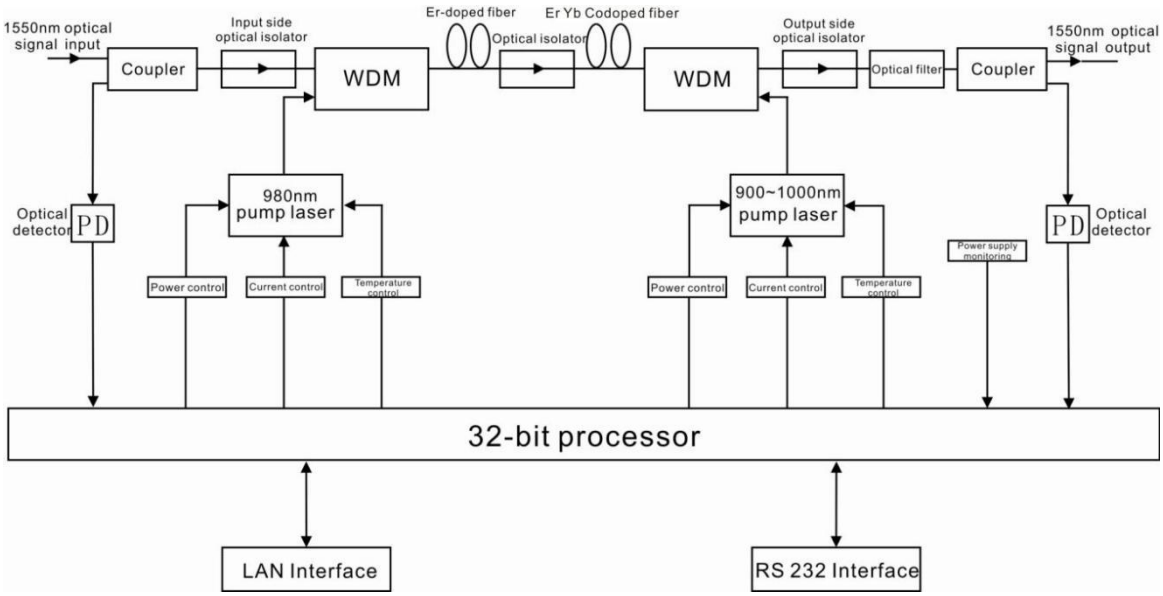
WE-1550-RT1 Series High-power Optical Amplifier

1. Product Overview

WE-1550-RT optical amplifier uses well-known high-performance erbium-ytterbium co-doped double-clad fiber and low-noise pump laser. It has a reliable circuit design and efficient heat dissipation design. The maximum total output power of the whole machine can reach +36dBm, and it supports up to 32 outputs, with optional optical switch, CWDM, and RF detection. It provides SNMP protocol network management software and WEB network management, suitable for amplified transmission of downstream 1550nm optical signal in FTTH network.

2. Block diagram



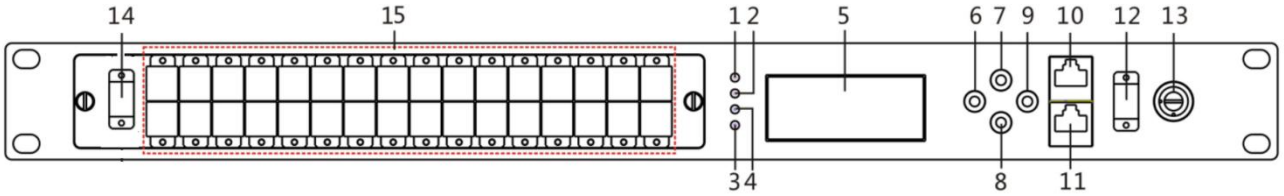
3. Technique Parameter

Item		Unit	Technique parameters	Remark
EDFA				
Operating wavelength		nm	1545 - 1565	
Optical input power range		dBm	-10 - +10	
Output power stability		dBm	±0.5	
Noise figure		dB	≤ 5.5	input power: 0dBm
Return loss	Input	dB	≥ 50	
	Output	dB	≥ 50	
Optical connector type			SC/APC , LC/APC or E/2000	
Pump leakage to input		dBm	≤ -30	
Pump leakage to output		dBm	≤ -30	
Polarization Dependent Gain		dB	＜0.5	

Polarization Mode Dispersion	Ps	＜0.5	
Optical power adjustable range	dB	6	accuracy 0.1dB
optical detection	dB	-20±1	
General Characteristics			
Power voltage	V	AC 100 ~ 240/(50-60 Hz); DC 36 ~ 72	
Total power consumption	W	≤ 50	
Operating temperature range	℃	-10 - +50	
Operating relative humidity	%	Max 85% no condensation	
Storage temperature range	℃	-40 - +80	
Dimensions	mm	483 (L) x 360 (W) x 44 (H)	

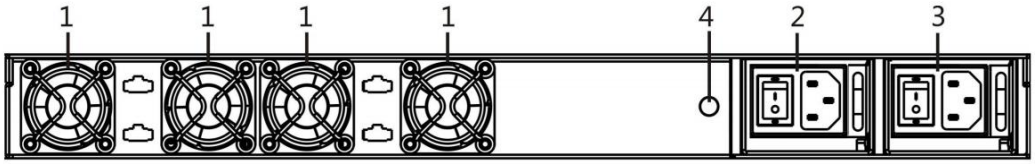
4 External Function Description

4.1 Front Panel Description



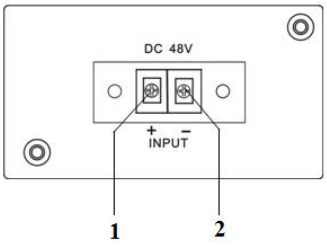
1. Power indicator: One switching power supply is working – yellow; two switching power supplies are working – green.
2. Optical input power indicator: This light turns on when the optical input power is > -10dBm.
3. Pump working status indicator: Red light means the pump is not working, but the machine parameters are normal; flashing red light means the machine has broken down, related fault reason see the alarm menu of the display menu; green light means the pump is working normal
4. Optical output power indicator: This light turns on when the optical output power is > +10dBm.
5. 160×32 dot-matrix LCD screen
6. Display the exit or cancel key of the setup menu.
7. Display the up or increase key of the setup menu.
8. Display the down or decrease key of the setup menu.
9. Display the enter key of the setup menu.
10. RJ45 port
11. RS232 port
12. Optical input test port
13. Pump laser switching key: “ON” means the pump laser is open and “OFF” means the pump laser is closed. Ensure the key is on “OFF” position before power on. After passing self-test, rotate the key to “ON” position according to the displayed message.
14. Optical signal input
15. Optical signal output

4.2 Rear Panel Description



1. Fan outlet	2. Power supply 1
3. Power supply 2	4. Ground stud of the chassis

4.3 DC Power Introduction



1	+ Positive terminal block
2	- Negative terminal block

5 Menu System

5.1 Main Menu

Name	Display	Description
System Starting	xxxxxxx	Manufacturers' logo
	xxxxxxx	Equipment model
	xxxxxxx	Start countdown / lock status
Suspend Page	In: xx.x out: xx.x Unit: dBm	Display the optical input / output power Unit: dBm
Main Page	1.Disp Parameters	Entry of parameter display menu
	2.Set Parameters	Entry of parameter setup menu
	3.Alarm Status	Entry of alarm information menu

5.2 Display Menu

Input Power : *xx.x dBm*	Input power, accurate to *0.1 dBm*
Output Power: *xx.x dBm*	Output power，accurate to *0.1 dBm*
PreEDFA Power:*xx.x dBm*	The first stage amplification. output power, accurate to *0.1 dBm*
Current Channel	Current channel *A/B*
Pump1 Bias: *xx.x mA*	Bias current of pump1, accurate to *1 mA*
Pump1 Temper: *xx.x ℃*	Temperature of pump1, accurate to *0.1°C*
Pump1 Tec: *xx.x mA*	Cooling current of pump1, accurate to *1 mA*
Pump2 Bias: *x.x mA*	Bias current of pump2, accurate to *1 mA*
Pump2 Temper: *xx.x ℃*	Temperature of pump 2, accurate to *0.1°C*
+5V Read: *x.x V*	+5V power supply voltage , accurate to *0.1 V*
System Temper: *xx ℃*	Housing temperature, accurate to *0.1 °C*
SN	Device serial number
IP Addr	IP address
Mask	Subnet mask

Gateway	Gateway
MAC	Physical address
Trap Addr1	trap1 address
Trap Addr2	trap2 address
NTP Addr1	NTP server1 address
NTP Addr2	NTP server2 address
UTC Offset	UTC offset
Firmware Ver	Firmware version number

5.3 Setup Menu

Low Input Threshold	Set low alarm threshold of optical input power, range: -10.0～10.0dBm
High Input Threshold	Set high alarm threshold of optical input power, range: -10.0～10.0dBm
Set EDFA Mode	APC or ACC
Set Output Power	Set optical output power
Set IP Addr	Set IP address
Set Mask	Set subnet mask
Set Gateway	Set gateway
Set Trap1 Address	Set trap1
Set Trap2 Address	Set trap2
Set NTP Server1	Set NTP server1 address
Set NTP Server2	Set NTP server2 address
Set UTC Offset	Set UTC offset
Set Buzzer Switch	Set buzzer switch
Restore Factory Config	Restore the factory default configuration

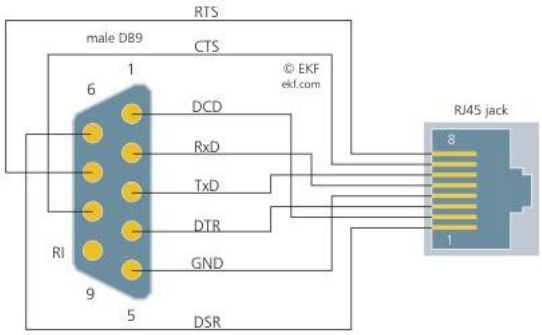
5.4 Warning menu

Input power: *xxx*	*xxx= Lolow:*	Very low optical input power alarm
	xxx= Low:	Low optical input power alarm
	xxx= High:	High optical input power alarm
	Xxx= Hihigh:	Very high optical input power alarm
Output power: *xxx*	*xxx= Lolow:*	Very low optical output power alarm
	xxx= Low:	Low optical output power alarm
	xxx= High:	High optical output power alarm
	Xxx= Hihigh:	Very high optical output power alarm
System temperature: *xxx*	*xxx= Lolow:*	Very low device temperature alarm
	xxx= Low:	Low device temperature alarm
	xxx= High:	High device temperature alarm
	Xxx= Hihigh:	Very high device temperature alarm
Pump laser current: *xxx*	*xxx= Lolow:*	Very low current alarm of pump x
	xxx= Low:	Low current alarm of pump x
	xxx= High:	High current alarm of pump x
	Xxx= Hihigh:	Very high current alarm of pump x
Pump laser power: *xxx*	*xxx= Lolow:*	Very low power alarm of pump x
	xxx= Low:	Low power alarm of pump x
	xxx= High:	High power alarm of pump x
	Xxx= Hihigh:	Very high power alarm of pump x
Pump laser temperature: *xxx*	*xxx= Lolow:*	Very low temperature alarm of pump x

	xxx= Low:	Low temperature alarm of pump x
	xxx= High:	High temperature alarm of pump x
	Xxx= Hihigh:	Very high temperature alarm of pump x
Power supply voltage: *xxx*	*xxx= Lolow:*	Very low +5V DC power supply alarm
	xxx= Low:	Low +5V DC power supply alarm
	xxx= High:	High +5V DC power supply alarm
	Xxx= Hihigh:	Very high +5V DC power supply alarm
Fan	*Fan invalid*	Cooling fan is invalid

6.Communication Setup Descriptions

6.1 Connection Description: RJ45 to DB-9

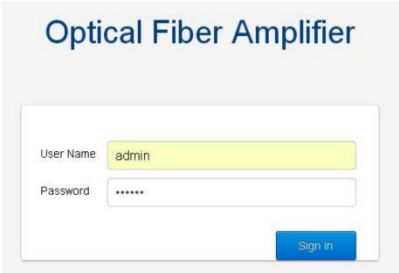


RJ-45 PIN	DB9 female PIN
1	2
2	3
6	5
3	1
4	4
5	6
7	7
8	8

The communication is asynchronous, and the byte frame format is: 1 start bit, 8 data bits, 1 stop bit, no parity; baud rate: 38400 bps.

6.2 WEB Network Management

- Opening the IE browser and entering the equipment IP address leads to the following interface:
- user name: **admin** password:：**123456**

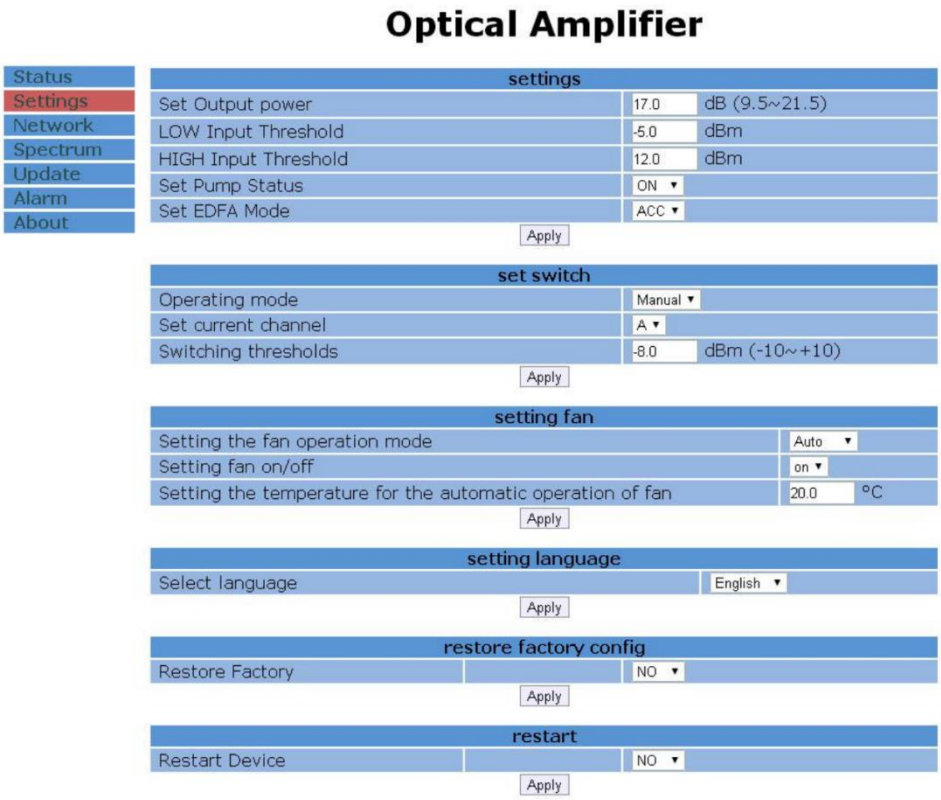


- **Status interface: display EDFA parameters**

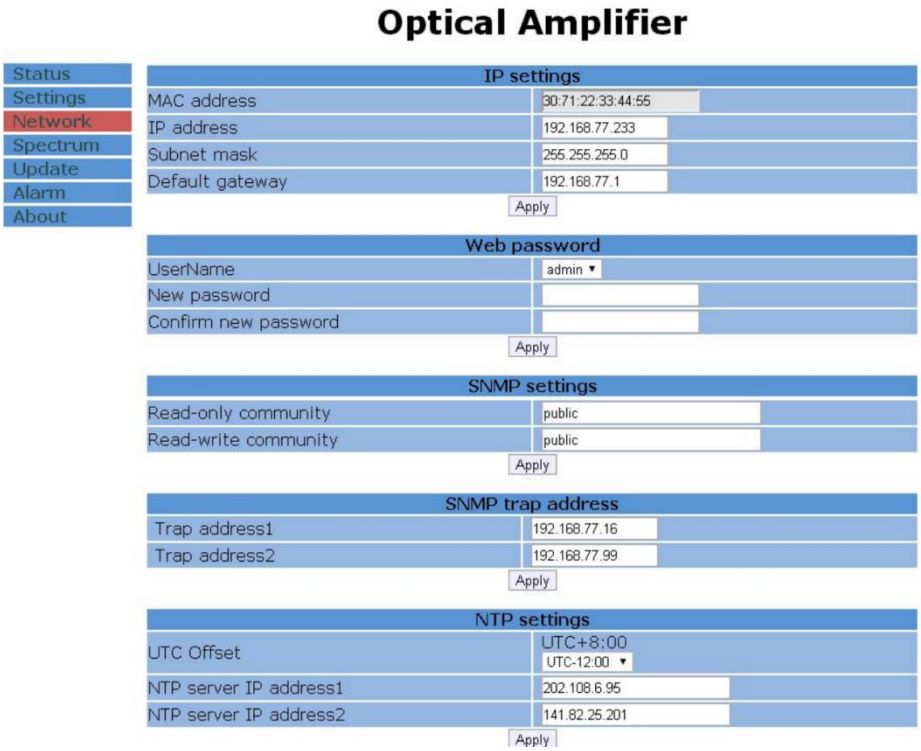
Optical Amplifier

	status	
Status	Input powerA	0.0 dBm
Settings	Input powerB	-99.0 dBm
Network	Ouput power	17.0 dBm
Spectrum	Current Channel	A
Update	Pump1 bias	551 mA
Alarm	Pump1 temperature	24.6 °C
About	Pump1 tec	64 mA
	Pump2 bias	1800 mA
	Pump2 temperature	25.0 °C
	Device temperature	23.8 °C
	DC +5V	4.9 V
	Power1 Status	off
	Power2 Status	on
	Up-time	0 days 00:46:02

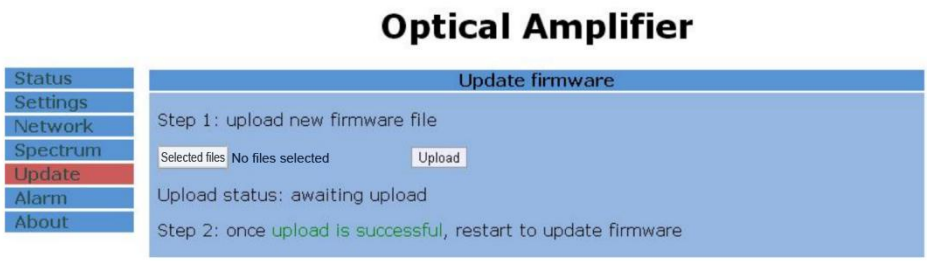
- **Settings interface: set EDFA parameters**



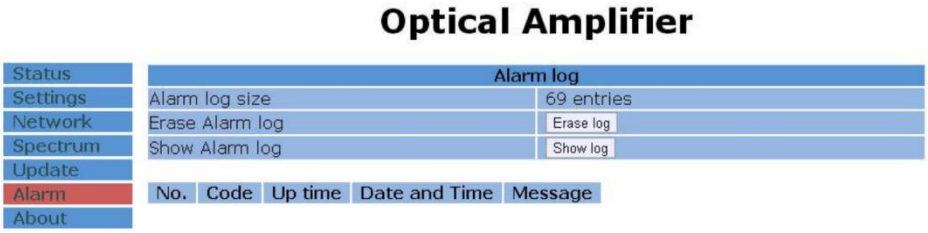
- **Network interface: Configure network parameters**



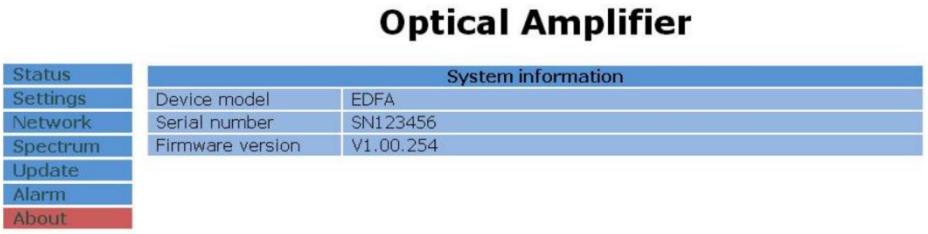
- **Update interface: Software online upgrade**



- **Alarm interface: Display alarm information**



- **About interface: EDFA related information**



7 Attention

- Ensure the package is not defaced. If the equipment is damaged due to transportation or other reasons, please don't electrify to avoid worse damage.
- Before powering on, make sure that the grounding terminals of the chassis and power socket are reliably grounded, and the grounding resistance should be ＜4Ω, which can effectively protect against surges and static electricity.
- Optical amplifier is a highly technical professional equipment,its installation and debugging must be operated by professional technicians. Read this manual carefully before operating to avoid damage to equipment caused by fault operation or accident harm to the operator.
- When installing and debugging optical equipment, invisible laser beams may be emitted inside the fiber connector.Avoiding permanent harm to the body and eye, the fiber connector should not aim at the human body and human should not look directly at the fiber connector with the naked eye!
- There must be no shielding outside the ventilation holes of the device. Poor ventilation will cause the index to decrease, and in serious cases will cause damage to the device.
- When cleaning the fiber end face, you must confirm that the optical source is turned off.
- When the fiber connector is not in use, put a dust cover to avoid dust pollution and keep the end surface of the optical fiber clean.
- When installing the fiber connector, apply appropriate force to avoid damage to the adapter. Otherwise, the output optical power may decrease.