

## OP-TX1550/04-TV & Satellite Optical Transmitter



### 1. Product Overview

OP-TX1550/04-2600 satellite optical transmitter is directly modulated adopts a highly linear DFB laser with cooler. It can simultaneously transmit 47-862MHz CATV signal and 960-2600MHz satellite live TV signal in one optical fiber. The satellite optical transmitter can select ITU standard wavelength and DWDM, which can achieve network upgrading and expansion. Compatible with FTTxPON technology to realize the multi network integration of CATV (analog and digital TV), satellite TV (DVB-S) and internet. SAT-IF uses a highly linear IF drive amplifier circuit with AGC function to ensure high-quality transmission of Analog TV, Digital TV (DVB-C, DVB-T) and Satellite TV signals in one optical fiber.

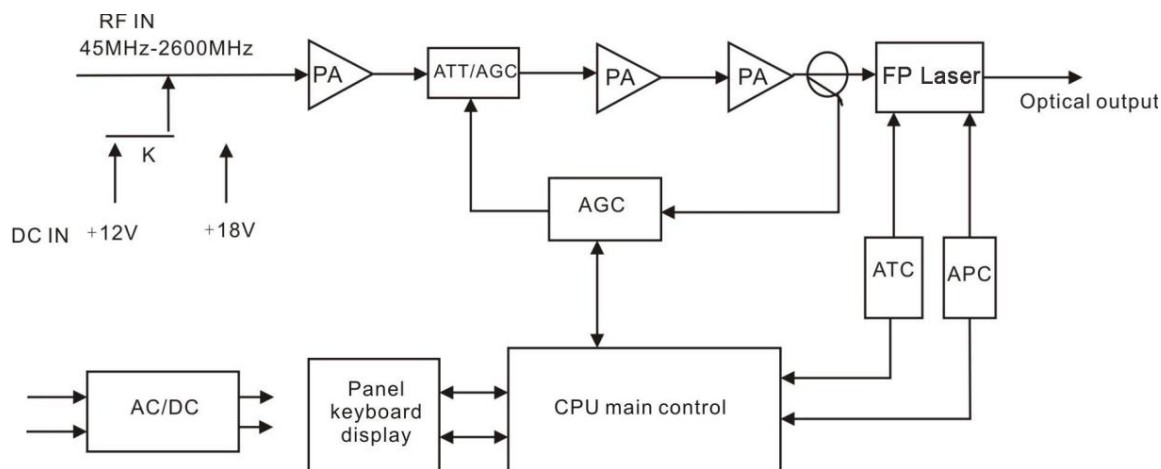
### 2. Product Applications

- One optical fiber transmits CATV and SLDTV
- FTTxPON (EPON, GPON)

### 3. Features

- Wide working bandwidth, up to 2.6GHz.
- ITU wavelength is optional.
- 1U 19 " standard rack.
- CPU control, LCD displays status and fault diagnosis.
- Standard RJ45 interface, equipped with SNMP network management function.
- APC and ATC control circuits ensure the long life and high reliability of the laser.

### 4. Block Diagram



### 5. Technical Parameters

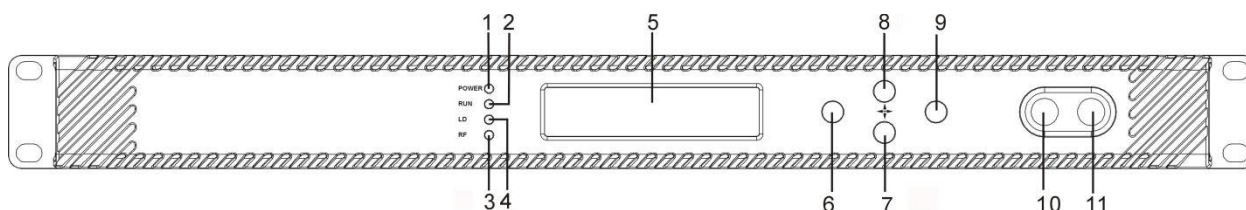
Performance	Unit	Index	Remark
<b>Optical Characteristics</b>			
Laser Type		DFB	
Optical Wavelength	nm	1550	
Output Optical Power	mW	4	Variations Available
Output Return Loss	dB	50	
Optical Connector Type		SC/APC	
<b>CATV RF Characteristics</b>			
Working Bandwidth	MHz	45-862	
Input Range	dBμV	75~85	Input level
Flatness	dB	±1	
Input Return Loss	dB	14	
C/N	dB	≥51	42CH CENELEC 80dBμV AGC OMI=3.8%
C/CTB	dB	≥63	
C/CSO	dB	≥58	
Input Impedance	Ω	75	
RF Connector		F type	
<b>SAT-IF Characteristics</b>			
Working Bandwidth	MHz	950~2600	
Input Range	dBμV	68~83	Input level
Flatness	dB	±1	
Input Return Loss	dB	10	
C/IM3		≥55	<b>Note1</b>
<b>General Characteristics</b>			
Power Supply (AC)	V	110~265	Optional dual power

Consumption	mW	20	
SNMP network management interface		RJ45	
Working Temperature	°C	0~50	
Storage Temperature	°C	-40~60	
Dimension (W)*(D)*(H)	mm	483*395*44	1U 19 inch

**Note1:** C/IM3 is defined as the ratio between the peak of carrier signal and triple beat (IM3) by using a two-tone test (1.0GHz and 1.1GHz).

## 6. External Function Description

### 6.1 Front Panel

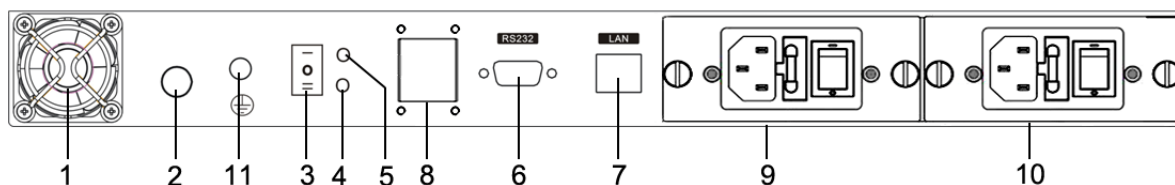


1	Power indicator	2	Run indicator	3	RF input indicator
4	Laser working indicator	5	LCD	6	ESC
7	Down	8	Up	9	Enter
10	Laser switching key	11	RF input test port		

#### 6.1.1 Indicators Status Description

Power indicator	Power on	LED green
Run indicator	Normal	LED green
Laser indicator	ON	LED green
RF input indicator	No input or exceed the normal range	LED flash red
	Normal	LED green

### 6.2 Rear Panel



1	Fan outlet	2	RF signal input port	3	Voltage output switch
4	+18V indicator	5	+12V indicator	6	RS232 interface
7	LAN interface	8	Optical output interface	9	Power supply1
10	Power supply2	11	Ground stud		

**Note:**

When the voltage output switch on the ‘—’ side, the +12V indicator is on and the RF signal input port with +12V voltage output;  
 When the voltage output switch on the ‘○’ side, the RF signal input port no voltage output;  
 When the voltage output switch on the ‘=’ side, the +18V indicator is on and the RF signal input port with +18V voltage output.

**7. Menu Operation**

**7.1 Main Menu**

Display parameters	Description
	Boot display
<b>1.Disp Parameters</b>	Menu 1: Display parameters
<b>2.Set Parameters</b>	Menu 2: Set parameters
<b>3.Alarm Status</b>	Menu 3: Alarm status

**7.2 Display Menu**

Display parameters	Description	Display parameters	Description
Laser Output	Output optical power	+24V	+24V monitor voltage
Laser Bias	Laser current	S/N	Serial number
Laser Temp	Laser temperature	BOX Temperature	Box temperature
TEC Cooling	Cooling current	IP Address	IP address
RF Control Mode	RF control mode	Sub Mask	Subnet mask
AGC Ref	AGC attenuation	Net GateWay	Gateway
+5V	+5V monitor voltage	MAC	Mack address
-5V	-5V monitor voltage	Software Ver	Software version number
+12V	+12V monitor voltage		
+18V	+18V monitor voltage		

**7.3 Setup Menu**

Display parameters	Description	Remark
Set LaserOutPut Unit	Set optical power output unit	mW and dBm optional
Set Buzzer Alarm	Set buzzer alarm	YES is on, NO is off
Set RF Control Mode	Set RF control mode	AGC and MGC optional
Set MGC Ref	Set attenuation under MGC mode	Adjustable range 0~15dB
Set AGC Ref	Set attenuation under AGC mode	AGC control range -3~+3dB
Set Channel Number	Set channel number	

Set Local IP Address	Set IP address	
Set SubNet Mask	Set subnet mask	
Set Gateway	Set gateway	
Restore Factory	Restore factory settings	

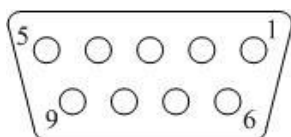
**7.4 Alarm Menu**

Display alarm content	Description
RF Alarm	RF alarm
Laser Temp	Laser temperature alarm
Laser Bias:	Laser current alarm
Output Alarm	Output alarm
Laser Tec	Laser cooling current alarm
+5V Alarm	+5V voltage alarm
-5V Alarm	-5V voltage alarm
+12V Alarm:	+12V voltage alarm
+18V Alarm:	+18V voltage alarm
+24V Alarm	+24V voltage alarm

**8. Communication Setup Descriptions**

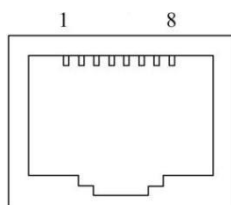
**8.1 Communication Interface Description**

- 1) RS232 communication interface adopts DB9 standard connector, the pin definitions as follow:  
 The serial communication uses the standard NRZ form, 1 starts bit, 8 data bits, 1 stop bit and the baud rate is 38400.



1: No Connect	2: TX	3: RX
4: No Connect	5: GND	6: No Connect
7: No Connect	8: No Connect	9: No Connect

- 2) LAN communication interface adopts RJ45 standard connector, the pin definitions as follow:



LAN

1: TX+	2: TX-	3: RX+
4: No Connect	5: No Connect	6: RX-
7: No Connect	8: No Connect	

**8.2 Set Up the Super Terminal**

If you have not setup the Hyper Terminal in your Windows system, follow these steps:

Click “start menu →program→ accessory→communication→ Hyper Terminal”:

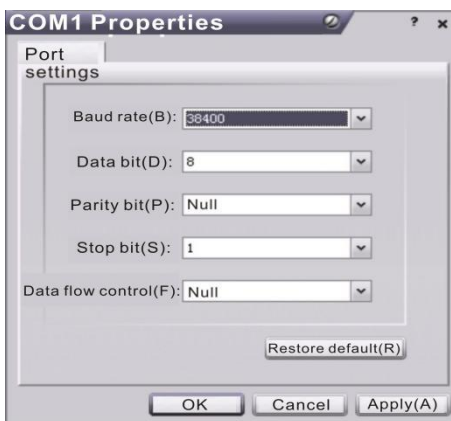
This results in the following screen:



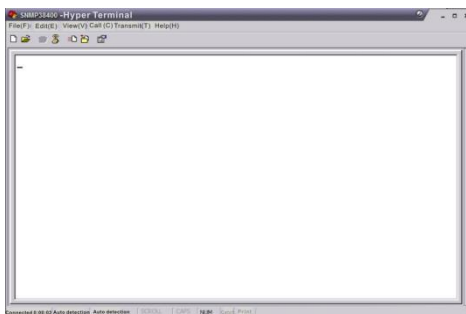
Then input your connection name, such as “SNMP38400”, and choose the serial port to connect with your equipment. As follows:



Press the “OK” button shows the configuration page of serial port. As follows:



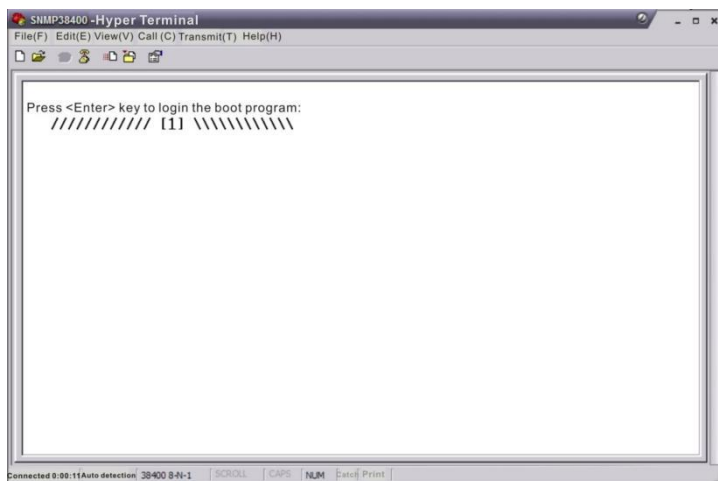
Change the serial port configuration to 38400-baud rate, 8 data bits, no parity bit, 1 stop bit, no data flow control, press the “OK” button, you have set up the Windows serial port Hyper Terminal.



You can click “file→save” menu to save this configuration of Hyper Terminal for later using.

### 8.3 Operating Parameters Configuration

Under the condition of Transmitter power off, please use the Serial Port Lines to connect the RS232 port of optical transmitter with the computer port. Open the Windows Hyper Terminal which you have set up. Then turn on the transmitter’s power, you will see the page as follows, at this time, you can press the “OK” button into the boot program and do some advanced configuration. Boot program is like the BIOS setting program of PC. Generally speaking, users do not have to enter the boot program to configure the parameter, so we set the password to avoid damaging the properly configuration.



Skip the boot program and the application program begins as follows:

```

*****
Application For TRANSMITTER SNMP Agent
*****
Version:V1.7.3.5
*****
Input password :
    
```

You can input your command in this page, and then configure the operating parameter of the application program.

**System supports the following commands:**

<b>help</b>	<b>List internal commands of the system;</b>
<b>ethcfg</b>	<b>Configure the Ethernet operating parameters;</b>
<b>community</b>	<b>Configure the SNMP group name;</b>

**Specific using as follows:**

**help**

This command shows current application program version, program name and the internal commands list of the system. You can also use the “help” command to show help information of other commands, such as “help ethcfg”, ethcfg’s help information will appear.

**ethcfg**

This command configures the Ethernet parameters, including IP address, subnet mask and gateway. You can refer to the help information for its usings.

**community**

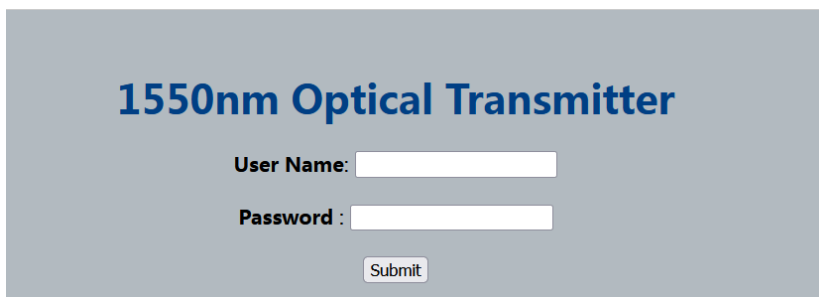
This command configures the read-only group name and read-write group name. “Group name” is the concept of SNMP agreement like the password. Use the command “community ro” to configure the read-only, and “community rw” for the read-write. For example, input “community rw public”, “public” is the read-write group name. The group name for read-only and read-write are both “public” as the equipment default setting from factory.

The commands of transmitter are shown as follows:

Command	Descriptions	Default
ethcfg ip xx.xx.xx.xx	Set ip address	
ethcfg msk xx.xx.xx.xx	Set submask	
ethcfg gwt xx.xx.xx.xx	Set gateway	
community ro xxxxx	Set read-only group name	public
community rw xxxxx	Set read-write group name	public
setpswd xxxxxxxx	Set login password	123456

### 8.4 WEB Network Management

1. Opening the IE browser and entering the equipment IP address leads to the following interface:



2. Enter the user name **admin** and password **123456** (factory default), to show the following interface:

#### 1550nm Transmitter

- [Disp Parameter](#)
- [Set Parameter](#)
- [Modify Password](#)

#### Display Parameter

Item	Value
Device Name:	1550 Laser Transmitter
Serial Number:	2020.03.11
Optical Power:	9.5dBm
Laser Bias:	96.4mA
Laser Temp:	21.7°C
Laser TEC:	640mA
RF Level:	9.6dBm
+5V:	3.18V
-5V:	-3.78V
+12V:	9.00V
+18V:	11.50V
+24V:	10.30V
Device Temperature:	18.3°C
MAC Address:	30-71-b1-cd-ef-0e

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.



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

1550nm Transmitter

- *Disp Parameter*
- *Set Parameter*
- *Modify Password*

Set Parameter

Item	Current	New	Update
RF MODE:	MGC	MGC ▾	<input type="button" value="Update"/>
AGC Ref:	0dB	-3 ▾ dB	<input type="button" value="Update"/>
MGC Ref:	0dB	0 ▾ dB	<input type="button" value="Update"/>
Http Port:	80	<input type="text"/>	<input type="button" value="Update"/>

Set IP Parameter

Item	Current	New	Update
Static IP Address:	192.168.1.190	<input type="text"/>	<input type="button" value="Update"/>
Subnet Mask:	255.255.255.0	<input type="text"/>	<input type="button" value="Update"/>
Default Gateway:	192.168.1.1	<input type="text"/>	<input type="button" value="Update"/>
Trap Address1:	0.0.0.0	<input type="text"/>	<input type="button" value="Update"/>
Trap Address2:	0.0.0.0	<input type="text"/>	<input type="button" value="Update"/>

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.

4. Click **Modify Password** to open the following interface:

### Modify Login Password

New User Name :

New Password :

Confirm Password :

## 9. SNMP

### NSCRTV standard and relevant MIBs

Description	Specifications	Conditions / Comments
NSCRTV hfcemsCommonMIB	support	
NSCRTV hfcemsPROPERTYMIB	support	
NSCRTV hfcemsOPTICALTRANSMITTERDIRECTLYMIB	support	
NSCRTV hfcemsALARMSMIB	support	

All alarms sent as traps defined by NSCRTV-HFCEMS-ALARMS-MIB

Alarm Contents	Descriptions
RF Alarm	RF alarm
Laser Temp	Laser temperature alarm
Laser Bias:	Laser current alarm
Output Alarm	Output alarm
Laser Tec	Laser cooling current alarm
+5V Alarm	+5V voltage alarm
-5V Alarm	-5V voltage alarm
+12V Alarm:	+12V voltage alarm
+18V Alarm:	+18V voltage alarm
+24V Alarm	+24V voltage alarm

## 10. Attention

- Before powering on, make sure that the grounding terminals of the chassis and power socket are reliably grounded, and the grounding resistance should be  $<4\Omega$ , which can effectively protect against surges and static electricity.
- Optical transmitter is a highly technical professional equipment, its installation and debugging must be operated by professional technicians. Read this manual carefully before operating to avoid damage to equipment caused by fault operation or accident harm to the operator.
- When installing and debugging optical equipment, invisible laser beams may be emitted inside the fiber connector. Avoiding permanent harm to the body and eye, the fiber connector should not aim at the human body and human should not look directly at the fiber connector with the naked eye!
- There must be no shielding outside the ventilation holes of the device. Poor ventilation will cause the index to decrease, and in serious cases will cause damage to the device.
- When cleaning the fiber end face, you must confirm that the optical source is turned off.
- When the fiber connector is not in use, put a dust cover to avoid dust pollution and keep the end surface of the optical fiber clean.
- When installing the fiber connector, apply appropriate force to avoid damage to the adapter. Otherwise, the output optical power may decrease.

