NY048 Series Multifunctional Optical Transceiver

➢ Feature

※ **Transmitting Analogue and Digital Signal**
※ **WDM (Wavelength Division Multiplexing)**
※ **High Reliability**
※ **Strong Anti-interference Ability**

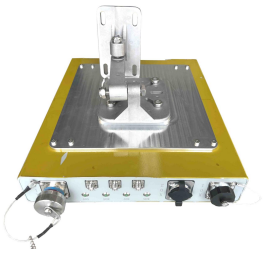


Fig. (a) Outdoor unit with support frame

Fig.(b) Outdoor Unit

➢ Application

※ **Ground receive station of satellite system**
※ **Radar system**
※ **Mobile communication terminal**

Fig. (c) Front panel of indoor unit

Fig.(d) Back panel of indoor unit

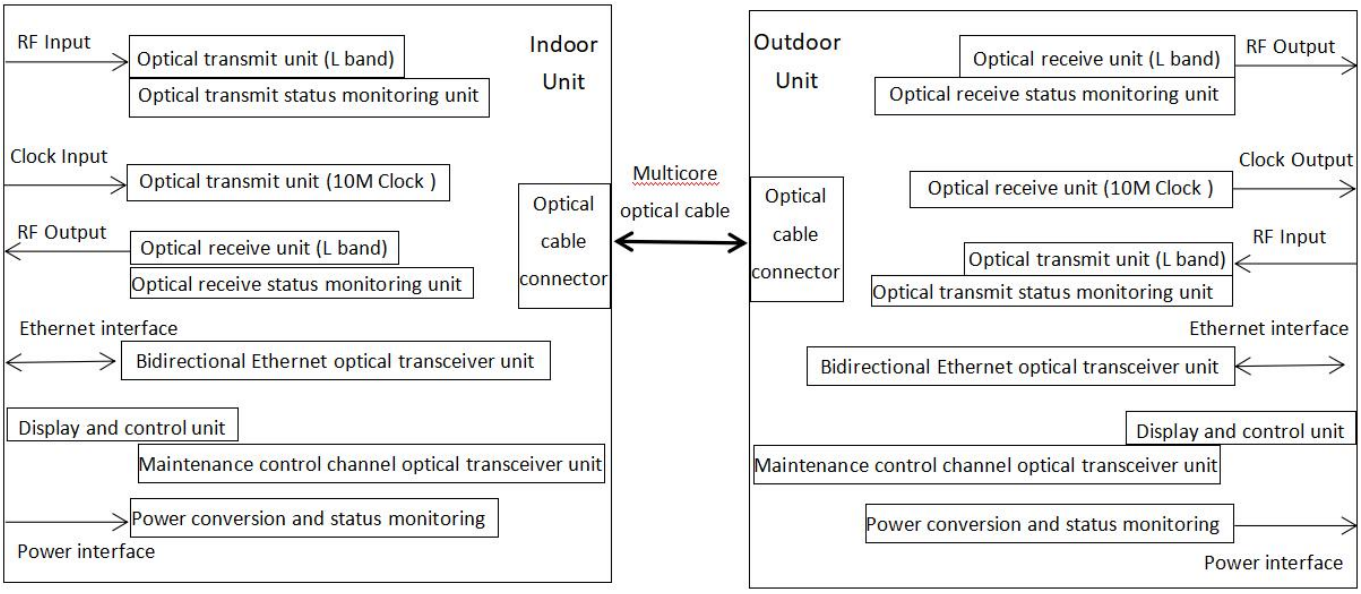
Description of NY048 Series

The NY048 series multi-function optical transceiver is based on radio frequency photon and digital optical communication technology. Optical fiber and cable are used as carriers to achieve RF signal transmission, status and control signal transmission, Ethernet communication, and other functions between the central computer room and outdoor radar terminal equipment in satellite system. NY048 series transceiver consists of an indoor unit and an outdoor unit, completing the uplink and downlink full duplex transmission of L-band RF signals. The uplink is for controllable transmission of a 10 MHz clock signal, which can realize the real-time display of work status and recording and reporting of fault status. The downlink is used as adaptive bidirectional Ethernet communication interface of 100M/1000M.

The interior of the product chassis adopts modular design, and each functional module adopts independent chambers to reduce interference between modules. The overall closed design of metal materials effectively prevents external signal interference and insulates signal leakage from interfering with other devices; The power socket, optical interface, radio frequency interface, and indicator light are all equipped with waterproof functions on the installation surface.

The product uses optical cables as the long-distance transmission medium for signals. Compared to traditional cable transmission, optical cable transmission has advantages such as wider bandwidth, stronger anti-interference, better confidentiality, lower system power consumption, and lighter weight. Not only can it be used for communication between radars and base stations in traditional radar ground stations, but also for communication between radars and signal processing centers in mobile or vehicular stations. After portable upgrade, it can also be used in mobile radar communication systems.

Schematic



Firgure1. NY048 Series Multifunctional Optical Transceiver Schematic

Electrical / Optical Characteristics

Signal	Parameter	Value			Unit	Remark
		Min	Typ	Max		
RF Signal	Frequency	950	-	2150	MHz	-
	Input signal power range	-60	-	0	dBm	-
	Link insertion loss	-	-	1	dB	Adaptive within 0 ~ 5km transmission distance
	Gain Flatness	-	-	±1.5	dB	-
	Group delay distortion	-	-	0.5	ns	-
	Noise Figure	-	-	20	dB	At room temperature
	CNR	30	-	-	dB	-
	Input 1 dB Compression	0	-	-	dBm	-
	Spurious suppression ratio	50	-	-	dBc	Input power 0dBm
	IM3 rejection ratio of output signal	40	-	-	dBc	Input power 18dBm
	Phase noise of output signal	-	-	-63	dBc/Hz	@100Hz
		-	-	-73	dBc/Hz	@1KHz
		-	-	-83	dBc/Hz	@10KHz
		-	-	93	dBc/Hz	@100KHz
	VSWR at input and output ports	-	-	1.5	-	50Ω
Clock Signal	Frequency	10	-	-	MHz	-
	Input power	-	6	-	dBm	-
	Output power	5	-	-	dBm	Adaptive within 0 ~ 5km transmission distance
	VSWR at input and output ports	-	-	1.5	-	50Ω

Status display and control function	Display and control various working states of indoor and
Ethernet functionality	Full duplex 100/1000M Ethernet transmission

Power Supply

Item	Symbol	Description	Unit	Remark
Indoor Unit	DC	+12@10W	V	220VAC to +12VDC Power supply with power adapter
Outdoor Unit	DC	+12@15W	V	220VAC to +12VDC Power supply with power adapter

Display function

Figure2. LCD display of indoor unit

Symbol	Description	Remark
D&T:	Display date and time	
: Indoor unit status information display		
ALL:	Comprehensive status. Including transmission status, reception status, working current status, and optical power receiving status	■ Any state fault □ All states are normal
Tx	Transmission status indication of L-band uplink signal	■ Fault □ Normal
Rx	Reception status indication of L-band downlink signal	■ Fault □ Normal
I	Current status indication	■ Fault □ Normal
RP	Optical power receiving of L-band downlink signal（dBm）	
: Outdoor unit status information display		
ALL	Comprehensive status. Including transmission status, reception status, working current status, and optical power receiving status	■ Any state fault □ All states are normal
CLK	Indication of Clock signal receive output electric power	■ Fault □ Normal
Tx	Transmission status indication of L-band uplink signal	■ Fault □ Normal
Rx	Reception status indication of L-band downlink signal	■ Fault □ Normal
I	Current status indication	■ Fault □ Normal
RP	Optical power receiving of L-band downlink signal（dBm）	
The outdoor unit displays the following statuses with an indicator light		
X06	Optical transmission status of downlink signal	Green indicator: on means normal，off means fault
X07	Optical reception status of uplink signal	Green indicator: on means normal，off means fault
X08	The status of power supply	Green indicator: on means normal，off means fault
X09	Clock signal working state	Green indicator: on means normal，off means fault or remotely turned off

Typical Curve

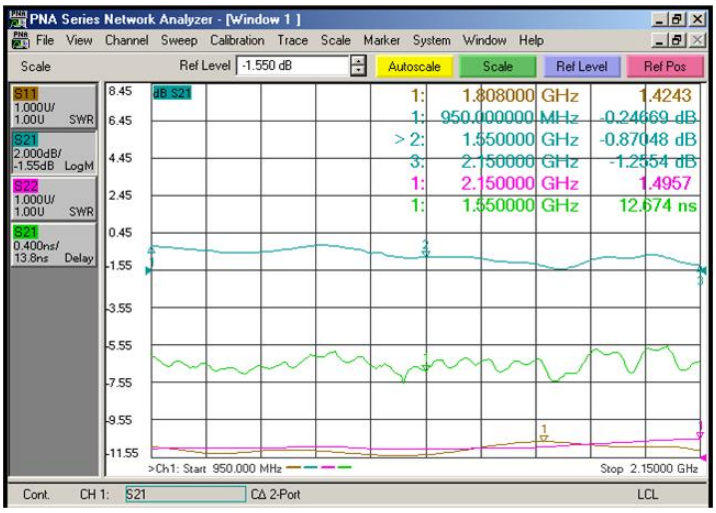


Figure 3. Up/Down signal typical curve

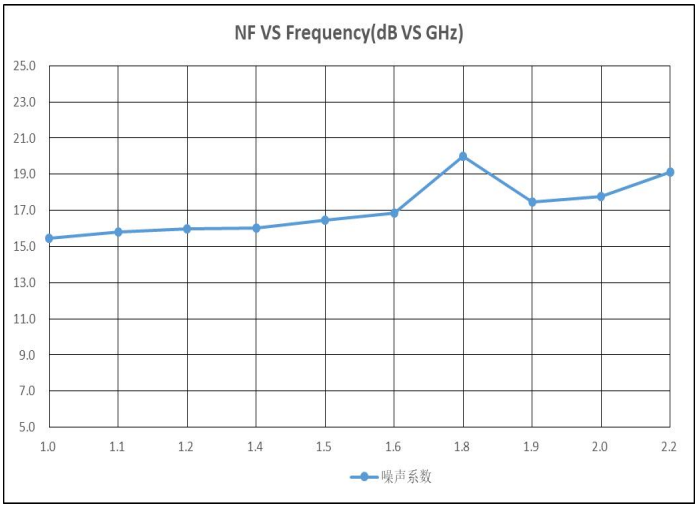


Figure 4. Up/Down signal noise figure

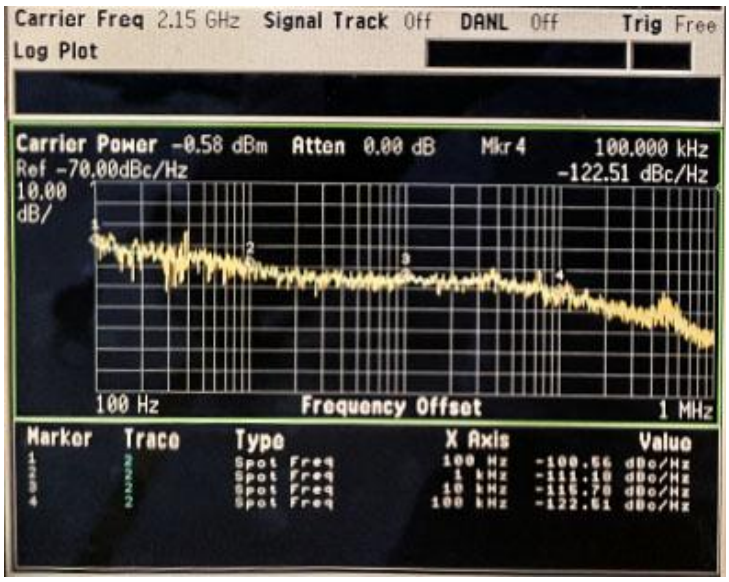


Figure 5. Up/Down signal phase noise

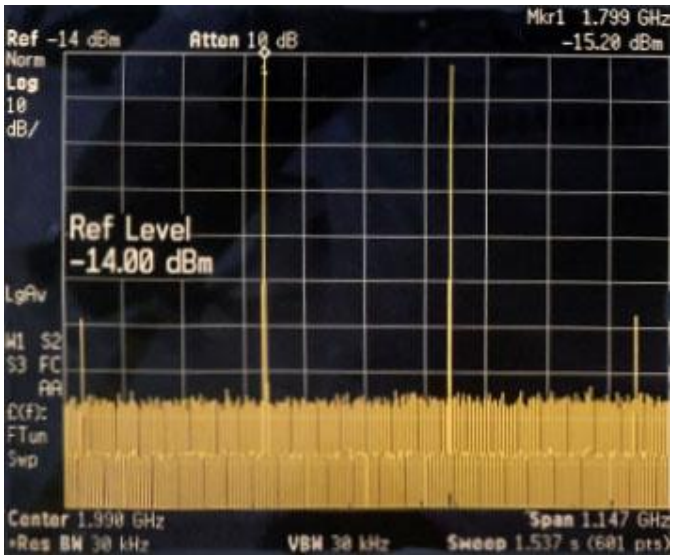


Figure 6. Up/Down signal IM3 (third order intermodulation signal)

Dimension and Interface

- **Indoor Unit: Dimension and Interface**

unit：mm[inch]

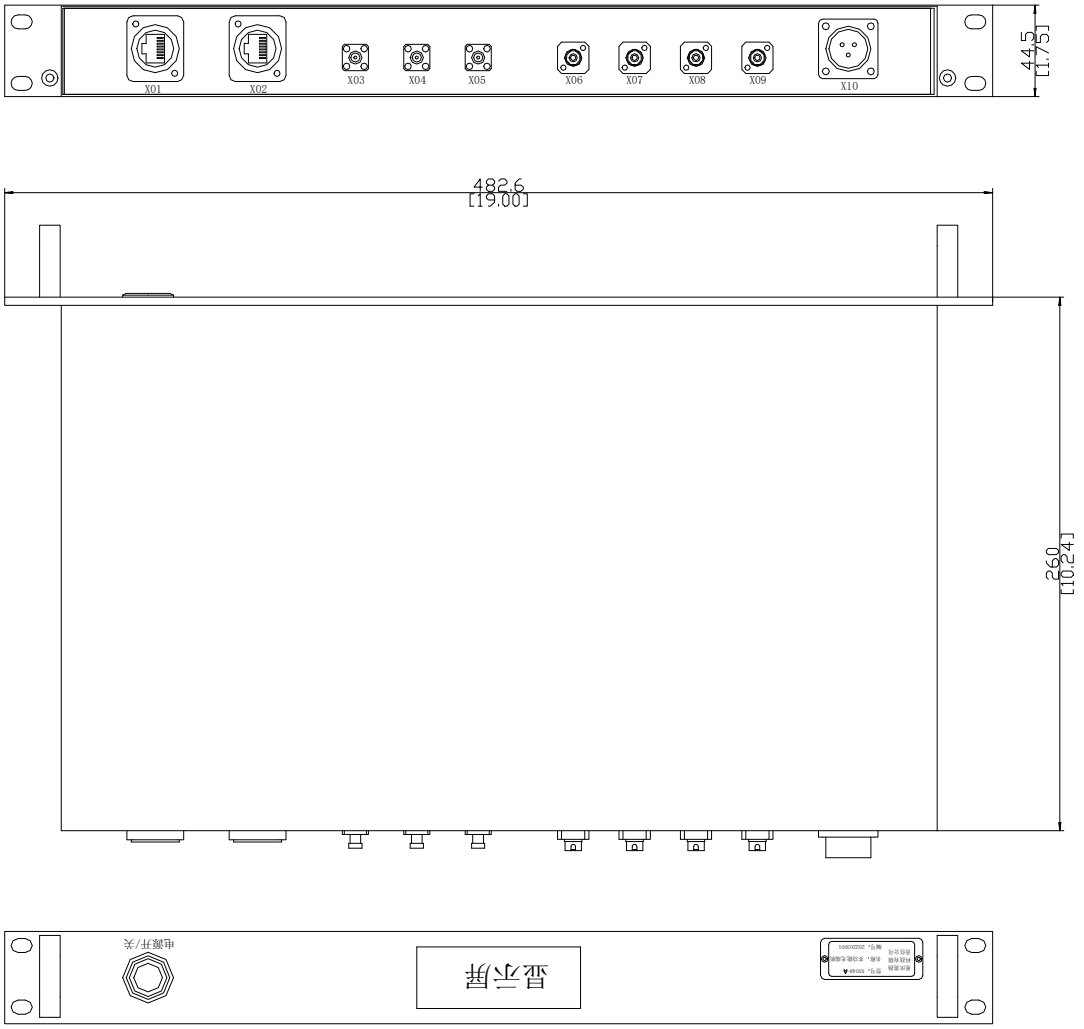


Figure 7. Dimension of Indoor unit

Interface Definition of indoor unit					
Symbol	**Description**	**Type**	**Symbol**	**Description**	**Type**
X01	Local Ethernet port	YT-RJ45	X06	Optical output of uplink RF signal	FC/APC
X02	Up/down Ethernet port	YT-RJ45	X07	Optical input of downlink RF signal	FC/APC
X03	Uplink RF signal input	SMA-K	X08	Optical output of Clock signal	FC/APC
X04	Downlink RF signal input	SMA-K	X09	Status information, control signal, optical input, output	FC/APC
X05	Clock signal input	SMA-K	X10	Power	WS20-3Z
Power supply：220VAC/50Hz to 12VDC with power adapter					

- **Outdoor Unit: Dimension and Interface**

Unit：mm[inch]

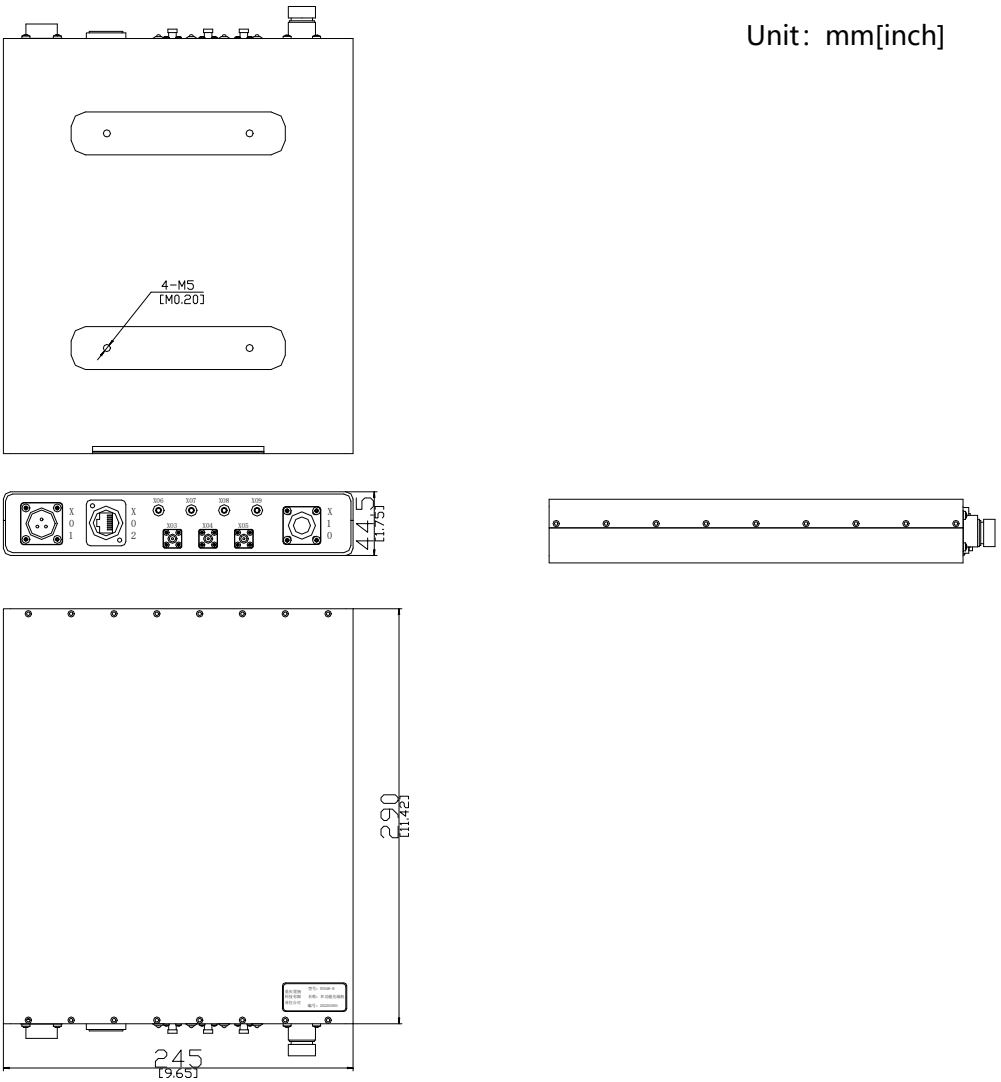


Figure 8. Dimension of Outdoor unit

Interface Definition of outdoor unit					
Symbol	**Description**	**Type**	**Symbol**	**Description**	**Type**
X01	Power	WS20-3Z	X04	Downlink RF signal input	SMA-K
X02	Up/down Ethernet port	YT-RJ45	X05	Optical output of Clock signal	SMA-K
X03	Uplink RF signal output	SMA-K	X10	4-core optical interface	YMF13F04A1D40N0
Power supply：220VAC/50Hz to 12VDC with power adapter					
Outdoor unit: X10（4-core optical interface）Interface Definition					
1（A）core：Uplink signal optical input（Connected to indoor unit X06）			2（B）core：Downlink signal optical output (Connected to indoor unitX07)		
3（C）core：Clock signal optical input（Connected to indoor unitX08）			4（D）core：State, control composite optical signal (Connected to indoor unitX09)		

- This series of products is customized, and the product information in this article is for reference only.