
1550nm High Power Multi Ports PON EDFA (2RU)

User's Manual

XGSPON EDFA

I . Products Descriptions

XGSPON EDFA high power fiber amplifier adopts two-stage amplification, the first stage adopts low-noise EDFA, the second stage adopts high-power EDFA, the total output optical power can reach 41dBm. It can replace several or dozens of EDFA, which can greatly reduce the cost of network building and maintenance and reduce the space of head-end. Each output port is built in with CWDM to multiplex CATV signal and OLT PON Data flow. The device will play an increasingly important role in the process of continuous extension and expansion of optical fiber network. It provides a high stability but low cost solution for the triple-play and large area coverage of FTTH.

Optional dual fiber inputs, in fact, built-in with a set of complete optical switch system , which can be used as the backup of A and B optical path. When the main optical line fails or lower than the threshold value, the device will automatically switch to the standby optical line to ensure the continuous operating of the device. The product is mainly used in optical fiber ring network or redundant backup network, It is featured in short switching time (< 8ms), low loss (< 0.8dbm) , and can be forced manually switched.

The core components adopts the top brand pump laser and double cladding active fiber. The optimized optical circuit design and manufacturing process ensure the best optical performance. The perfect electronic controlled APC (automatic power control), ACC (automatic current control) and ATC (automatic temperature control) are adopted to ensure high stability and reliability of output power, as well as excellent optical performance.

MPU (microprocessor) with high stability and precision is adopted in the system. The optimized thermal structure design , good ventilation and heat dissipation design ensure the long life and high reliability of the device. Based on the powerful network management function of TCP / IP protocol, network monitoring and head-end management can be carried out for the status of multiple node equipment through RJ45 network management interface, supporting multiple power supply redundancy configurations, which improved the practicability and reliability of the device.

Special Notes

In consideration of the request of inserting and plugging patch cord in the working state of the device, a maintenance function with a rapid drop of 6dB is added to protect the fiber core.

The output power is reduced by 6dB instead of turning off the power supply. It will not cause a large area of out of service, but only a short-time signal decline.

The function is featured in :

A. After 6dBm reduced, the output power per port is $\leq 18\text{dBm}$, the value makes it Available To pug in and out patch cord without hurting or burning the fiber core of patch cord.

B. It can return to original working status quickly after maintenance.

Features

1.1 It adopts the top brand pump laser and double cladding active fiber.

1.2 Each output port is built in with CWDM.

1.3 Compatible with any FTTx PON: EPON、GPON、10GPON.

1.4 Perfect APC, ACC and ATC optical circuit design ensures low noise, high output and high reliability of the device in the whole operating band (1545 ~ 1565nm).

1.5 It has the function of automatic protection of low input or no input. When the input optical power is lower than the set value, the laser will automatically shut down to protect the operating safety of the device.

1.6 Output adjustable, adjustment range : 0~-4dBm.

1.7 RF test in the front panel(optional).

1.8 The switching time of optical switch is short and the loss is small. It has the functions of automatic switching and forced manual switching.

1.9 Built- in dual power supply, automatically switched and hot plug supported.

1.10The operating parameters of the whole machine are controlled by

microprocessor, and the LCD status display on the front panel has many functions such as laser status monitoring, parameter display, fault alarm, network management, etc.; once the operating parameters of the laser deviate from the allowed range set by the software, the system will alarm promptly.

1.11 Standard RJ45 interface is provided, supporting SNMP and WEB remote network management.

II. Installation

2.1 Preparation before installation

2.1.1 Please examine the machine to see if there is distinct

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

2.2 Installation

2.2.1 Please keep a space about 4.5cm between machines for ventilation.

2.2.2 Please make sure: the socket works very well and well grounded; The impedance $\leq 4\Omega$; 220V power with three cables, the middle one should connected to the ground. Incorrect grounding may hurt the device or influence the quality of signal.

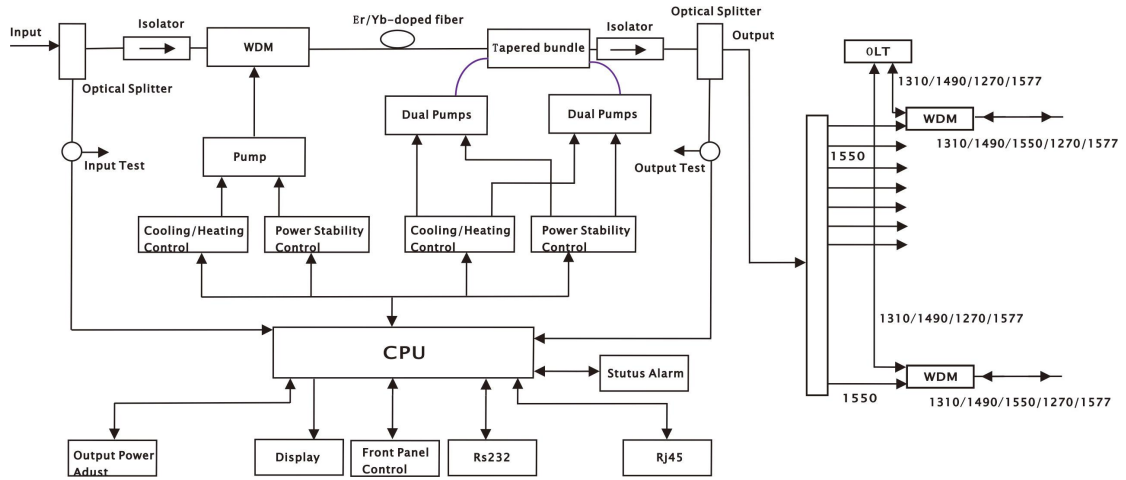
2.2.3 Please make sure the power supply button in the rear panel turn to OFF before the power supply cable connected.

2.2.4 Please keep the interface of the fiber clean before connecting the fiber.

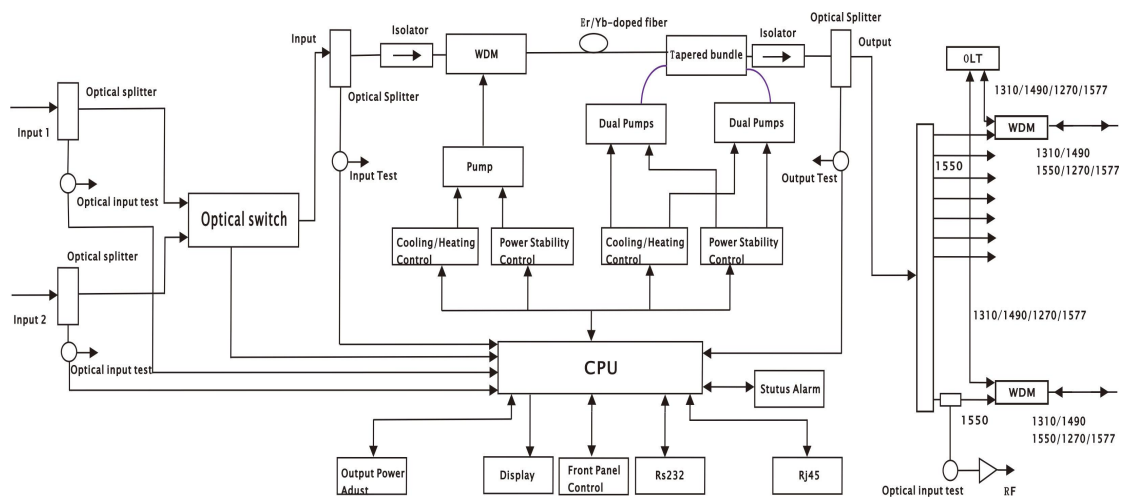
III. Operation

3.1 Diagram

Single Input Model



Dual Inputs Model

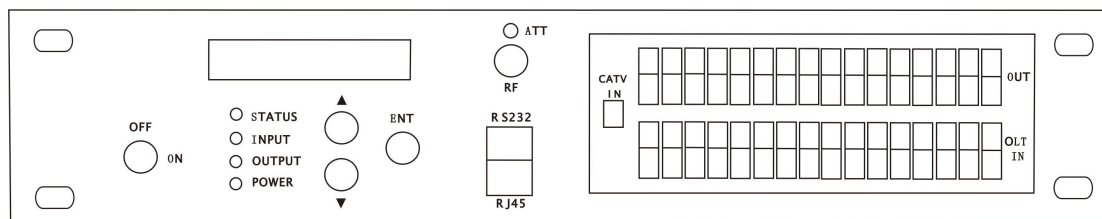


3.2 Main Technical Parameters

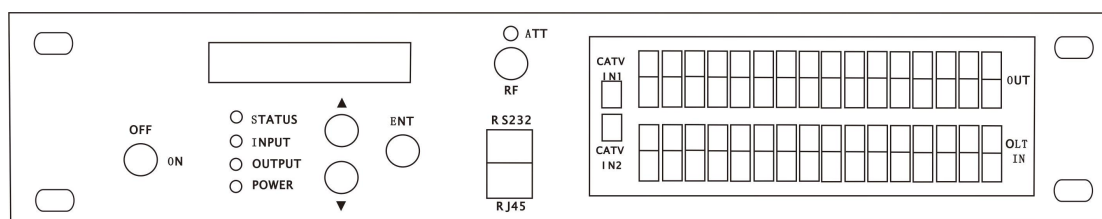
| Category | Items | Unit | Index | | | Remarks |
|---------------|---------------------------|------|---------------------|------|------|---------|
| | | | Min. | Typ. | Max. | |
| Optical Index | CATV Operating Wavelength | nm | 1545 | | 1565 | |
| | OLT PON Pass | nm | 1310/1490/1270/1577 | | | CWDM |

| | | | | | | |
|---------------|----------------------------------|------------|--------------------|----|------------------|---------------------------|
| | Wavelength | | | | | |
| | Optical Input Range | dBm | -10 | | +10 | |
| | Output Power | dBm | | | 41 | |
| | Output adjustment Range | dB | -4 | | 0 | |
| | Output ATT | dB | | -6 | | |
| | Output Ports Uniformity | dB | | | 0.7 | |
| | Output Power Stability | dB | | | 0.3 | |
| | No. of OLT PON Ports | | | | 32 | |
| | | | | | 64 | |
| | No. of COM Ports | | | | 32 | |
| | | | | | 64 | |
| | 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 | |
| | Insertion Loss of Optical Switch | dB | | | 0.8 | |
| | Noise Figure | dB | | | 6.0 | |
| | 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 Index | RF Test | dB μ V | 78 | | 82 | |
| | 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 Temp | °C | -5 | | +65 | |
| | Storage Temp | °C | -40 | | +85 | |
| | Operating Relative Humidity | % | 5 | | 95 | |
| | Dimension | mm | 370×483×88 | | | D、W、H |
| Weight | Kg | 7.5 | | | | |

3.3 Front Panel Instructions



Single Input

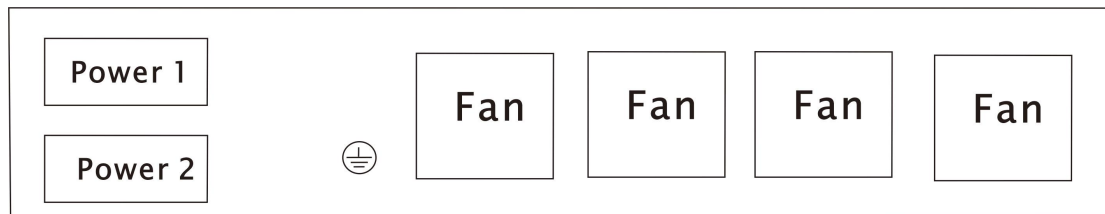



Dual Inputs

| S/N | Identification | Name | Remarks | |
|-----|----------------|---------------|---|--------------|
| 1 | LCD | LCD Display | To display the parameters of the device | |
| 2 | STATUS | Device Status | LED Green, Device working | |
| | | | LED Red, Device alarming or faulty | |
| 3 | 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 | |
| 4 | OUTPUT | Fiber Output | LED Green, Fiber output is within normal range | |
| | | | LED Red, Fiber output is out of normal range | |
| 5 | POWER | Power Supply | LED Green, Dual power supply working | |
| | | | LED Yellow, Single power supply working | |
| 6 | CATV IN | CATV input | 1550nm fiber input | Single input |
| 7 | CATV IN1 | CATV input 1 | 1550nm fiber input 1 | Dual Inputs |
| 8 | CATV IN2 | CATV input 2 | 1550nm fiber input 2 | Dual Inputs |
| 9 | OLT IN | OLT Input | OLT Input | CWDM |
| 10 | OUT | Fiber Output | Fiber Output | |
| 11 | ▲ ▼ | Buttons | Start menu page turning and set the device | |
| 12 | ENT | Enter | Confirmation after menu page turning and device setting | |

| | | | |
|----|---------|---------------|--|
| 13 | OFF/ON | Key | ON pump laser on , OFF pump laser off |
| 14 | RF TEST | RF test point | Output level 78 ~ 82dB μ V Optional |
| 15 | RS232 | RS232 Port | Local programming |
| 16 | RJ45 | RJ45 Port | Remote SNMP and WEB supported |

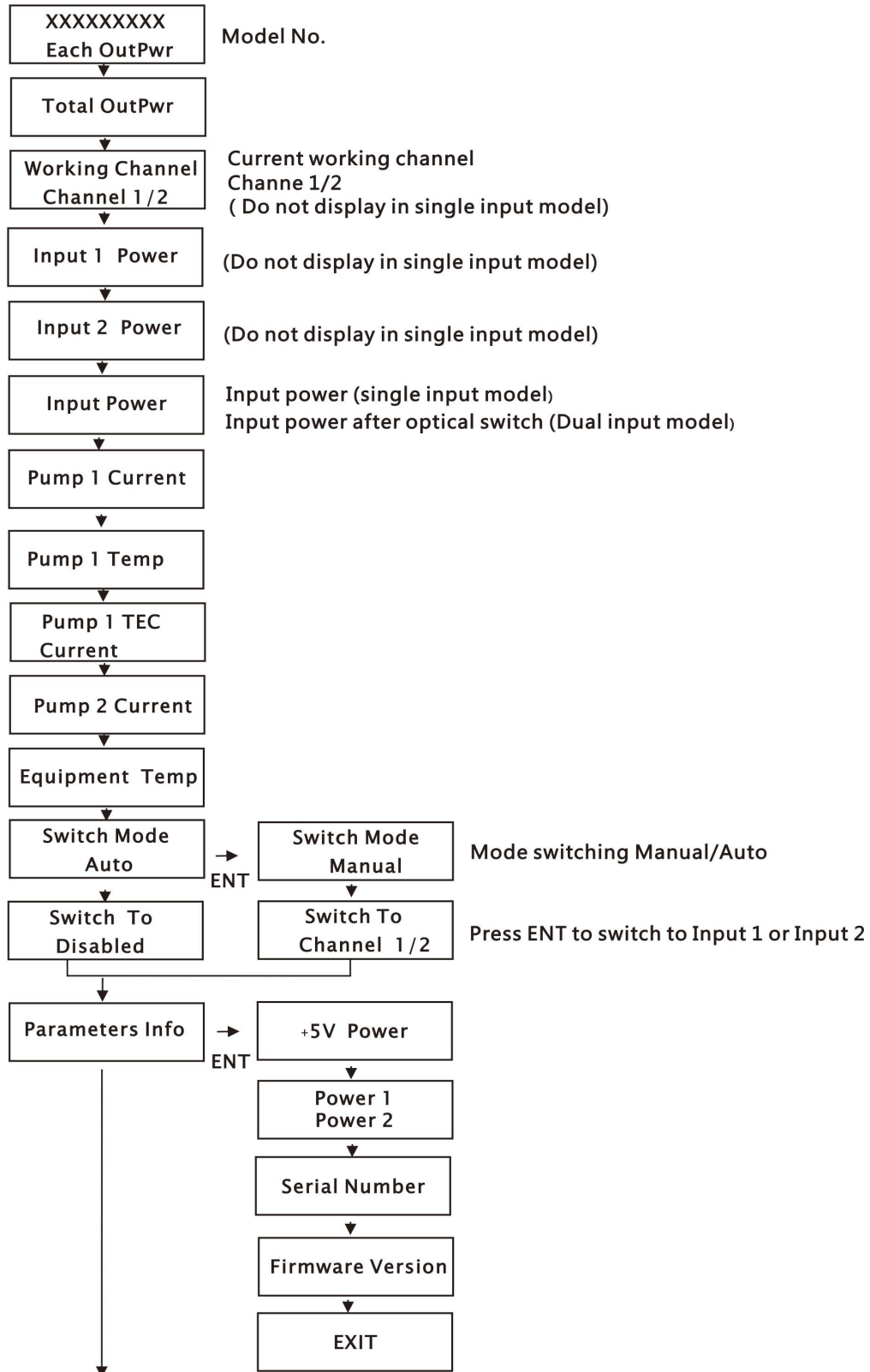
3.4 Rear panel Instructions

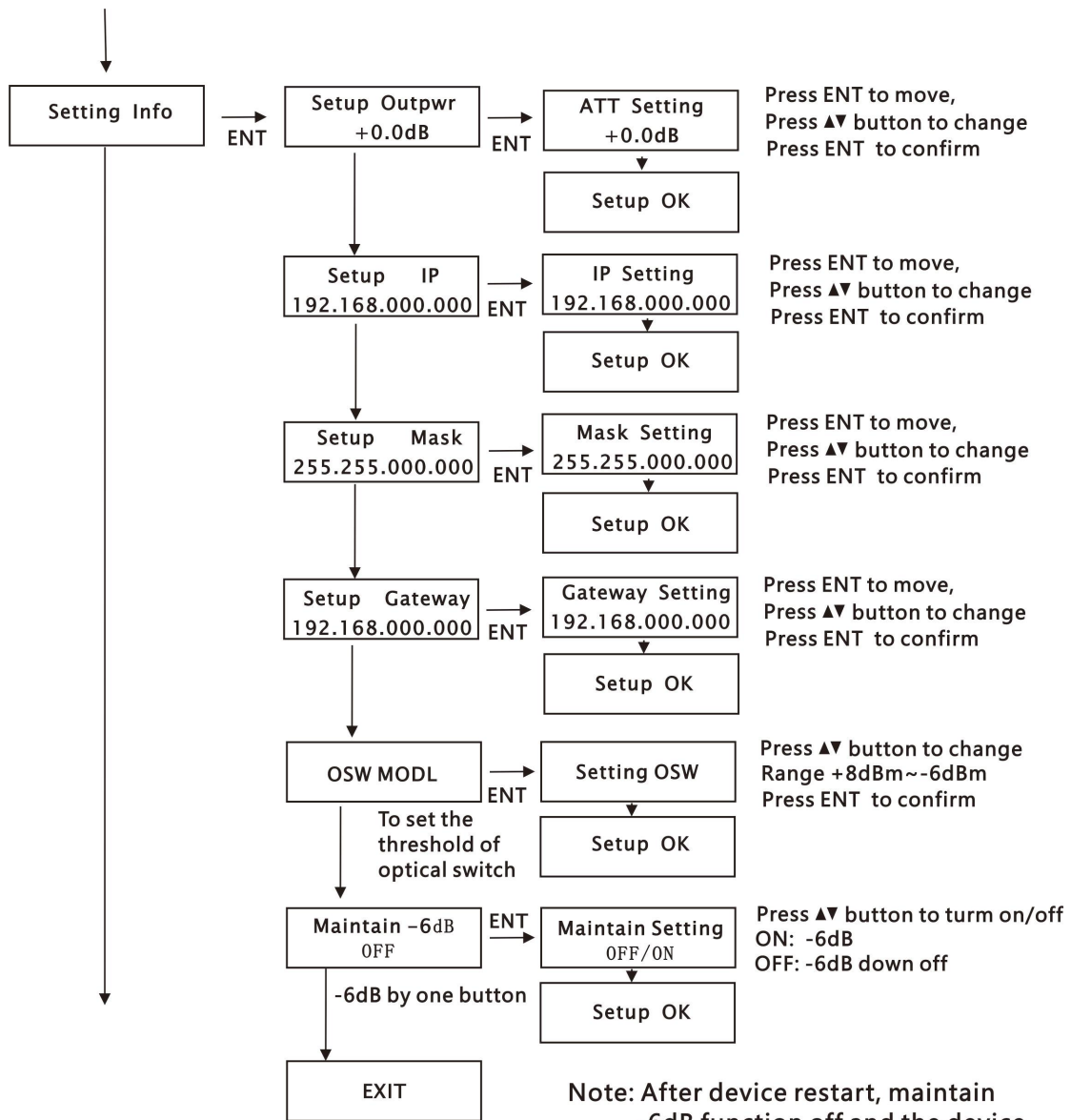


| S/N | Identification | Items | Remarks |
|-----|---|----------------|-------------------------------|
| 1 | Fan | Fan | For the cooling of the device |
| 2 |  | Grounding Port | For Grounding |
| 3 | Power1 | Power Socket1 | Hot plug in/out supported |
| 4 | Power2 | Power Socket 2 | Hot plug in/out supported |

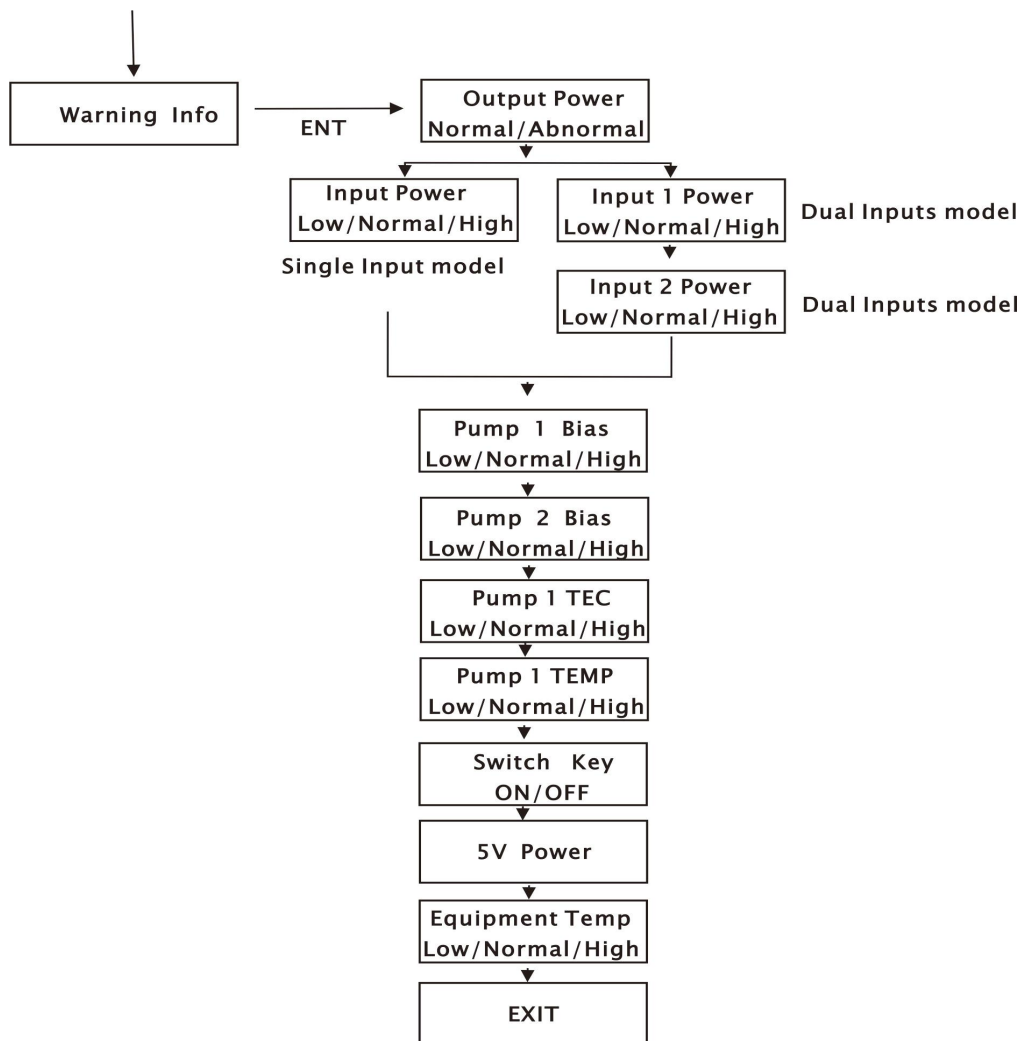
3.5 Front Panel Operation

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





Note: After device restart, maintain -6dB function off and the device will return to normal output



IV. Products Series

| | | | |
|--------------------|----|--------------------|-----------------------|
| Total Output Power | | No. of Output Port | Output Power per Port |
| dBm | mW | | |

| | | | |
|----|-------|-----|------|
| 28 | 630 | 4 | 20.5 |
| | | 8 | 17.0 |
| 29 | 800 | 4 | 21.5 |
| | | 8 | 18.0 |
| 30 | 1000 | 4 | 22.5 |
| | | 8 | 19.0 |
| 31 | 1250 | 8 | 20.0 |
| | | 16 | 16.5 |
| 32 | 1600 | 8 | 21.0 |
| | | 16 | 17.5 |
| 33 | 2000 | 8 | 22.0 |
| | | 16 | 18.5 |
| | | 32 | 15.0 |
| 34 | 2500 | 8 | 23.0 |
| | | 16 | 19.5 |
| | | 32 | 16.0 |
| 35 | 3200 | 8 | 24.0 |
| | | 16 | 20.5 |
| | | 32 | 17.0 |
| 36 | 4000 | 16 | 21.5 |
| | | 32 | 18.0 |
| 37 | 5000 | 16 | 22.5 |
| | | 32 | 19.0 |
| | | 64 | 15.5 |
| 38 | 6300 | 16 | 23.5 |
| | | 32 | 20.0 |
| | | 64 | 16.5 |
| 39 | 8000 | 32 | 21.0 |
| | | 64 | 17.5 |
| 40 | 10000 | 32 | 22.0 |
| | | 64 | 18.5 |
| | | 128 | 15.0 |
| 41 | 12500 | 32 | 23.0 |
| | | 64 | 19.5 |
| | | 128 | 16.0 |

V. Notes

5.1 Static-sensitive pump laser is applied in the EYDFA, please note that electrostatic protection should be applied in the storage of the EYDFA and it should not be stored with corrosive material, and the storage temperature should be between - 40 °C and + 85 °C.

5.2 As the output power of EYDFA is high, please do not turn on the power supply before the EYDFA 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.

5.3 Please don't now attempt to look into the optical connectors when power applied, eye damage may result.

5.4 Please don't block the cooling holes of the device and keep it in good ventilation

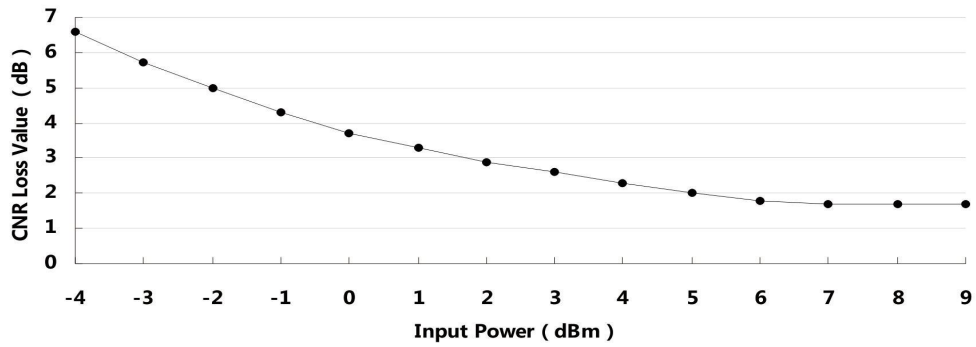
5.5 Please use anhydrous industrial alcohol instead of medical alcohol to wash the fiber connector if necessary after the power supply of the device turned off.

5.6 For high power EYDFA , 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.

5.7 Please don't test the EYDFA repeatedly, otherwise the fiber connector interface may be hurt and the output power decreased.

5.7 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



VI、 Solution to some ordinary problems

| 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 OUTPUT Red LCD Display "KEY OFF" | The key turned to OFF | Turn the key to ON | |
| 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 $\leq 19\text{dBm}$ |
| | | 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 ~ 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 19dBm | |

VII. Warranty Terms

1550nm series EYDFA are covered by LIMITED WARRANTY AS NEGOTIATED , which starts from the initial date of your purchase. We provide its customer whole-life technical supports. If warranty is expired, repair service only charges parts (if required). In the event that a unit must be returned for service, before returning the unit, please be advised that:

7.1 Warranty mark pasted on the housing of unit must be in good conditions.

7.2 A clear and readable material describes model number, serial number and troubles should be offered.

7.3 Please pack the unit in its original container. If the original container is no longer available, please pack the unit in at least 3 inches of shock absorbing material.

7.4 Returned unit(s) must be prepaid and insured. COD and freight collect can not be acceptable.

NOTE: we **do not** assume responsibility for damage caused by improper packing of returned unit(s).

The following situation is not covered by warranty:

1. The unit fails to perform because of operators' faults.
2. Warranty mark is modified, damaged and/or removed.
3. Damage caused by Force Majeure.

4. The unit has been unauthorized alteration and/or repaired.
5. Other troubles caused by operators' faults.