1550nm Directly Modulated Optical Transmitter Module WOS-WT-1550-4K
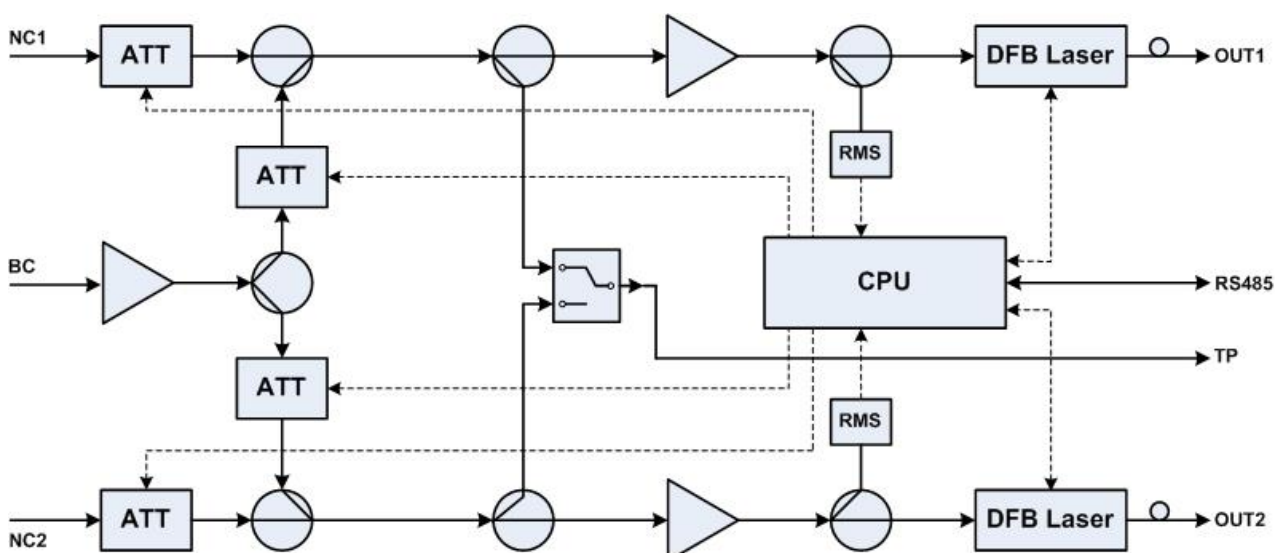
1. Product Overview

In accordance with the planning of the Next Generation Broadcasting Network (NGB) and various 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 transmitter 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 multi 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. Multi-wavelength networking is optional. The parameters can be set and displayed through SNMP, Web Interface and CMM management unit.

2. Performance Characteristics

➢ Support hot swap

➢ 1.2GHz band, support DOCSIS 3.1 system

➢ Two optical output, two independent CMTS signal input and one common CATV signal input

➢ RF input with high isolation

➢ Low noise DFB laser with predistortion

➢ Electronically controlled dispersion compensation to support 50KM transmission distance and optimize long-distance transmission performance

➢ Optional ITU standard wavelength

➢ Modular structure design with electromagnetic compatibility

3. Block Diagram

Rev 1 .1   190313   www.prevail-catv.com

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1

4. Technique Parameters

Item	Unit	Parameter	
Optical part			
Optical wavelength	nm	ITU wavelength, C31.....C37 is optional	
Laser type		DFB laser	
Optical modulation mode		Direct optical intensity modulation	
Optical connector type		SC/APC	
Output optical power	dBm	>10	
RF part			
Frequency range	MHz	110 ~ 1218	
Relative Intensity Noise	dB/Hz	-155	
RF input level	dBuV	75~85	
Flatness in band	dB	± 1	
RF input impedance	Ω	75	
Input return loss	dB	≥ 16	
AGC control range	dB	±5	
AGC adjustable range	dB	±5	
MGC adjustable range	dB	0 ~ 20	
BC-NC RF isolation	dB	≥ 50	Isolation between two RF inputs
RF input test port	dB	-20±1 (with F type connector)	
CNR	dB	≥ 50	Test link: optical transmitter--18dBm EDFA--20km fiber—optical attenuator--optical receiver (Pin= 0dBm, noise bandwidth 5MHz, single wavelength) 25pcs PALB Channel 119,25-287,25 MHz +114pcs QAM256-8MHz-digital load 302-1214 MHz, OMI total value between 19-26%
C/CSO	dB	≥ 60	
C/CTB	dB	≥ 60	
MER	dB	≥ 40	Test link: optical transmitter--18dBm EDFA--20km fiber—optical attenuator--optical receiver (Pin= 0dBm, noise bandwidth 5MHz, single wavelength) Full digital load 254-1214 MHz QAM 256, OMI total value between 19-26%
BER		≤10^{-9}	
Others			
Maximum power consumption	W	< 20	
Operating temperature	℃	-5 ~ + 55	
Storage temperature	℃	-30 ~ + 70	
Weight	Kg	1	

5. Operation instructions of the display menu

Once the module is installed, the corresponding slot in the display menu will highlight the module which is online. After entering the sub menu, the following parameters can be seen:

(1) Sub menu A:

A Out Power	XX.XdBm	Laser output power of channel A	
A RFLevel	XX.XdBuV	Laser drive level of channel A	
A LaserTemp	XX.X℃	Laser temperature of channel A	
A LaserBias	XXmA	Laser bias current of channel A	
A Laser Tec	XXA	Laser cooling current of channel A	
A CurRFMode	AGC	Current RF operating mode of channel A, AGC or MGC optional	
A AGCOffset	XdB	AGC offset of channel A, adjustable range: ±5dB	Valid when selects AGC of CurRFMode
A MGCAtt	XdB	MGC attenuation of channel A, adjustable range 0~20dB	Valid when selects MGC of CurRFMode

A NCAtt	XdB	NC attenuation of channel A
A BCAtt	XdB	BC attenuation of channel A
A ChanNum	84	Number of transmission channels, 1 ~ 100
A Wavelength	1550	Wavelength of channel A
A LaserCtrl	ON	Laser switch, ON, OFF
A FiberLength	XX KM	Set dispersion compensation distance, 0-50KM, 1KM stepping
DevTemp	XX.X℃	Module internal temperature
Model		Serial number
Version		Software version number
WorkTime		Total operating hours of the equipment

(2) Submenu B:

B Out Power	XX.XdBm	Laser output power of channel B	
B RFLevel	XX.XdBuV	Laser drive level of channel B	
B LaserTemp	XX.X℃	Laser temperature of channel B	
B LaserBias	XXmA	Laser bias current of channel B	
B Laser Tec	XXA	Laser cooling current of channel B	
B CurRFMode	AGC	Current RF operating mode of channel B, AGC or MGC optional	
B AGCOffset	XdB	AGC offset of channel B, adjustable range: ±5dB	Valid when selects AGC of CurRFMode
B MGCAtt	XdB	MGC attenuation of channel A, adjustable range 0~20dB	Valid when selects MGC of CurRFMode
B NCAtt	XdB	NC attenuation of channel B	
B BCAtt	XdB	BC attenuation of channel B	
B ChanNum	84	Number of transmission channels, 1 ~ 100	
B Wavelength	1550	Wavelength of channel B	
B LaserCtrl	ON	Laser switch, ON, OFF	
B FiberLength	XX KM	Set dispersion compensation distance, 0-50KM, 1KM stepping	
DevTemp	XX.X℃	Module internal temperature	
Model		Serial number	
Version		Software version number	
WorkTime		Total operating hours of the equipment	

6. Structure Description

Front panel   Rear panel
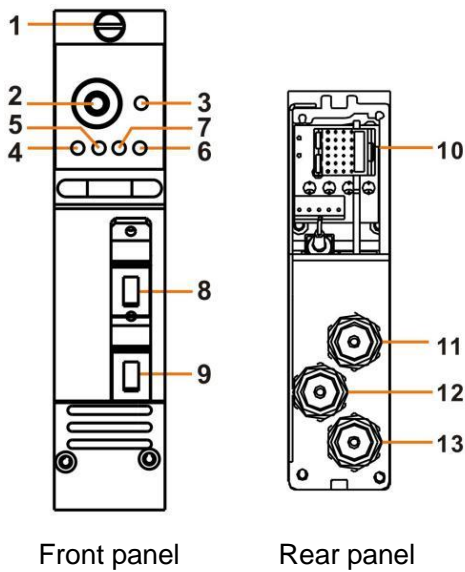
	Description	Remark
1	Module fixing screw	
2	Level test port	-20dB
3	Switch button of RF TP in A/B channel	
4	Monochrome status indicator (Channel A)	Off: Laser parameter alarm; Flashing green: RF alarm; Constant green: working normally.
5	Monochrome status indicator (Channel B)	Off: Laser parameter alarm; Flashing green: RF alarm; Constant green: working normally.
6	Monochrome operating indicator	TB on: Test point is on channel B.
7	Monochrome operating indicator	TA on: Test point is on channel A.

	Description	Remark
8	Optical power output	
9	Optical power output	
10	Module socket	
11	NC2: CMTS signal B input	
12	BC: CATV common input	
13	NC1: CMTS signal A input	

7. Installation

➢ This module can be installed in slots 1-16 and can be fully configured.

➢ Check whether the pins on the rear of the module are bent.

➢ Install the module in place along the guide and tighten the screws.

➢ Avoid direct observation and contact with the fiber tip. You must confirm the equipment is off when cleaning the port.

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