WT-1550-EML Optical Transmitter

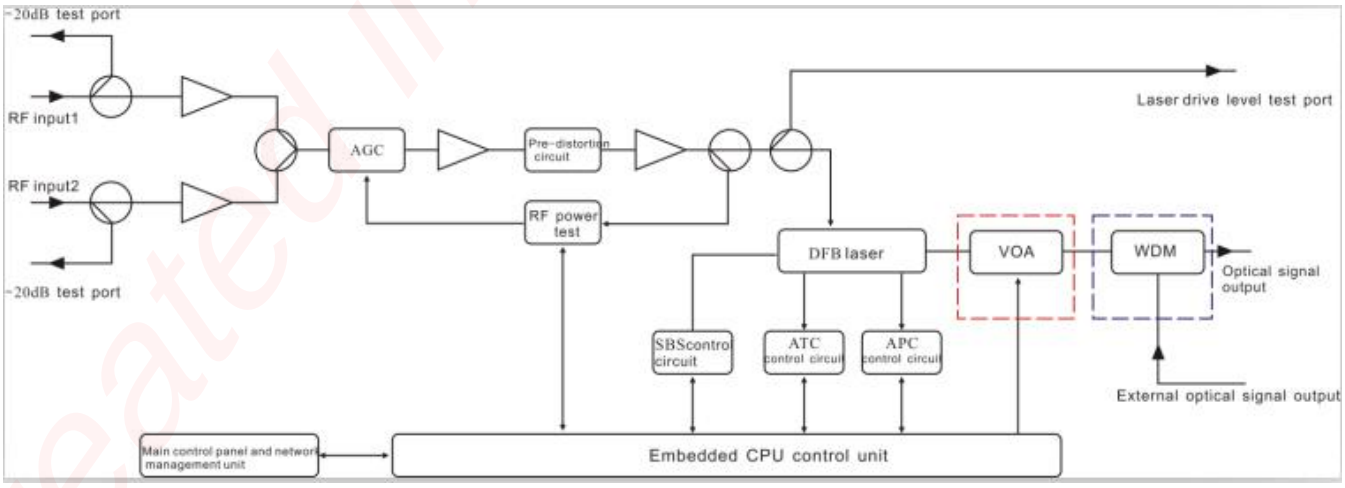
1. Product Overview

When the 1550nm is used as the downlink transmission wavelength, the expensive price of the 1550nm external modulated optical transmitter using the Mach-Zehnder Modulator and the severe dispersion effect of the conventional 1550nm directly modulated optical transmitter are the difficulties in network upgrade. So we have developed a 1550nm optical transmitter adopting the latest electroabsorption modulated laser (EML). It combines the advantages of the high performance, high SBS of external modulated transmitter and high integration ,low cost of directly modulated transmitter. SBS can be up to 20dB in distance transmission in 35KM, MER>40. Supports up to 1.2GHZ frequency band, two-way RF input, high isolation, can support QAM, IPQAM broadcast, insert functions. Can be built-in CWDM, multi-wavelength networking.

2 Features

- 1.2GHZ frequency band. 35KM，MER＞40dB。
- SBS can be up to 20dB, 0.5dB stepping.
- AGC、MGC gain control modes are optional.
- Two-way input, isolation up to 50dB, can achieve high-quality RF insert function.
- Dual power supply hot backup, multiple power supply modes are optional.
- Laser output power, bias current, and cooling current are detected in real time.
- Dual power supply hot backup，AC220V，DC48V are optional。
- Can be equipped with CWDM(optional) to achieve optical insertion.
- Support SNMP network management software and WEB network management.

3 Block diagram



Note: The optical attenuator and wavelength division multiplexer in the dotted box are optional.

4 Technical Parameter

Items	Unit	Technical Parameter	
Optical part			
Optical wavelength	nm	1550 (ITU wavelength is optional)	
Laser type		Electroabsorption modulated laser（EML）	
Optical connector type		FC/APC or SC/APC	
Output optical power	mW	10	Exclude optical attenuator and CWDM insertion loss
External optical input power (main channel)	dBm	-5～10	
RF part			
Frequency Range	MHz	47 ~ 870/1003/1218	
RF input level	dBuV	77± 5	
Flatness in band	dB	± 0.75	
Input return loss	dB	≥ 16	
RF AGC control range	dB	±5	
RF MGC adjustable range	dB	0 ~ 20	
SBS	dB	13 ~ 20，0.5dB stepping	
RF input isolation	dB	≥ 50	Isolation between two RF inputs
RF input test port	dB	-20±1	
Laser drive RF level test port	dB	-20±1	
Electronically controlled optical attenuator tolerance	dB	≤1：attenuator 0-15dB ≤3：attenuator 16-20dB	
CNR	dB	≥ 52	0Km，-1dBm receiver，59CH analog +40CH digital，77dBuV
C/CSO	dB	≥ 58	SBS：20dBm，25Km，-1dBm receiver 59CH analog +40CH digital，77dBuV
C/CTB	dB	≥ 58	
MER	dB	≥ 40	SBS：20dBm，25Km，-1dBm receiver 96CH 256QAM digital，77dBuV。
BER		≤10e-8	
Others			
Maximum power consumption	W	≤15	
Operating temperature	℃	-5 ~ + 55	
Storage temperature	℃	-30 ~ + 70	
Weight	Kg	5.5	

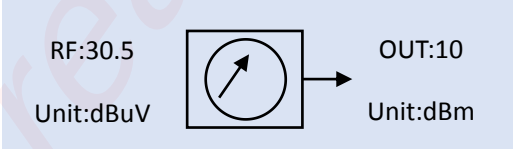
5 Display menu operation instructions

▲▼key: The cursor can be moved left or right or up and down, and the selected module or menu is highlighted.

Enter key: Press Enter to enter the next submenu or set the submenu. After the setting is completed, press Enter to confirm.

ESC key: Exit or return to the previous menu.

Visible display content after boot: Press Enter to enter the Level 1 submenu:



Laser drive level　　Output optical power

1.Disp Parameters	Parameter display menu
2.Set Parameters	Parameter setting menu
3.Alarm Status	Alarm status

Disp Parameters Level 2 submenu:

Laser Output	**xx dBm**	Laser output optical power
Voa Input	**xx dBm**	optical power after the attenuator, this menu is not visible without the WDM model.
Master Input	**xx dBm**	External optical input power, this menu is not visible without the WDM model.
Laser Bias	**xx mA**	Laser bias current
Laser Temp	**xx ℃**	Internal temperature of the laser
Tec current	**xx A**	Laser cooling current
RF Chan No	**xx**	Number of transmission channels of the system
Laser RF	**xx dBuV**	Laser drive level
RF Ctrl Mode	**AGC**	RF control mode
AGC Ref	**x dB**	AGC Offset (This menu is only available in AGC mode.)
MGC ATT	**x dB**	MGC Attenuation (This menu is only available in MGC mode.)
Wave Length	**1550**	Wavelength
+5V Read	**x v**	+5V Monitoring voltage
-5V Read	**x v**	-5V Monitoring voltage
+24V Read	**x v**	+24V Monitoring voltage
S/N		Serial number
BOX Temp	**xx ℃**	Current temperature inside the machine
IP Address		IP address of this machine
Mask		Subnet mask of this machine
GTW		Gateway of this machine
Mac		MAC address of this machine
SoftWare Ver		机内软件系统的版本号

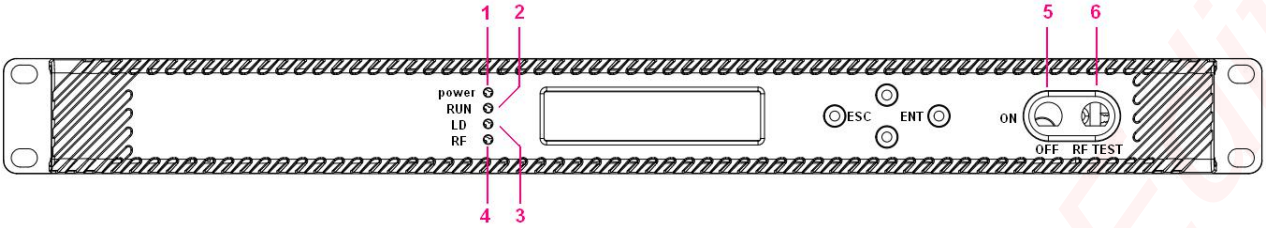
Set Parameters Level 2 submenu:

SetLaserOutputUnit	**dBm**	Optical power unit: dBm、mW are optional	
Set BuzzerAlarm	**ON**	Buzzer alarm: ON、OFF are optional	
SetRF ControlMode	**AGC**	RF control mode: AGC、MGC are optional	
Set MGC ATT	**XX dB**	MGC attenuation: 0-20 are optional	
Set AGC Ref	**XX dB**	AGC Offset: ±3dB is optional	
Set OPT ATT Mode	**AUTO**	Set the optical power attenuation mode: AUTO、Manu are optional	this menu is not visible without the WDM model.
Set OPT ATT	**XX dB**	Set the optical power attenuation: 0～15dB are optional.	
Set OPT Delta	**XX dB**	Set the difference between the main optical power and the inserted optical power	
Set SBS		Set SBS，13～20dB，0.5dB stepping	
SetChannel Number	**XX**	Number of channels: 0-100 are optional	
Set IP Addr		Set the local IP address	
Set Subnet Mask		Set the subnet mask	
Set GateWay		Set gateway	

Alarm Status Level 2 submenu:

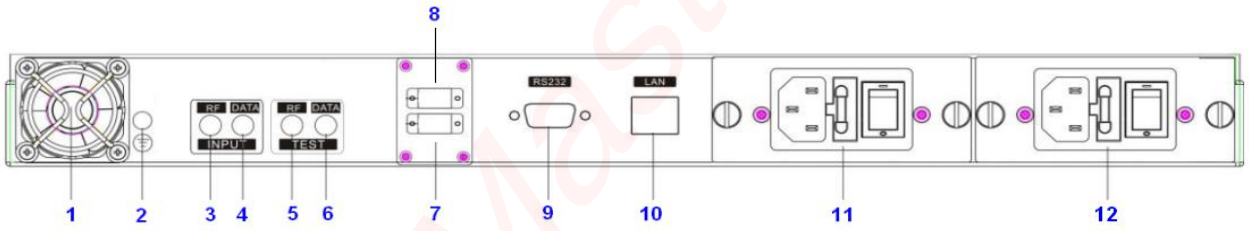
Laser RF	Drive level alarm: The default normal range is 80 to 110dBuV, which can be set through the network management.
Laser Temp	Laser temperature alarm: The default normal range is 25±10°C, which can be set through the network management.
Laser Bias	Laser bias current alarm: The default normal range is 20 to 90 mA, which can be set through the network management.
Laser TEC	Laser cooling current: The default normal range is -1.5~1.5A, which can be set through the network management.
Laser Output	Output optical power alarm: The default normal range is 2 to 25 mW, which can be set through the network management.
+5V Alarm	+5V alarm: The default normal range is 5±1V, which can be set through the network management.
-5V Alarm	-5V alarm: The default normal range is -5±1V, which can be set through the network management.
+24V Alarm	+24V alarm: The default normal range is 24±2V, which can be set through the network management.

6 Structure Description



Front panel

1	Power Indicator
2	Running indicator: 1HZ frequency flashing green when the device is working normally
3	Laser working status indicator: Green light is always on: the laser is working normally. Red light is always on: the laser is not turned on Red light is flashing: The device has a parameter alarm. You can view the alarm content in the Alarm Status Level 2 submenu.
4	Laser drive level indicator: Green light is always on: drive level is normal. Red light is flashing: drive level alarm. You can view the alarm content in the Alarm Status Level 2 submenu.
5	Laser switch key: ON: Laser is on OFF: Laser is off. Keep the laser off before the device is powered on, and turn on the laser after the power-on self-test is completed.
6	Laser drive level detection port: -20dB

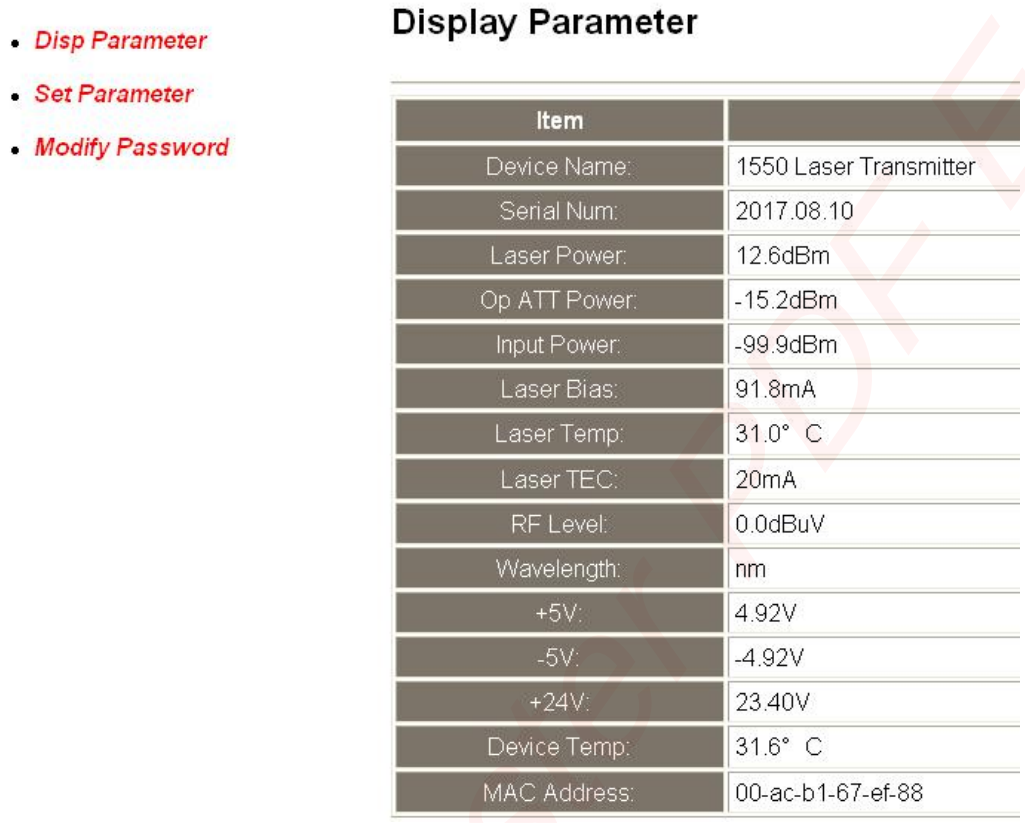


Rear panel

1	Fan	**5**	RF input 1 test port -20dB	**9**	RS232 interface
2	Ground stud	**6**	RF input 2 test port -20dB	**10**	LAN interface
3	RF input 1	**7**	Optical signal output	**11**	Power supply1, hot swappable
4	RF input 2	**8**	Optical signal input, there is no interface without the WDM model.	**12**	Power supply 2 , hot swappable

7. WEB Network Management

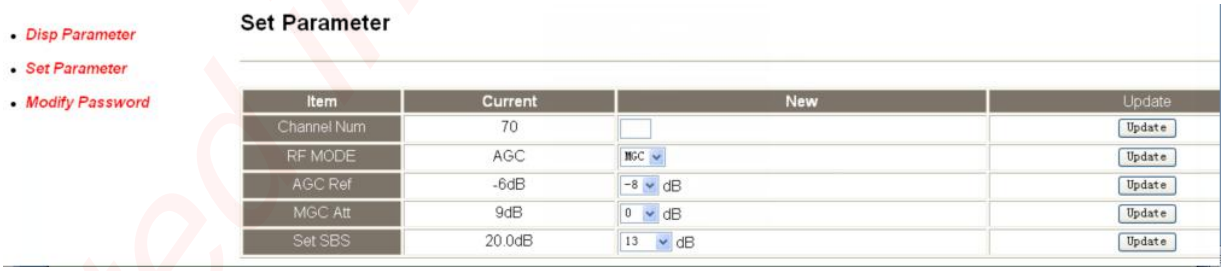
Opening the IE browser and entering the equipment IP address, then enter the user name **admin** and password **123456** (factory default), to show the following interface:



There are 3 sub-interfaces:

1. **Display Parameter** interface: Describes the equipment display menu.
2. **Set Parameter** interface: Change the equipment parameters in this interface.
3. **Modify password** interface: Change the login password in this interface.

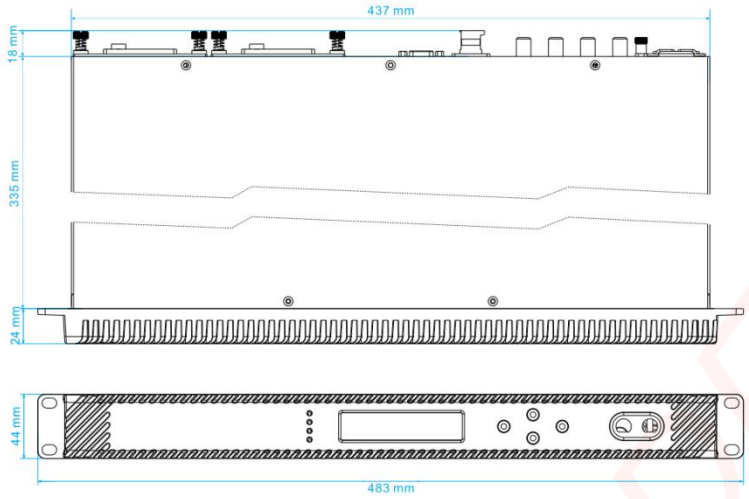
Click **Set Parameter** to open the following interface:



The **Item** shows the changeable parameters, **Current**—the current parameters; **New**—select or enter the new parameters; **Update**—update the parameters.

The update steps: Find the item which needs to be changed, select a new value, and click the **Update** button.

8 Dimension



9 Naming Specification

WT1550-EML-RF1-I-10-S-G-1P-A220
1 2 3 4 5 6 7

1. RF1: One way RF input. RF2: two way RF inputs.
2. I：Standard model, no WDM.
   II：Standard model + built-in WDM wavelength division multiplexer + built-in VOA electrical variable optical attenuator.
3. Output power mW。
4. S：SC/APC. F：FC/APC。
5. G male，Y female。
6. 1P single power supply，2P dual power suppliers.
7. A220：AC220V，DC48：DC48V
8. The output is optional ITU standard wavelength, please specify the specific wavelength requirements in the order.
9. Please specify the WDM specification parameters in the order when selecting WDM.
10. Standard front panel is black engineering plastic material.
11. Standard optical interface and RF interface location are on the rear panel.
12. Standard Ethernet transponder.

10 Attention

● Before unpacking, please confirm that the outer packaging is intact. If you think that the equipment has been damaged due to transportation, etc., do not power on to avoid more serious damage to the equipment or accidental injury to the operator.

● Before powering on the equipment, make sure that the grounding end of the chassis and power socket is reliably grounded. The grounding resistance should be <4Ω, which can effectively protect against surge and static electricity.

● The optical transmitter is a professional and technical equipment. The installation and debugging must be carried out by professional technicians. Please read this manual carefully before operation to avoid damage to the equipment due to misoperation or accidental injury to the operator.

● When installing and debugging the optical device, there may be an invisible laser beam in the fiber connector. The fiber optic connector should be avoided to be aimed at the human body, even not be directly viewed by the naked eye to avoid permanent damage to body and eye!

● When the fiber connector is not in use, it should be put on the dust jacket to avoid dust pollution and keep the fiber end face clean.