
***XPON OT-CATV-1550NM
OPTICAL TRANSMITTER***

Installation & User Manual

XPON OT-CATV-1550nm



Optical Transmitter

Declaration

There are seals on the product to avoid being opened, users are cautioned that AirLive shall be not responsible for any consequences caused by opening the products without permission and reserves the right to file an action for ownership.

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1. General Information

1.1 About The Manual

This manual describes the function of the optical transmitter XPON OT-CATV-1550NM, and how to service and maintain the equipment.

Please read the manual before installing and operating the unit to avoid damaging.

1.2 General Description

XPON OT-CATV-1550NM optical transmitter is rack mounted, Construct the head-end equipment with excellent performance. It's easy for the unit to manage and flexibly configure.

1.3 Features

- ✧ Applied at HFC network, function as transmitters for CATV video PAL, NTSC RF signals and QAM, QPSK, FSK digital data;
- ✧ The source laser is a DFB laser with optical isolator;
- ✧ With AGC, MGC, APC, ATC function, to improve the steady of the output optical power;
- ✧ Applies high performance microprocessor to achieve monitoring and controlling the status of the transmitter and exchange the data;
- ✧ With screen saver function, to prolong the life of VFD;
- ✧ Alarm by noise and light when status is abnormal;
- ✧ RS-485 interface for remote monitoring;

2. Configuration

2.1 Block Diagram

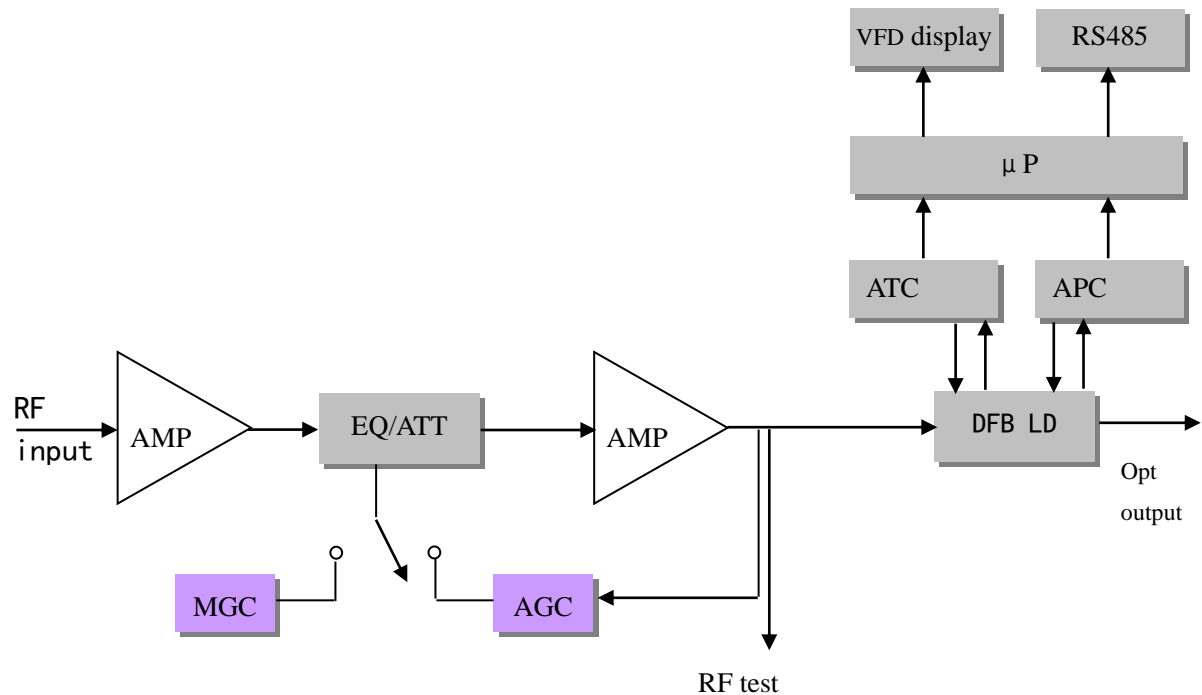


Fig. 1 Block diagram

The XPON OT-CATV-1550NM block diagram is shown in fig.1.

Amplified and equalized by optical transmitter unit, the CATV signal will be sent to LD to modulate the laser strength. And the output signal of LD will be sent through the fiber to a remote optical receiver.

There is AGC circuit to ensure the system being working stable. When the input level changes largely (within 75~85dBμV). The distortion performance will change a little or keep steady. There're APC and ATC circuit to keep the output optical power steady.

To operate and maintain easily, it's necessary to monitor the working status of DFB LD, such as optical power, bias current, LD temperature and cooling current etc. So, the transmitter has a μ P to monitor the status of the unit.

3. Characteristic

3.1 Link Performance

CNR: \geq 51dB

CSO: \leq -60dBc

CTB: \leq -65dBc

Test condition: for 59 PAL_D channels loading,

The link is defined as beginning at the transmitter (XPON OT-CATV-1550NM) RF input and ending at the RF output jack on standard optical receiver; including a 10km fiber with an optical attenuator, The received optical power of the standard receiver is -1dBm.

3.2 Optical Characteristic

Wavelength: 1550±20nm

Optical power: 4mW~10mW

Optical connector: SC/APC

Optical Fiber Mode: single Mode

3.3 RF Characteristic

Bandwidth: 45~1000MHz

Input level: 80±5dBuV

Flatness: ≤±0.75dB

Test port level: ≥70 dBμV

Test port flatness: ≤±1.5dB

Input impedance: 75Ω

Input return losses: ≤-16dB (45~550MHz)

≤-14dB(550~ 862MHz)

3.4 Gain Control

MGC: >10 dB

AGC: As the input level changes within ±5 dBμV, the output level changes within ±1 dBμV.

Note: if the carriers were less than 15 channels, MGC is recommended. When the system powers on, AGC is the default status.

3.5 Power Supply

Switch power supply: 110~265VAC

Consumption: <30W

3.6 Ambient Condition

Operation temperature: 0~50°C

Storage temperature range: -25~65°C

Relative humidity : Max 95% without condensation

4. Installation

4.1 Install The Equipment

- ✧ Examine the equipment for loss or damage that may have occurred during shipping.
- ✧ Unpack the equipment. Check the material for small parts. When unpacking and otherwise handling the transmitter, follow ESD precautionary procedures including use of grounded wrist straps, grounded workbench surface, and grounded floor mats.
- ✧ Check the power supply, then power on.
- ✧ Check the input RF level to make sure that it is within the range of 75~85 dBμV, and connect it securely.
- ✧ Clean the connector of the fiber and check the output optical power. Then connect the output optical fiber.
- ✧ Set MGC and AGC. When the channels that loaded into

the transmitter are less than 15, only MGC should be selected, otherwise either AGC or MGC can work.

- ✧ Please do not adjust MGC_ADJ on the front panel while there is no test condition. If it's necessary to adjust it, follow the steps below:
 1. Test the RF level of the test point;
 2. Adjust the MGC and observe the level of the test point simultaneously. The range that can adjust is within $\pm 3\text{dB}$ of the original level.

4.2 Cautions

- ✧ Follow safety precautions while operating. The damage caused by incorrect operation will not be accepted by AirLive Technology Corp.
- ✧ Check the AC voltage before power on, to make sure that the voltage is in the range of 110~265VAC.
- ✧ Do not look directly to the optical output port to avoid being hurt.
- ✧ Before power on, the transmitter should be well grounded.
- ✧ Follow the ESD precautionary procedures.
- ✧ Do not open the unit and adjust the adjustable components.

◇ The fuse of the power supply is 1 ampere.

5. Front Panel And Rear Panel

5.1 Front Panel

Display:

Model XPON OT-CATV-1550NM

S/N "S/N :*****"

Alarm "****Alarm!"(When there is alarm)

 "No alarm"(When there is no alarm)

 "LD PROTECTED!"(When LD is abnormal)

LD Power "LD PWR:****"

Bias Current "LD BIAS:****"

LD Temp. "LD TEMP:****"

Cool Current "COOL CUR:***"

+24V "+24V DC:***"

+12V "+12V DC:***"

+5V "+5V DC:***"

-5V "-5V DC:***"



Fig. 2 Front Panel

Notes: If **Status Button** has not been touched more than 1 minute, and there is no alarm, the VFD will show XPON OT-CATV-1550NM continuously as screen saver; If **Status Button** has not been touched for more than 1 minute, and there are alarms only, the alarm item whose alarm grade is higher than the others will show; If **Status Button** has not been touched for more than 1 minute, and there are both alarms and LD PROTECTED item, the LD PROTECTED item will show.

Do not adjust the MGC while there is no test condition.

5.2 Rear Panel

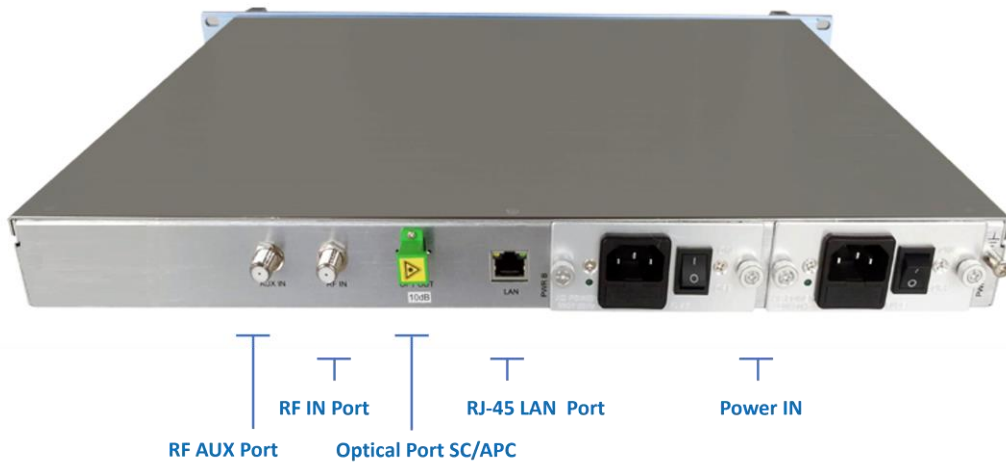


Fig. 3 Rear Panel

6. Alarm Conditions

Item	Conditions	Alarm class		Alarm grade	Control signal	
		Common	Serious		Noise	Light
LD bias current	$>100\text{mA}$	√		1	√	√
	$>110\text{mA}$		√		√	
LD cooling current	$>1\text{A}$ or $<-1\text{A}$	√		2	√	√
LD temperature	$>27^{\circ}\text{C}$ or $<23^{\circ}\text{C}$	√		3	√	√
	$>29^{\circ}\text{C}$ or $<21^{\circ}\text{C}$		√		√	
Output optical power	Below 1dBm	√		4		√
RF alarm	$U < 1.5\text{V}$	√		5		√
-5V DC power	$>-4.5\text{V}$ or $<-5.5\text{V}$	√		6	√	√
+5V DC power	$>5.5\text{V}$ or $<4.5\text{V}$	√		7	√	√
+12V DC power	$>13.2\text{V}$ or $<10.8\text{V}$	√		8	√	√
+24V DC power	$>26.4\text{V}$ or $<21.6\text{V}$	√		9	√	√

Notes: Where there is a “√”, it means “Yes”.

When there is a serious alarm, the VFD will show “LD PROTECTED!”; When there is a common alarm, the VFD will show “***alarm!”.