1. Product Overview

Electro absorption externally modulated laser (EML) is an integrated device of EAM and DFB laser. With the advantages of performance, cost and volume, the application field has been gradually extended to CATV optical transmission system in recent years, which is used to replace direct modulation optical transmitter and external modulation optical transmitter using Mach-Zehnder modulator.

This machine adopts 1550nm EML laser, microwave source phase modulation, SBS maximum 20dBm, two RF input, high isolation, built-in CWDM, multi wavelength networking, can well support QAM, IPQAM broadcast, insertion function.

It is especially suitable for all-optical transmission network with full digital TV channel. SBS 20dbm, 25km, MER > 40dB. KDPA can provide a complete solution of 1550nm EML optical transmitter + high power optical amplifier (EDFA) + FTTH ultra-low power indoor optical receiver.

2. Features

- 1GHZ frequency band，AGC、MGC modes are optional.
- SBS 13~20dbm, 0.5dB step continuously adjustable.
- SBS 20dBm,25KM,MER＞40dB.
- Two-way input, isolation up to 50dB.
- Real time monitoring of laser working parameters.
- Optional CWDM for optical insertion.
- Dual power supply , AC220V，DC48V are optional.
- Support SNMP NMS and WEB network management.

3. Technical Parameter

	Items	Unit	Technical Parameter	
Optical part	Optical wavelength	nm	1550 (ITU wavelength is optional)	
	Laser type		Electro absorption 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	dBm	-5～10	
RF part	Frequency Range	MHz	47～1003	
	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	

Others	Maximum power consumption	W	≤15
	Operating temperature	℃	-5 ～ + 55
	Storage temperature	℃	-30 ～ + 70
	Weight	Kg	5.5

4. Link performance

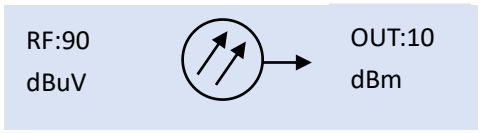
Test conditions: 50MHz ~ 860MHz, 96 channels of digital TV signal, 77dbuv / CH, QAM256, - 1dbm reception.

Fiber length / SBS	MER	BER
25KM / SBS 13dBm	≥ 40dB	< 1.0 E-9
25KM / SBS 16dBm	≥ 40dB	< 1.0 E-9
25KM / SBS 20dBm	≥ 40dB	< 1.0 E-9
50KM / SBS 13dBm	≥ 40dB	< 1.0 E-9
50KM / SBS 16dBm	≥ 39.5dB	< 1.0 E-9
50KM / SBS 20dBm	≥ 39dB	< 1.0 E-9

Note：The RF control of this machine is set to AGC mode in the factory. The AGC bias should be adjusted according to the actual number of channels in order to achieve the best performance.

5. Display menu operation instructions

5.1 Boot screen



Laser drive level　　Output optical power

5.2 Disp Parameters

Laser Power	**xxdBm**
Voa Input	**xx dBm**
Master Input	**xx dBm**
Laser Bias	**xx mA**
Laser Temp	**xx ℃**
Tec current	**xx A**
RF Chan No	**xx**
Laser RF	**xx dBuV**
RF Ctrl Mode	**AGC**
AGC Ref	**x dB**
MGC ATT	**x dB**
Wave Length	**1550nm**
+5V Read	**x v**
-5V Read	**x v**
+24V Read	**x v**
S/N	**xx ℃**
BOX Temp	
IP Address	
Mask	
GTW	
Mac	
SoftWare Ver	

Laser output optical power
optical power after the attenuator, this menu is not visible without the WDM model.
External optical input power, this menu is not visible without the WDM model.
Laser bias current
Internal temperature of the laser
Laser cooling current
Number of transmission channels of the system
Laser drive level
RF control mode
AGC Offset (This menu is only available in AGC mode.)
MGC Attenuation (This menu is only available in MGC mode.)
Wavelength
+5V Monitoring voltage
-5V Monitoring voltage
+24V Monitoring voltage
Serial number
Current temperature inside the machine
IP address of this machine
Subnet mask of this machine
Gateway of this machine
MAC address of this machine
Software version number

5.3 Set Parameters

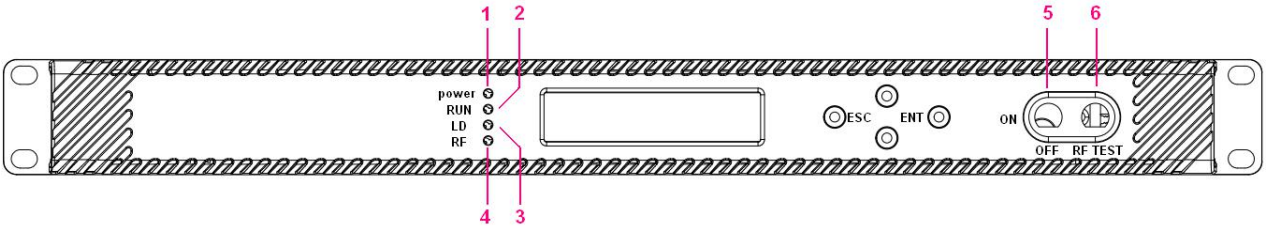
Set LaserOutputUnit	**mW/dBm**	Optical power unit： dBm、mW are optional	
Set BuzzerAlarm	**YES/NO**	Buzzer alarm： ON、OFF are optional	
Set RF ControlMode	**AGC/MGC**	RF control mode：AGC、MGC are optional	
Set MGC ATT	**XX dB**	MGC attenuation： 0-20 are optional	
Set AGC Ref	**XX dB**	AGC Offset：±3dB is 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 two optical power	
Set SBS	**XX dB**	Setting SBS: 13 ~ 20 adjustable, 0.5dB step	
Set Channel Number	**XX**	Set SBS，13～20dB，0.5dB stepping	
Set IP Addr		Number of channels：0-100 are optional	
Set Subnet Mask		Set the local IP address	
Set GateWay		Set the subnet mask	
Restore Factory Config		Set gateway	

5.4 Alarm Status

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

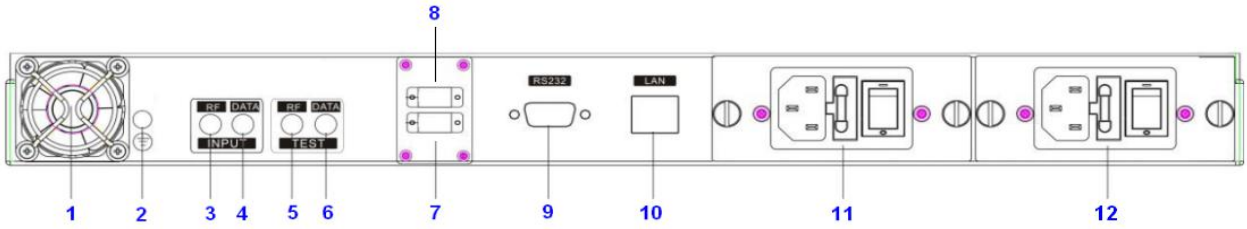
6. Structure Description

6.1 Front panel



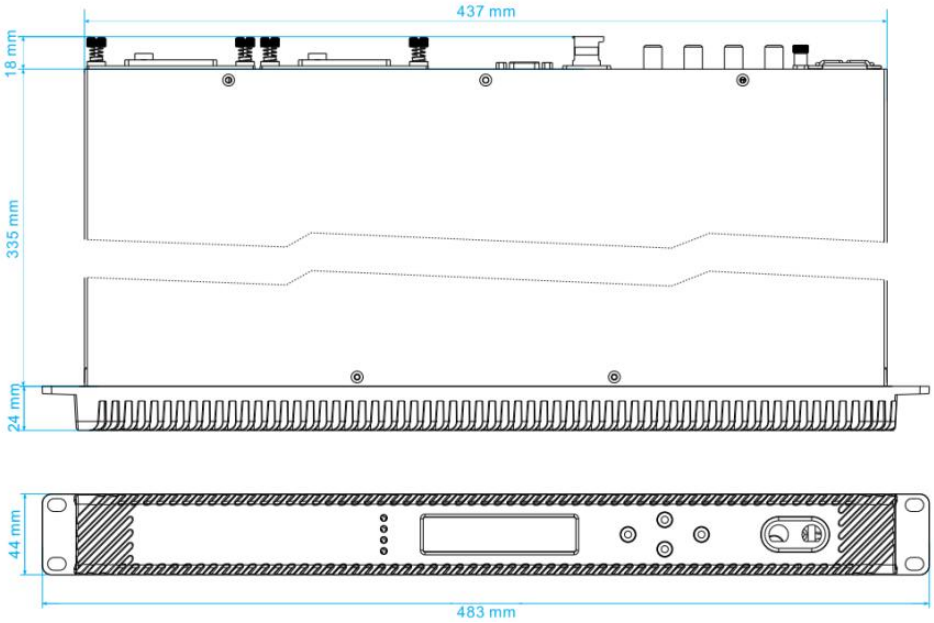
1	Power Indicator
2	Running indicator: 1HZ frequency flashing green when the device is working normally
3	Laser working status indicator： Green light is always on: the laser is working normally. Red light is always on: the laser is not turned on Red light is flashing: The device has a parameter alarm. 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

6.2 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. Dimension



8. 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.