The User Guide

UNYx

UNYX-1550DT-10

1550nm Directly Modulated Optical Transmitter

Content

1. The product overview

1.1 The product overview

UNYX-1550DT series 1550nm Direct Modulated Optical Transmitter products adopt the high linearity, optical isolation, the DFB, thermoelectric cooling DFB laser produced by AOI and other world-renowned semiconductor companies. It can provide high-quality images, digital or compressed digital signal long-distance transmission for cable television and telephone communications. Built-in RF driver amplifier and control circuitry to ensure the machine's CNR, CTB, CSO target. Comprehensive and reliable optical circuits and laser output power stability Temperature stability of thermoelectric cooler control circuit to ensure optimal machine performance and long-life laser stability. Laser is the most expensive machine components, machines equipped with microprocessors. The microprocessor software to monitor the working state lasers, operating parameters from the panel LCD display. Once the laser operating parameters deviate from the permissible range set by the software, the microprocessor will automatically turn-off laser power. Flashing yellow light prompts alarm panel LCD prompts cause of the malfunction (non-human factors that can not be damaged laser),RF pre-distortion technology, ensuring the case of CSO-performance system for maximum CNR. In addition, the use of 19 "1U standard rack, built-in high performance switching power supply can be 85 ∽ 265Vac City Network voltage work.

1.2 The features

1.2.1) Laser adopts 1550nm wavelength，DFB with optical isolation，semiconductor refrigeration and heating, LCD monitoring and etc functions；

1.2.2) Main control circuit adopts microprocessor control, LCD operating status display, automatic alarm until self-protection；

1.2.3) Preamplifier adopts PDI gallium arsenide module with low noise, high gain and more dynamic；

1.2.4) High-effect predistortion laser correction, chirp compensation circuit, improves non-linear distortion index effectively；

1.2.5) Hot-plugging main module power supply, anti-surge, overvoltage and overcurrent lightning protection, anti-lightning voltage≥6000V；

1.2.6) Optical transmitting bandwidth of wavelength carrier 47~862/1000MHz, in-band waviness≤±0.75dB；

1.2.7) 1U standard case, installed in 19″ standard rack；

1.2.8) Optional II type status monitoring transponder certainly satisfy national standard and SCTE, HMS, WEB standard.

2. The product structure diagram

2.1 The Electrical block diagram
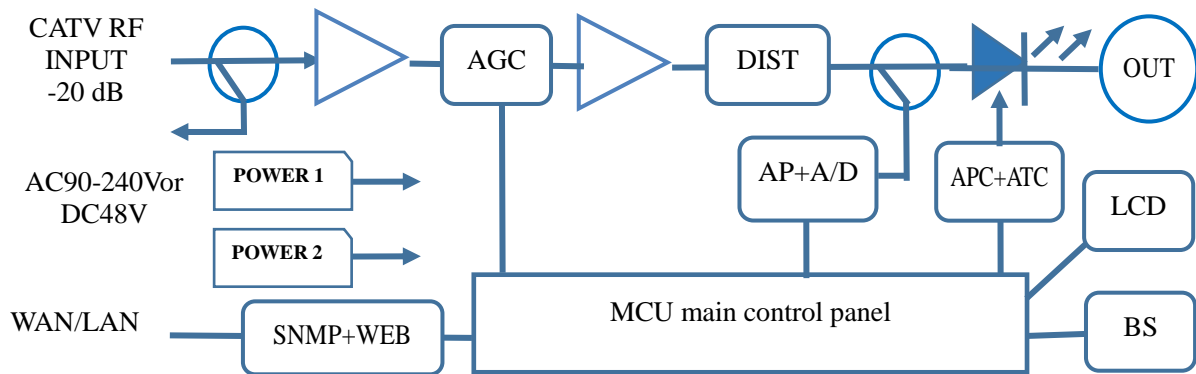
2.2 The transmitter's front panel, back panel diagram
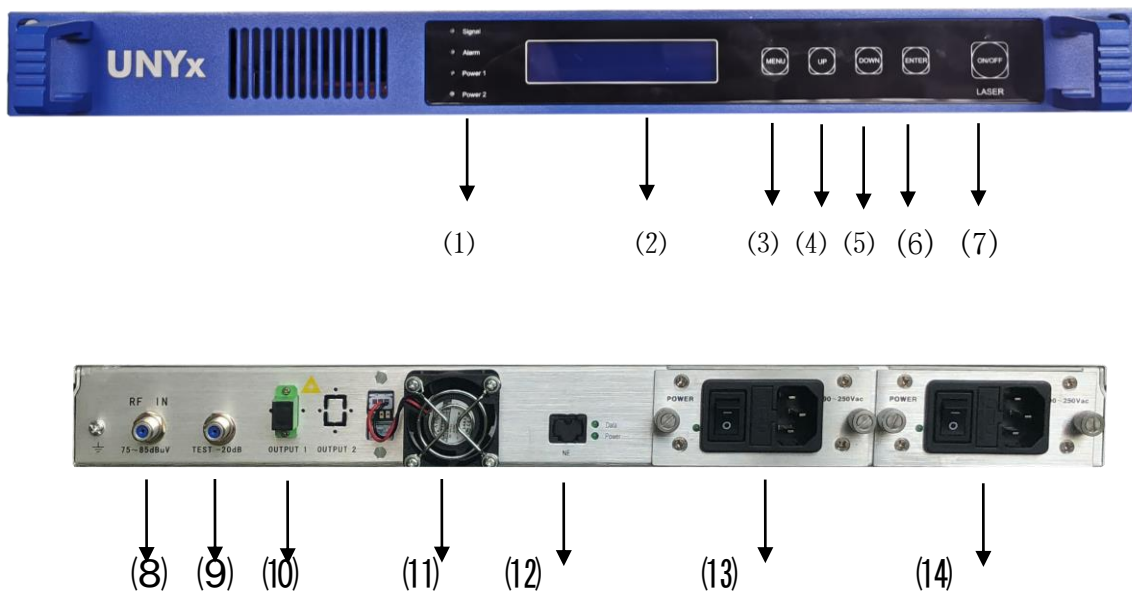
(1)Signl、Alarm、Power1、Power2 Indicator light，(2)LCD display (3)MENU button (4)UP button (5)DOWN button (6)ENTER button (7)LASER Lock key switch，(8)RF IN（75-85dBuV） (9)TEST-20dB RF monitoring caution sign (10)OUPPUT1 optical signal output (11)Fan (12)NE network management transponder (13)POWER1 main power supply socket and switcher (14)POWER2 reserved power supply socket and switcher

3 .The main technical indicators

Performance			Index	Comment
Optical Features	Laser Wavelength	nm	1550±10	whether ITU wavelength or appointed by users
	Laser Line Width	MHz	≤1	FWHM(△λ)
	Side-mode Suppression Ratio	dB	≥45	SMSR
	Equivalent Noise Intensity	dB/Hz	≤-160	RIN (20～1000MHz)
	Extinction Ratio	dB	≥20	
	Output Power	mW	≥10	Appointed by Users
	Optical Return Loss	dB	≥55	
	Fiber Linker		SC/APC	
RF Features	Operating Bandwidth	MHz	47～862/1000	Adding 10lg60/n When transmitting channels less than 60CH
	Input Level	dBuV	75-85	
	AGC Feature	dB	±1	Input Nominal Level±5
	Flatness	dB	≤±0.75	47-1000MHz
	Return Loss	dB	>16	
	Input Impedance	Ω	75	RF/INPUT
	RF Detection	dB	-20±1	
Link Feature	Test Channel		PAL-D/59ch	NTSC/79CH
	CNR	dB	≥50	
	CTB	dB	≤-60	
	CSO	dB	≤-60	
Common Feature	Network Management Port		RJ45	Support WEB and SNMP
	Power Supply	V	90～255	Optional Single and Dual Power Supply
	Consumption	W	≤50	Dual Power Supply Operating 100W
	Operating Temperature	℃	-20～55	
	Storage Temperature	℃	-30～75	
	Operating Relative Humidity	%	5～95	
	Size	mm	482×435×45	W×D×H

4. Operating Instruction

LASER　TRANSMIT
LASER　　　POWER

LASER　TRANSMIT
UNYX-1550DT-10

LASER　TRANSMIT
PARAMETER

COOL TEC: 0.09A
LASERPOWER:

LASERCURR：
85.0mA

5V POWER1: 5.20V
-5V POWER1:-5.2V

5V POWER2: 5.20V
-5V POWER2:-5.2V

FAN STATE:　OFF
EQU TEMP:　29.8 C

OMI CONTROL: AGC
INPUT RF: 82.0 dBuV

RF CHANNELS:
60

VERSION:　V2.6T
Jun 17 2020

LASER　TRANSMIT
SN:E1J1-200717-01

TRAP1 IP ADDR :
192 .168 .002 .099

Press the back panel of the optical transmitter to connect RF signal, connect or detect the optical power output of the machine, and press the front panel function button to operate. Click MENU to choose "LASER TRANSMIT PARAMETER CHECK" or "LASER TRANSMIT PARAMETER SET". Press ENTER to confirm the option, press UP or DOWN to select the subitem content, combined with the parameters displayed in the LCD, to complete the parameter query of the machine and set the item threshold.

4.1Starting up and inquire

Connecting AC110V/220Vor DC48V power supply，"LASER POWER OFF" The laser key switch is in the OFF state，press LASER ON/OFF , Then press ENTER to confirm, LCD displays "UNYx-1550DT-10", UNYx-1550DT-10 stands for model and specification, UNYx stands for manufacturer's abbreviation, T stands for optical transmitter, 1550 stands for wavelength of 1550nm segment, DT stands for full-channel broadband modulation, and -10 stands for 10dBm output power.Press the MENU and select "PARAMETER CHECK" to enter the query submenu. "COOL TEC: 0.09A LASER POWER: 10.1dBm" COOL TEC is the cooling or heating current of the built-in LASER, and LASER POWER is the LASER output POWER; Press UP or DOWN to select "LASERCURR: 85.0mA LASERTEMP: 25.1 C" on the next page. LASERCURR is the working current of the laser, unit mA, LASERTEMP is the working temperature of the laser; On the next page, "5V POWER1: 5.20 V-5V POWER1:-5.2V" and on the next page, "5V POWER2: 5.20 V-5V POWER2:-5.2V". FAN STATE: OFF EQU TEMP: 29.8 C "FAN STATE: OFF is the working STATE of the FAN. AUTO, OFF closes, ON opens. "OMI CONTROL: AGC INPUT RF: 82.0 dBuv" is the modulation CONTROL mode. In AGC automatic gain CONTROL, INPUT RF: 82.0 dBuv is the RF INPUT online detection level. When less than 75, it is represented by <75dBuv; when greater than 75dBuv, it is the online detection value. Next page: "RF CHANNELS: 60

LASER WAVE:1550.52nm" RF CHANNELS: 60 is the RF set of CHANNELS and LASER WAVE:1550.52nm is the factory set wavelength of light. Next, "VERSION: V2.6T Jun 17 2020" is the VERSION and date of the Manufacturer's Software, and next, "LASER TRANSMIT SN:E1J1-200717-01" is the serial number of the optical transmitter.

4.2 **Parameter Set**

Press Menu button twice to enter parameter set:

IP address：192. 168. 002.099，press ENTER button to enter IP address set，divide IP time interval to adjust（cursor line），press ENTER to confirm，press UP to adjust value smaller，press DOWN to adjust value bigger，press ENTER to save；

press DOWN to adjust other time interval as same method above.

> TRAP2 IP ADDR :
> 192 .168 .002 .099

> CHANNELS SET:
> 60

> RF MOD   LVL:
> 0dB

SUB MASK ADDR：In the parameter setting item, press DOWN to select the subnet mask, such as "subnet mask: 255.255.255.000", press ENTER to ENTER the subnet mask adjustment state, and adjust the mask period by the same method as above.

GETWAY ADDR：In the parameter setting item, press DOWN to select the gateway, for example, "Gateway: 192.168. 002. 001, press ENTER to ENTER the state of gateway adjustment. The adjustment is made in different time periods of the gateway. The adjustment method is the same as above.

TRAP1/2 IP ADDR：In the parameter setting item, press DOWN to select server 1 or 2, for example, "Server 1 address: 192.168. 002. 042, press ENTER to ENTER the adjustment state of server 1. The adjustment shall be made in different time period of server address, and the adjustment method is the same as above.

CHANNELS SET FAN CONTROL：In the parameter Settings press the DOWN button to channel and fan Settings, such as "channel: 60, fan: automatically, ON and OFF, press the ENTER key to ENTER the RF carrier channel number and fan set state, channel number and fan state adjust (the cursor line), press ENTER to confirm, press the UP adjustment value smaller, press the DOWN to adjust numerical, press ENTER to save. Adjust the fan state press DOWN, according to the above method to adjust the fan working state.

RF MOD LVL：Press DOWN to select RF MOD LVL, which is set at 0dB when leaving the factory. Press UP to up-regulate 1-5dB, and press DOWN to down-regulate -1 to -5dB.

4.3 **Parameter Description**

COOL/HEAT TEC:For example, "HEAT TEC: 0.4a", when the ambient temperature of the laser is less than 25℃, the built-in semi-conductor HEAT pipe starts to work, and the current flowing through it is the heating current. When the ambient temperature is more than 25℃, the built-in semiconductor refrigeration tube starts to work, and the current flowing through it is the refrigeration current, and the heating or cooling current 0 ~ 2A is normal.

LASER POWER：For example, "LASER POWER: 10.1DBM", this parameter is the actual optical POWER corresponding to the PD tube of the built-in LASER and the MCU control circuit. The error between the displayed value and the output POWER is normal.

LASER CURR：：For example, "LASER CURR: 85.0mA" is the working current value of the LASER, and 60-100mA is normal.

LASER TEMP：For example, "LASER TEMP: 25.1 C", this parameter is the working temperature inside the LASER module. It can be quickly controlled at 20-30 ℃ when starting up and within 25℃±1 minute later.

POWER1/2 5V -5V：For example, "POWER1 5V: 4.9V", this parameter is that the operating voltage of the local power supply 1.5V is 4.9V online, and the difference between it and the nominal voltage ±0.5V is normal.

FAN STATE：For example, "FAN STATE: AUTO" indicates that the FAN works in the STATE of AUTO. AUTO is set at >35 ° c when the chassis temperature is lower than 35 ° c, it will automatically turn on the FAN, and automatically turn off the FAN when the chassis temperature is lower than 35 ° c. "OFF" means OFF, and "ON" means ON.

EQU TEMP：For example, "EQU TEMP: 29.8C", this parameter represents the online temperature of the whole machine.

OMI CONTROL：AGC：This parameter is used to indicate that the machine is on in AGC.

INPUT RF：For example, "INPUT RF: 82.0 dBuv", this parameter represents the online level value of the local RF INPUT, which is related to the set value of channels. When the number of channels corresponds to the actual level error of ±2dB, it is normal.

RF CHANNELS：If "RF CHANNELS: 60", this parameter represents the number of CHANNELS after the machine is set.

LASER WAVE：For example, "LASER WAVE:1550.52nm", this parameter represents the wavelength value of light after the machine is set, which has been set when the product is released from the company.

4.4 Directions for use

This machine electricity before you should check whether the mains power supply voltage is within the scope of 90 ~ 255 v (DC power supply - 48 v), the grounding resistance of grounding line should be less than 4 Ω, RF input signal level is in the 75 ~ 85 dbuv, and shielding network for voltage is close to zero volts. When meet the above conditions can be POWER ON, then ENTER the "LASER POWER OFF" LASER lock button switch for the OFF state, according to the LASER ON/OFF key, then press ENTER to confirm, the LCD displays "UNYx-1550DT-10" said this machine has entered the normal working state, such as panel Alarm red light flashing, said the machine is a parameter is not in conformity with the conditions, such as RF signal no input or small, the POWER 1 didn't open (with POWER 2), LASER current, temperature overrun and so ON. At this point, press MENU to CHECK. If the suffix of query parameter is "~", it means that the content parameter or fault item parameter does not conform to it. If the single power supply 1 or 2 works, it will also appear sound and light alarm. When the double power supply works, the content of this item will no longer alarm, and the alarm will stop automatically after maintained for 1 minute, so as not to increase the noise source of the machine room.

5.WEB Management Function（optional）

The optional status monitoring transponder ensures compatibility with SCTE HMS standards. Native RJ45 interface in the rear panel, or a PC or LAN connection switches, the unit's IP address, subnet mask, the address of the server and installed position information to register in the HFC network management system application software, and then use network management system platform of query system access

to the machine working condition, the related parameters are error within 2.5% is normal.

6 .FW2000 Device Network Management System

network management system solutions, FW2000, a Java programming-based network management system, can realize SNMP management and WEB network management at the same time. The scope of managing equipment now includes 1550 external modulation transmitter, direct modulation optical transmitter, XGS-PON &

CATV WDM EDFA, CATV EDFA and Building Optical receiver, etc. The system can perform equipment's configuration management, performance management, and alarm management, which achieve real-time parameter collecting, alarm web interface reminder, and alarm email reminder.

7 .The notes about optical connection

7.1 attention：

7.1 .1) before you connect them, carefully clean all the fiber optic connectors and connectors

7.2 Cleaning Guide:

7.2.1　Removal the dust cap of fiber optic connector, pay attention to confirm the optical connector is a APC surface;

The tips of cleaning fiber optic connector is to use a dedicated and dry cloth without velveteen (the company 5Kimwipes ®'s fine cloth); In addition, preferably adopt special microscope (at 100 times, 200 times) to check the cleanliness of fiber optic connector surface or blemish.

pay attention to maintaining the fiber optic connectors is clean;

7.2.2　cleaning the fiber optic connectors (flange):

you can use a dedicated compressed gas to clean the surface of fiber optic connector;

you can remove the dust which is less than 0.2 microns, better without residue;

hold the tank of compressed air from the connector about 6 inches, alignment flange, and press the nozzle switch shortly times,so you can clean the connector completely;

if there is no dedicated compressed air, the 2.5 mm cotton swab for cleaning can also be used to clean the optical transmitter connectors, or remove the flange and clean the optical fiber jumper connector of the other side directly ;

Note: When handling fiber optic connectors must be very careful to avoid damage.

7.2.3 using the optical fiber jumper to connect the output of optical transmitter to the optical power meter; the connectors of Optical Power Meter must match with each other.

7.2.4 Using the optical power meter to check the output of the transmitter optical power is within normal limits;

8. Other notes

8.1 The machine should have a good grounding, grounding resistance should be smaller than 4Ω. According to international standards, 220Vac line adopt three-wire system, the midline is grounding wire.

8.2 The machine should be set up in anti-hot, anti-cold, anti-wet environment, so as to avoid excessive temperature and humidity affect the use life of machine.

8.3 The machine adopts high-performance, highly reliable switching power supply with constant voltage and over-current protection.In the internal of switching power supply ,there is 2A fuse of import that can be work at 85Vac ∽ 265Vac electrical line. The machine using a dual power supply, which can be used for a cold, hot backup, it is recommended to use hot backup.

9 .The scope of the product warranty

The company's quality assurance system, includes equipment testing and inspection of operational procedures, thus ensure the reliability of product quality. Prior to the product exporting from the Company,we adopt all possible measures to make the electrical, optical, mechanical and other indicators of products have reached the standards promulgated. The Company requires the user to monitor on-site inspection and assembly; the testing personnel should be carry out related operations In strict accordance with the preventive measures formulated when they operate and test optical static sensitive devices.

9.1 Warranty Rules

For users' first-hand products, the company repair them in the area of materials and manufacturing processes free of charge one year since users pick up them.

Using this product, please follow the requirements on the instructions strictly, do not arbitrarily change. In the warranty period, the user can not break the seal, the internal circuitry can not be changed. If the product does not meet quality requirements or experience problems to be solved, please return the products to the

company, the company will handle according to the warranty provisions.

In the warranty period, users have the right to repair or replace the defective product confirmed by the company. However, the above provision is considered invalid to change ownership, or the irregularities caused by use, storage, transport, assembly or accidents.

9.2 assurance for specific product and guide to repair

All products are produced according to high-quality standards to ensure that avoid the failures in technology, materials and external framework, etc. If requests maintenance or return faulty equipment, the user should raise the equipment within 30 days after receipt goods or warranty period, please follow the following principles:

9.2.1 you shall return them after you receipt the Recycling Single issued by the company's sales department. When you apply return, please attach the device model, serial number and return reasons, and requested prepay return shipping. If you do not pay the freight in advance or no recycling single, the Company will not receive.

9.2.2 before the repair, the Company will inform the user about the equipment test results and maintenance costs (generally about the failure caused by the users or issues which do not meet the warranty conditions). If the returned facilities fully meet the quality requirements and don't need to repair, or the user does not require repairs outside of warranty service, users have to pay the basic fee. Only when the user acknowledge all the costs of maintenance, the company carry out repairs. Similarly, only with the user's consent, the company will be able to replace equipment parts (such as connectors), which is very necessary to the company's testing and repair.

9.2.3 the products repaired enjoy the same shelf life, and enjoy warranty treatment within 90 days after pick up the goods.