

## 1550nm Directly Modulated Optical Transmitter WT1550DM



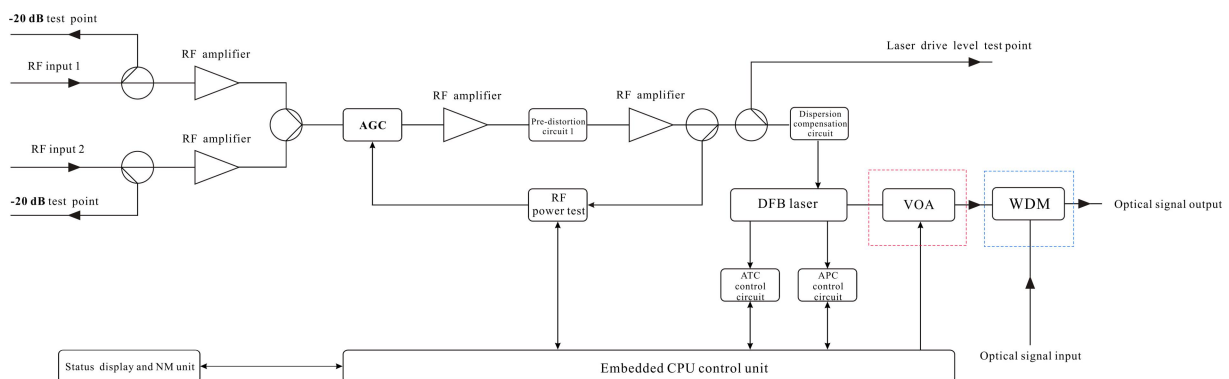
### 1. Product overview

According to the Next Generation Broadcasting (NGB) planning and PON standards, 1550nm is defined as the transmission wavelength for HFC downstream. The high cost of 1550nm external modulated transmitter and dispersion effects of 1550nm directly modulated make network transformation difficult. Thus we create the 1550nm directly modulated optical transmitter with electronically controlled dispersion compensation. It supports up to 1.2GHz band and DOCSIS 3.1 system. With two RF inputs and high isolation, it enables the signal transmission of QAM and IPQAM smoothly. Support a transmission distance of 50KM with electronically controlled dispersion compensation. Built-in CWDM is optional for multi-wavelength networking.

### 2. Performance Characteristics

- 1.2GHZ band, support DOCSIS 3.1 system.
- The AGC and MGC gain control modes are optional.
- Two inputs with 50dB isolation for high quality RF insertion.
- Dual power supply; hot backup; a variety of power supply options are available, optional AC100-240V and DC48V.
- Laser output power, bias current and cooling current are detected in real time.
- Optional CWDM for optical signal insertion.
- Electronically controlled dispersion compensation can support a transmission distance of 50KM.
- Low-cost solution is comparable to the performance of external modulated transmitter.
- ITU standard wavelength is optional.

### 3. Block Diagram



**Note: The optical attenuator in the red dashed box and the wavelength division multiplexer in the blue dashed box are optional.**

## 4. Technique Parameters

Item	Unit	Parameter	
<b>Optical part</b>			
Optical wavelength	nm	ITU wavelength	
Laser type		Butterfly-typed DFB laser	
Optical modulation mode		Direct optical intensity modulation	
Optical connector type		FC/APC or SC/APC	
Output optical power	mW	4~10	The insertion loss of the VOA and CWDM(+6dBm ~ +10dBm) is excluded.
External optical signal input	dBm	-5~10	
<b>RF part</b>			
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	
RF input isolation	dB	≥50	Isolation between two RF inputs
RF input test port	dB	-20±1	
Laser drive level test port	dB	-20±1	
Electronically controlled optical attenuator tolerance	dB	≤1: ATT 0-15dB	
		≤3: ATT 16-20dB	
CNR	dB	≥48	550MHZ 59CH analog signal 77dBuV/CH
C/CSO	dB	≥58	550-870MHZ 40CH digital signal 67dBuV/CH
C/CTB	dB	≥63	25 Km, -1dBm input
CNR	dB	≥46	550MHZ 59CH analog signal 77dBuV/CH
C/CSO	dB	≥55	550-870MHZ 40CH digital signal 67dBuV/CH
C/CTB	dB	≥63	50Km, -1dBm input
MER	dB	≥40	25 Km, -1dBm input, 96CH digital 77dBuV/CH
		≥39	50 Km, -1dBm input, 96CH digital 77dBuV/CH
<b>Others</b>			
Maximum power consumption	W	≤10	
Operating temperature	°C	-5 ~ +55	
Storage temperature	°C	-30 ~ +70	
Weight	Kg	5.5	

## 5. Operation instructions of the display menu

▲ ▼ 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 parameters in the submenu. Press **Enter** to confirm.

ESC key: Exit or return to the previous menu.

The menu displayed after power on: Press **Enter** to enter the first level submenu:



## Disp Parameters, the second level submenu:

Laser Output	xx dBm
Voa Input	xx dBm
Master Input	xx dBm
Laser Bias	xx mA
Laser Temp	xx °C
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	1550
+5V Read	x v
-5V Read	x v
+24V Read	x v
S/N	
BOX Temp	xx °C
IP Address	
Mask	
GTW	
Mac	
SoftWare Ver	

Laser output optical power
Optical power after attenuation (without WDM, no this menu)
External optical signal power (without WDM, no this menu)
Laser bias current
Internal temperature of the laser
Laser cooling current
Transmission channel numbers
Laser drive level
RF control mode
AGC offset (in AGC mode)
MGC attenuation (in MGC mode)
+5V monitoring voltage
-5V monitoring voltage
+24V monitoring voltage
Equipment wavelength
Serial number
Current internal temperature
Equipment IP address
Equipment subnet mask
Equipment gateway
Equipment MAC address
Equipment software version number

## Set Parameters, the second level submenu:

SetLaserOutputUnit	dBm
Set BuzzerAlarm	ON
SetRF ControlMode	AGC
Set MGC ATT	XX dB
Set AGC Ref	XX dB
Set OPT ATT Mode	AUTO
Set OPT ATT	XX dB
Set OPT Delta	XX dB
Set FiberC Length	xxKM
SetChannel Number	XX
Set IP Addr	
Set Subnet Mask	
Set GateWay	
Restore Factory Config	

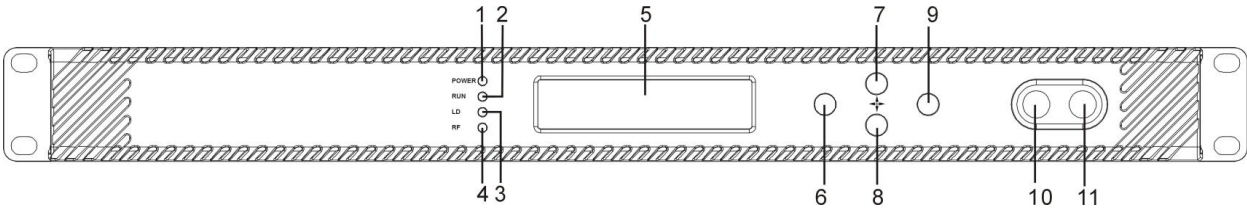
Optical power unit: dBm, mW optional	
Buzzer alarm: ON, OFF optional	
RF control mode: AGC, MGC optional	
MGC attenuation: 0-20 optional	
AGC offset: ±3dB optional	
Set the optical power attenuation mode: AUTO or Manu optional	Without WDM, no this menu
Set the optical power attenuation value: 0~15dB optional	
Set the difference between the main optical power and the inserted optical	
Set transmission distance: 0~50KM optional, 1KM stepping.	
Set the channel number: 0-100 optional	
Set the equipment IP address	
Set the subnet mask	
Set the gateway	
Reset to the default	

## Alarm Status, the second level submenu:

Laser RF
Laser Temp
Laser Bias
Laser TEC
Laser Output
+5V Alarm
-5V Alarm
+24V Alarm

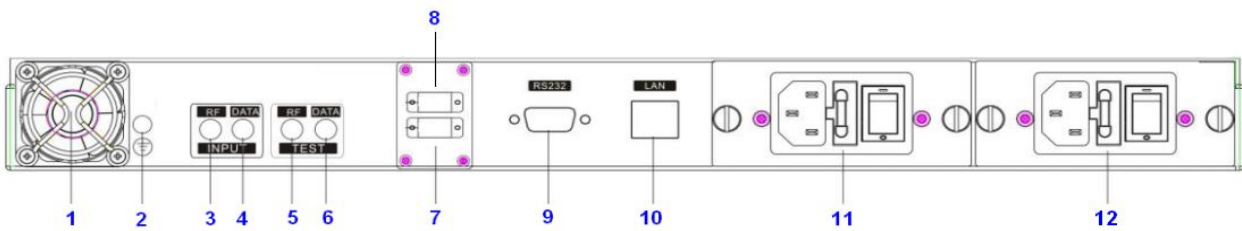
Laser level alarm: The default normal range is 80~110dBuV, which can be set through the network
Laser temperature alarm: The default normal range is 25±10°C, which can be set through the network
Laser bias current alarm: The default normal range is 20~90mA, which can be set through the network
Laser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

## 6. Structure Description



Front panel

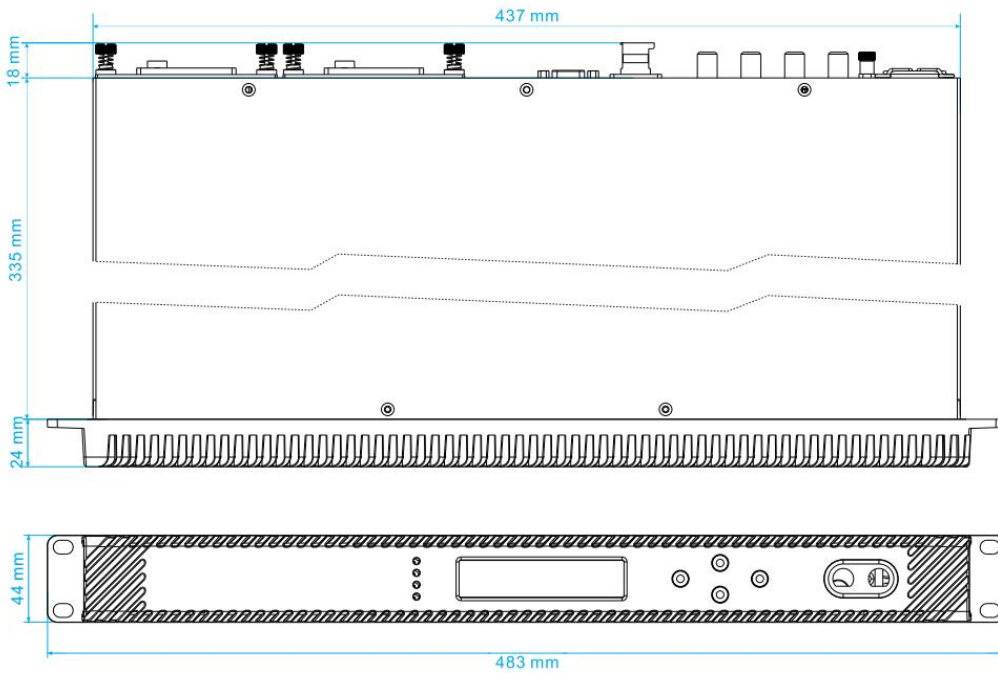
1	Power indicator
2	Device running indicator: This indicator will flash by 1Hz frequency after the device start running normally.
3	Laser working status indicator: Steady green light: The laser is operating normally. Steady red light: The laser is not turned on. Blinking red light: The device has a parameter alarm. You can view the alarm in the Alarm Status, the second level submenu.
4	Laser drive level indicator: Steady green light: Drive level is normal. Blinking red light: Drive level alarm. You can view the alarm in the Alarm Status, the second level submenu.
5	160x32 dot-matrix LCD screen: used to display all the parameters of the machine.
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	Laser switch: ON: The laser is on. OFF: The laser is off. Keep the laser off before the device is powered on, and turn on the laser after the self-inspection is completed when power on.
11	Laser drive level test port: -20dB



Rear panel

1	Fan	7	Optical signal output
2	Ground stud, ensure good grounding before power on	8	Optical signal input: without WDM, no this port
3	RF input 1	9	RS232 interface
4	RF input 2	10	LAN interface
5	RF input 1 test port -20dB	11	Power module 1, hot swappable
6	RF input 2 test port -20dB	12	Power module 2, hot swappable

## 7. Dimension



## 8. Attention

- Insure the package is not defaced. If you think the equipment has been damaged, please don't electrify to avoid worse damage or do harm to the operator.
- Before the equipment is power on, make sure the housing and the power socket is reliably grounded. The grounding resistance should be  $<4\Omega$ , so as to effectively protect against surges and static electricity.
- Optical transmitter is professional equipment. Its installation and debugging must be operated by special technician. Read this manual carefully before operating to avoid damage to equipment caused by fault operation or accident harm to the operator.
- While the optical transmitter is working or debugged, there is an invisible laser beam from the
- optical output adapter on the front panel. Avoiding permanent harm to the body and eye, the
- optical output should not aim at the human body and people should not look directly at the
- optical output with the naked 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 tip clean.



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