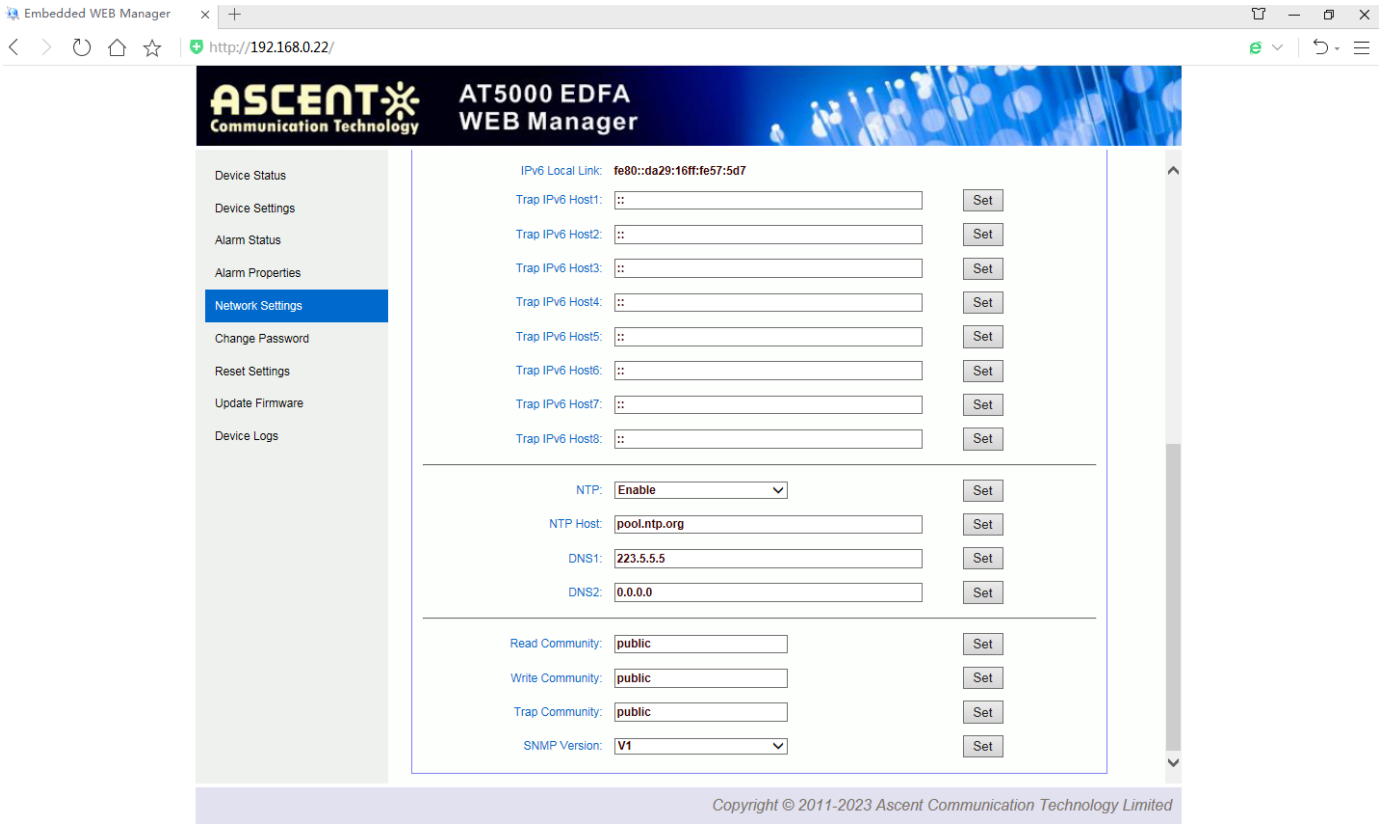


Alarm Status Page

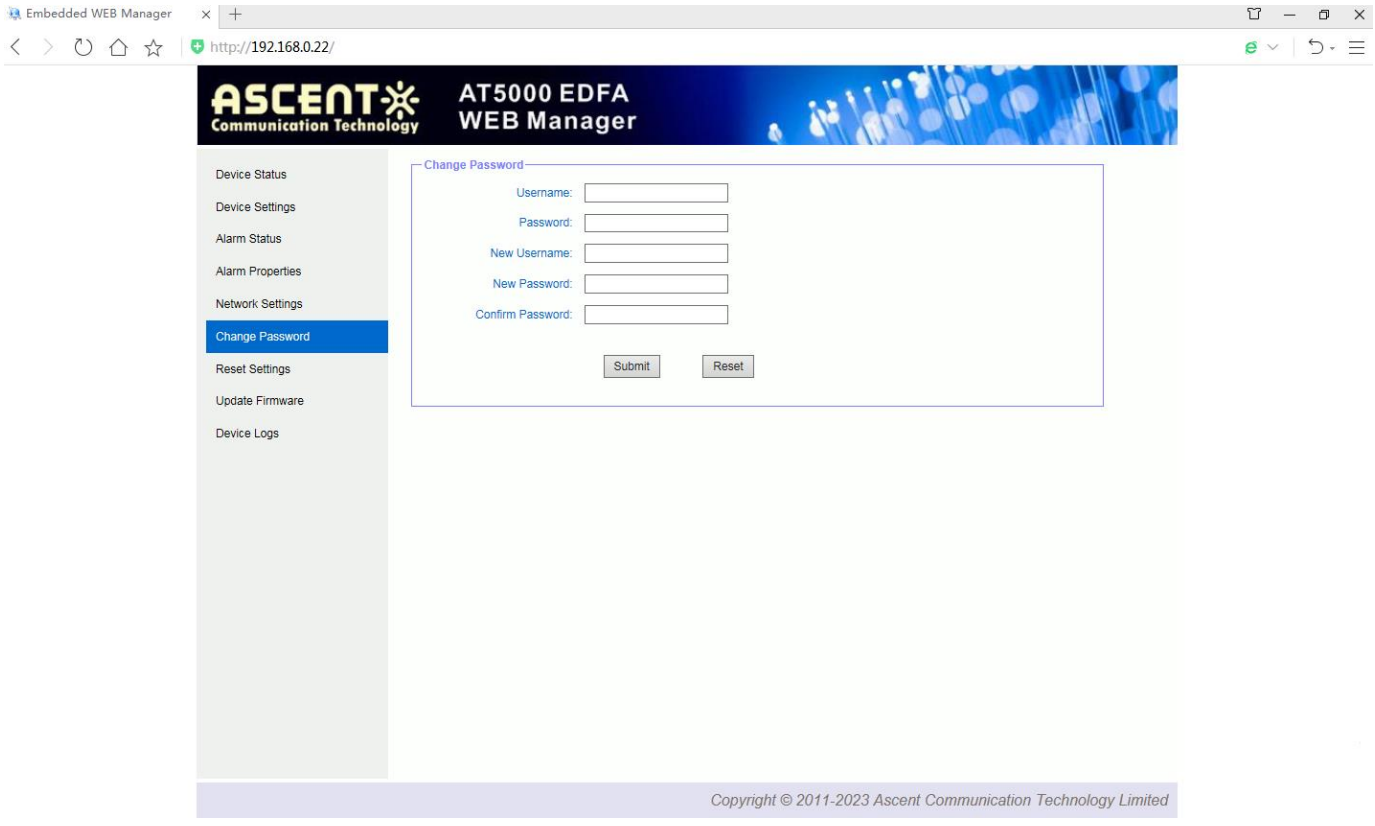


Alarm Properties Settings Page



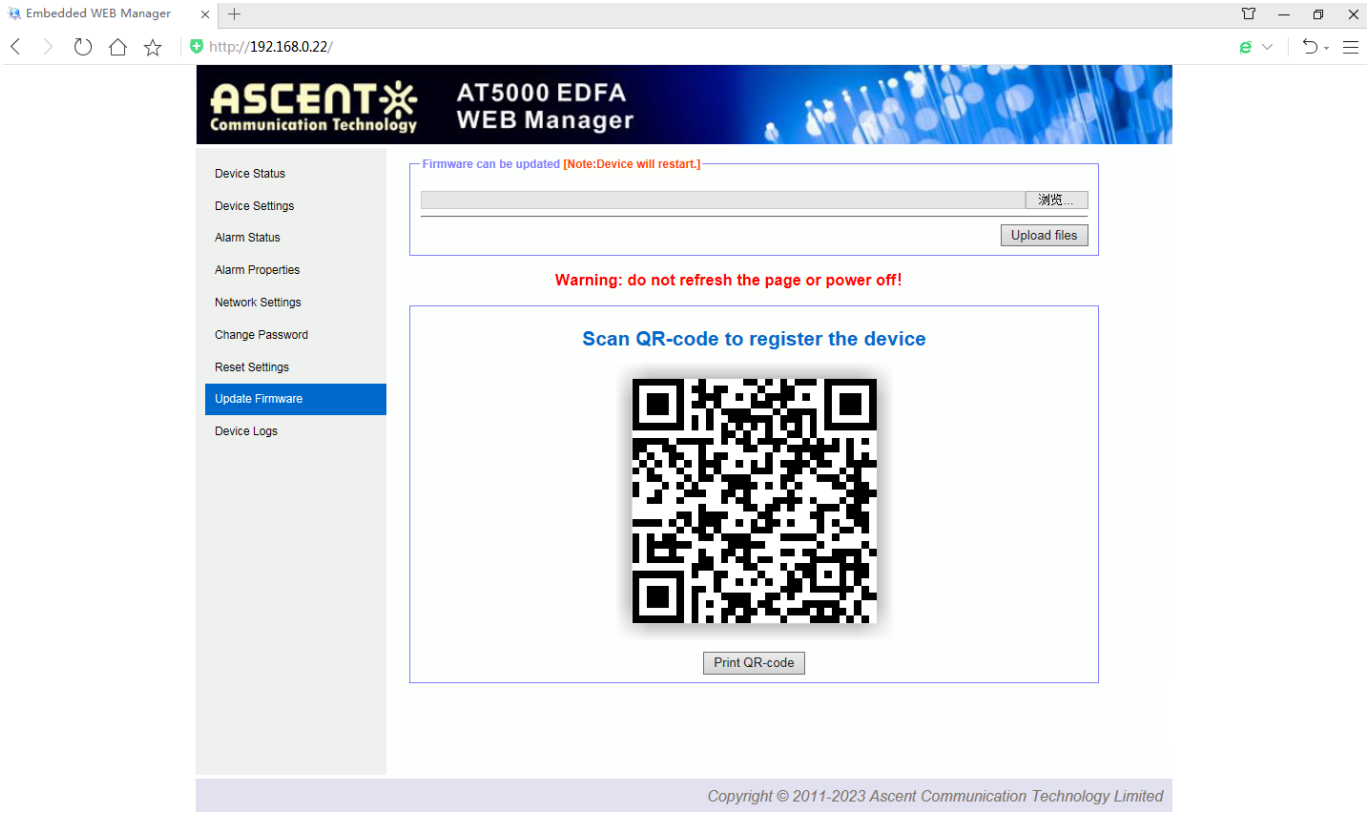


Network Settings Page

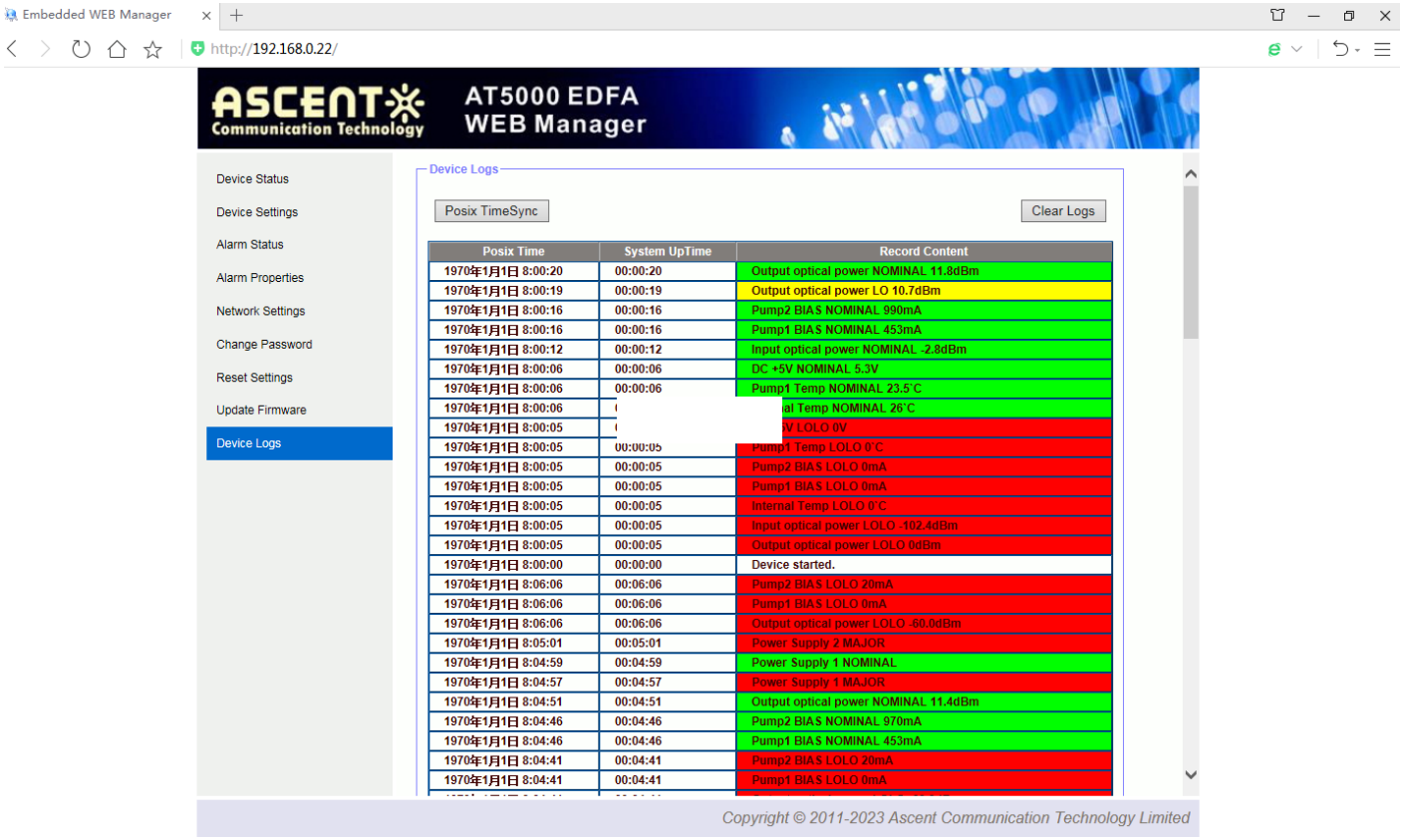


Change Password Page

Restore Settings Page



Update Firmware



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	Replace the fiber connector	The advised optical power per port ≤ 19 dBm
		Output interface of EYDFA or patch cord is dirty.	Clean the output interface with industrial anhydrous alcohol or dust-free paper	
		Power meter error	Change power meter	Top brand power meter is advised
		The wavelength deviation of input optical signal is far from 1550nm	Adjust the wavelength of optical transmitter	
6	LCD display shows output is about 0 to 4dB lower than specified value	Checking if the ATT attenuation in “setting info" is enabled	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	

Ascent Communication Technology Ltd

AUSTRALIA
140 William Street, Melbourne
Victoria 3000, AUSTRALIA
Phone: +61-3-8691 2902

HONG KONG SAR
Unit 9, 12th Floor, Wing Tuck Commercial Centre
177 Wing Lok Street, Sheung Wan, HONG KONG
Phone: +852-2851 4722

CHINA
Unit 1933, 600 Luban Road
200023, Shanghai CHINA
Phone: +86-21-60232616

USA
2710 Thomes Ave
Cheyenne, WY 82001, USA
Phone: +1-203 816 5188

EUROPE
Pfarrer-Bensheimer-Strasse 7a
55129 Mainz, GERMANY
Phone: +49 (0) 6136 926 3246

VIETNAM
15 /F TTC Building, Duy Tan Street
Cau Giay Dist., Hanoi, VIETNAM
Phone: +84 243 795 5917

WEB: www.ascentcomtec.com

EMAIL: sales@ascentcomtec.com

Specifications and product availability are subject to change without notice.
Copyright © 2022 Ascent Communication Technology Limited. All rights reserved.
Ver. ACT_2RU_Multiport_EDFA_QRG_V2k_Oct_2022