

E1-16*EM2/4 PCM Voice Multiplexer



User's Manual

Introduction

Dear users:

In order to make your work smoothly, we give you some advice. Before you connect and operate the product, you should make sure to read this manual carefully and pay more attention to the notices.

Safety Information

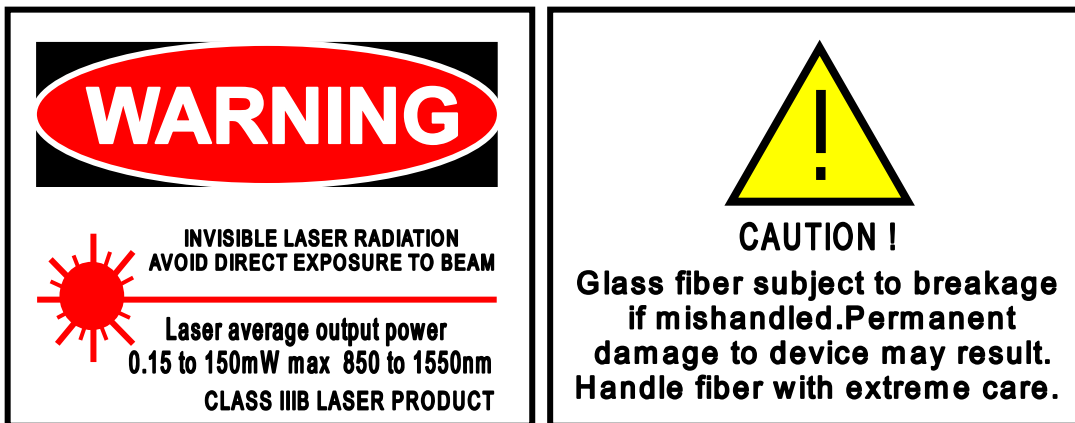
To avoid personal injury or the product and other products connected with being damaged, you should be careful of the safety information. Make sure use the product according to the rules to prevent the occurrence of some potential harm.

Attention:

1. Power Voltage. The device can be only used in the area where the power is AC 220V \pm 20%/50Hz. Please don't use in other areas.
2. Use proper power line and power. You must use the power line equipped with the products randomly. Also you can use other qualified power line with case which can protect earth terminal. The earth terminal of the outlet that is matched with power cord should be well ground connection.
3. Attention ground connection. The product is grounded by the conductor in the power line or terminal on the panel. To avoid electric shock, the ground conductor of the power line must be grounded in a good connection with the earth. **Before you connect all the optical ports of the product, you should be sure that the product is well grounded.**
4. Take care of typical value of the ports. To avoid fire or electric shock, please pay attention to all typical values and symbols labeled in the equipment and this manual.
5. Don't venture operation. When you doubt this product cannot work properly, please consult our professionals instead of venturing operation.
6. Vibrations and Crash. This machine contains elaborate optical component, you should avoid strenuous vibrations and crash.
7. Don't open the cover of the machine and repair arbitrarily. There aren't components for users to repair in the main case of this product. If you need repair the product, please contact our company professionals. As soon as you open the cover, you will have no warranty.

⚠️ Cautions

1. The product is Class IIIB laser device product. There is the laser radiation that your eyes cannot see in the machine. It is possible that the machine will cause some physical damage of your eyes and skin if you operate it improperly. After the machine powers up, you can't look steadily at the fiber optical input and output port or the fiber connector interface connected with the ports.
2. Keep the fiber optical connector clean, or it will cause attenuation and affect transmitting distance. When you install the product, you should dip tidy cotton with absolute ethyl alcohol to clean it.



3. The product is sensitive to static electricity. Before you contact with electric interface, you should release static electricity.
4. To prevent fire or electric shock, please don't let the product wet or damp. Don't operate in damp conditions.
5. Don't open the lid of the product to operate it.
6. Keep the surface clean and dry. You should ensure good ventilation and heat-emission.

:Overview

This device is a kind of developed point to point transmission equipment based on special-use VLSI. It has alarm function. 1-16Channel EM2/4 voice and 4Channel 10M/100M Ethernet interface (Wire Speed 0-15*64K),1-4Channel serial data interfaces can be optional. The device circuit is digital circuit. The working is reliable, stable, and low power consumption, high integration, small size, ease of installation and maintenance.

:Features

- Based on self -copyright IC
- Can monitor the remote alarm status
- E1 interface comply with G.703, adopts digital clock recovery and smooth phase-lock technology
- Provide 2 expansion interfaces(AUX1/2), you can extend 1-4Channel asynchronous data, such as RS232/RS485/RS422/Manchester code; 1-8Channel relay dry signal and so on
- 4Channel Ethernet interface is switch interface, support VLAN
- Ethernet interface rate is 10M/100M, half/full duplex auto-adaptable
- Voice port supports FXO and FXS port, EM2/4 audio interface, FXO port docking with program-controlled switchboard, FXS port connected to the user's telephone
- Have LED when the device is power-off or E1 line is broken or lose signal
- Can monitor the temperature and voltage (network management platform)
- AC 220V, DC-48V, DC24V can be optional

:Parameters

◆ FXS Phone Interface

Ring voltage: 75V

Ring frequency: 25HZ

Two-line Impedance: 600 Ohm (pick up)

Return loss: 40 dB

◆ **FXO PBX Interface**

Ring detect voltage: 35V
Ring detection frequency: 17HZ-60HZ
Two-line Impedance: 600 Ohm (pick up)
Return loss: 40 dB

◆ **EM2/4 Interface**

AD gain : 0db
DA gain : -3.5DB
line Impedance: 600 Ohm (pick up)
Return loss: 20 dB

◆ **Ethernet interface (10/100M)**

Interface rate: 10/100Mbps, half/full duplex auto-negotiation
Interface Standard: Compatible with IEEE 802.3, IEEE 802.1Q (VLAN)
MAC Address Capability: 4096
Connector: RJ45, support Auto-MDIX

◆ **E1 Interface**

Interface Standard: comply with protocol G.703;
Interface Rate: 2048Kbps±50ppm;
Interface Code: HDB3;
E1 Impedance: 75Ω (unbalance), 120Ω (balance);
Jitter tolerance: In accord with protocol G.742 and G.823
Allowed Attenuation: 0~6dBm

◆ **Power**

Power supply: AC180V ~ 260V ; DC -48V ; DC +24V
Power consumption: ≤7W

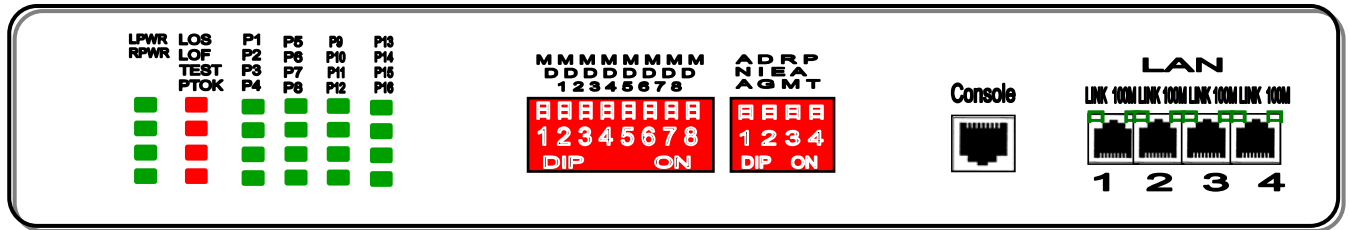
◆ **Working Environment**

Working temperature: -10°C ~ 50°C
Working Humidity: 5%~95 % (no condensation)
Storage temperature: -40°C ~ 80°C
Storage Humidity: 5%~95 % (no condensation)

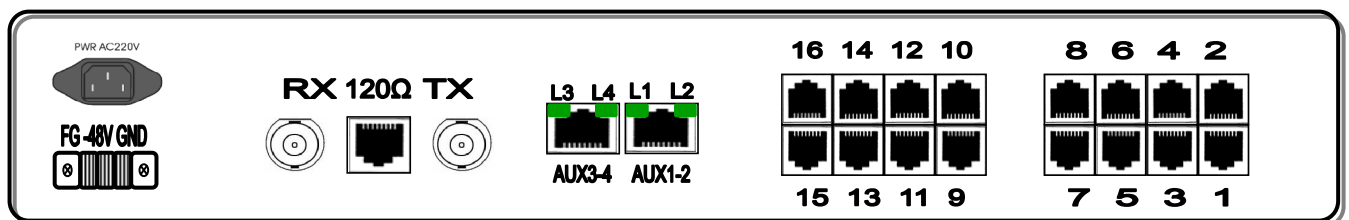
◆ **Dimension**

19 inch 1U : 483 (Length) X200 (Width) X44 (height) mm

Panel Description



Front Panel



back Panel

Indicator LED

Name	Color	Status	Description
LPWR	green	on	Local power on
		off	Local power off
RPWR	green	on	Remote power on
		off	Remote power off
ROK	green	on	Remote work normal
LOS	red	on	Fiber signal lost
		off	Fiber signal normal
LOF	red	on	Fiber signal frame lost, warning signal
		off	Fiber signal normal
TEST	red	on	Device is testing when any of ANA,DIG,REM,PATT is pressed
PTOK	red	on	when Button PATT was pushed down, PBRS Code testing
P1-16	green	on	1-16 channel voice is under calling
		wink	1-16 channel voice Calling in

		off	1-16 channel voice is not under calling
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RPWR Description:

If signal indicator light LOS is ON, there are two cases. One case is that the transmission line is broken; the other case is that the remote equipment is power off. As follows:

LOS ON, RPWR OFF: Remote device is power off;

LOS ON, RPWR ON: E1 line is broken;

LOS OFF, RPWR OFF: Normal Work

: Loop test

Loop test DIP

✘ there is DIP-4switch on the panel, they are as following from the left to right,

ANA: Fiber Interface local loop, to check whether local device and its connecting circuit correct

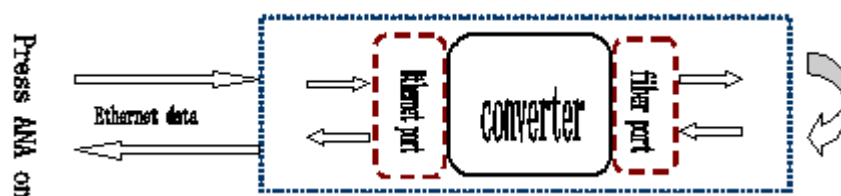


Figure 6: ANA button function

DIG: 10/100BASE-T Local loop, to check the opposite device and optical circuit

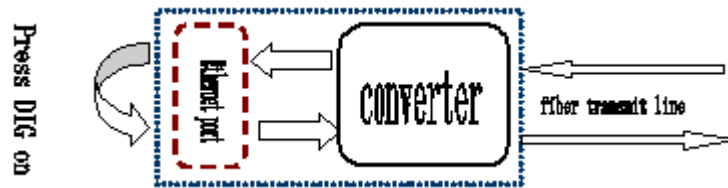


Figure 7: DIG button function

REM: Command the remote device 10/100BASE-T loopback to check optical line and both device

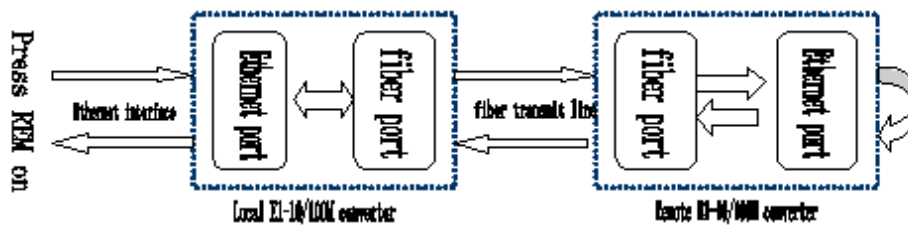


Figure 8: REM button function

PATT : Pseudo random code test: generate pseudo random code to LAN input port, and test if the signal output of LAN accord with the standard. PTOK ON if accord, OFF if not accord.

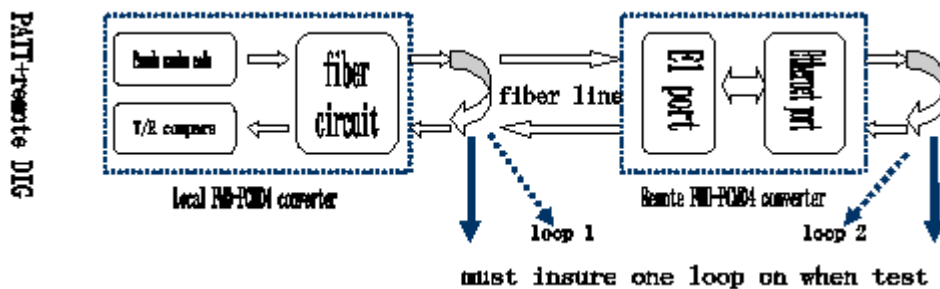


Figure 9: PATT button test

✂the combination function of buttons

A: Press local **ANA** + local **PATT** :

Pseudo random code signal test local device, PTOK on,

indicate local device work normally, if off or wink, indicate something wrong (please check loop 1)

B: Press remote **DIG** + local **PATT** :

Pseudo random code signal test remote device and Fiber transmit line, if on, work normal, if off or wink, indicate something wrong (please check loop 2)

C: Press local REM + local **PATT** :

PATT Pseudo random code signal test local and fiber transmit line, if PTOK on, work normally, if off or wink, indicate something wrong (please check loop 2)

B and C have same function



Note :

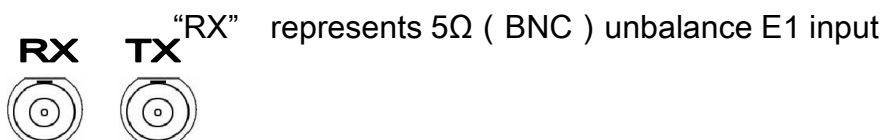
- 1 When loop 1 on, can check if local device work normally, if off, then loop 2 can check fiber transmit line and ends devices
- 2 Press any button on front panel, can stop transmit, and turn into test mode.
- 3 When PATT test, must make sure line could loop, otherwise the pseudo random code can't return back.

: DIP Switch

DIP1	STATUS	DESCRIPTION
1(M/S)	OFF	E1/fiber master clock (default)
	ON	E1/fiber slave clock
2(NC)	OFF	NC
	ON	NC
3(MODE3):	OFF:OFF	MAX Phone number is 16,other E1 timesolt for Ethernet
	OFF:ON	MAX Phone number is 12,other E1 timesolt for Ethernet
4(MODE4)	ON: OFF	MAX Phone number is 8,other E1 timesolt for Ethernet
	ON: ON	MAX Phone number is 4,other E1 timesolt for Ethernet
5(NC)	OFF	PCM port 1-4 type is FXO (default)
	ON	PCM port 1-4 type is FXS/E&M
6(NC)	OFF	PCM port 5-8 type is FXO (default)
	ON	PCM port 5-8 type is FXS/E&M
7(NC)	OFF	PCM port 9-12 type is FXO (default)
	ON	PCM port 9-12 type is FXS/E&M
8(NC)	OFF	PCM port 13-16 type is FXO (default)
	ON	PCM port 13-16 type is FXS/E&M

: E1 Interface

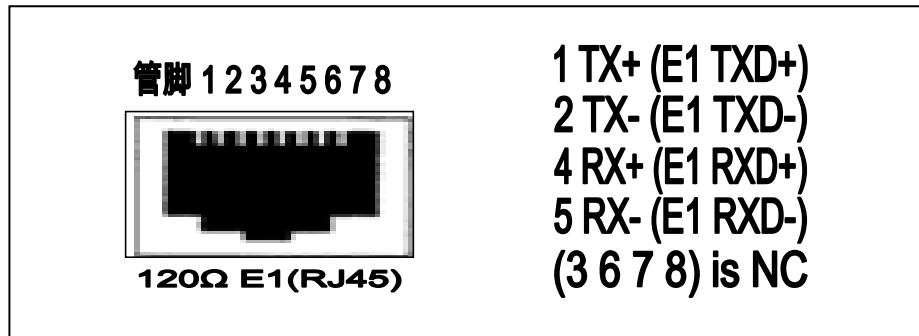
75Ω-BNC Socket



“TX” represents 75Ω (BNC) unbalance E1 output

120Ω-RJ45 Socket

PIN defined as follows:

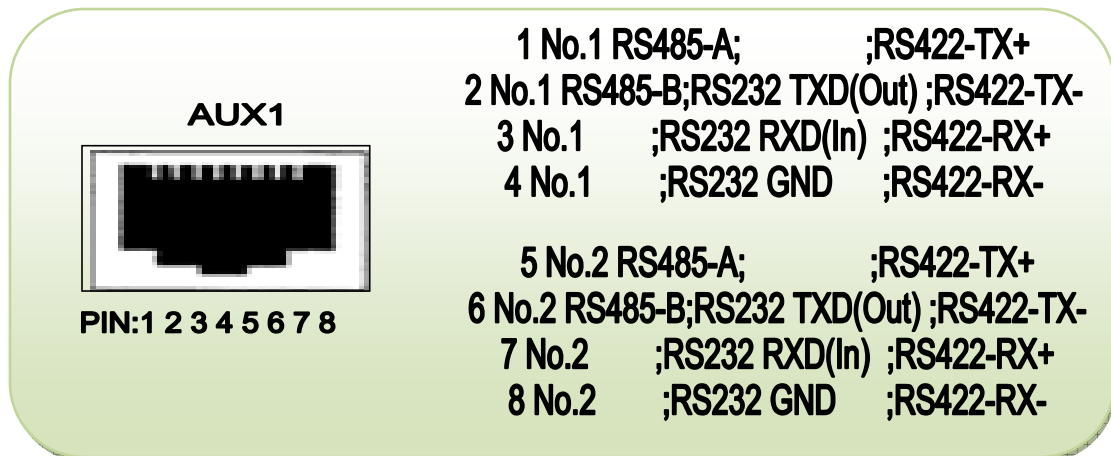


:AUX Extension Interface

Can extend all kinds of data (according to your order)

The RJ45 interface of L1-L4 on the back panel is 1-2Channel RS232 data.

PIN1-4 is 1Channel, PIN5-8 is 2Channel. Defined as follows:



:Ethernet Interface

1 Channel Ethernet and 4Channel Ethernet can be optional. Support 10/100M, half/full duplex auto- negotiation and AUTO-MDIX (crossed line and straightly connected line self-adaptable)

LINK	Green	ON	Ethernet is connected
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		OFF	Ethernet is not connected
100M	Green	ON	Ethernet rate is 100M
		OFF	Ethernet rate is 10M

RJ45 Connector and Crystal head PIN order as follows:



10/100M Ethernet Interface



Crystal head PIN order

*** Straightly connected line order**

A end Crystal head PIN		B end crystal head PIN	
Twisted Pair Color	PIN order	PIN order	Twisted Pair Color
White and Orange	1	1	White and Orange
Orange	2	2	Orange
White and Green	3	3	White and Green
Blue	4	4	Blue
White and Blue	5	5	White and Blue
Green	6	6	Green
White and Brown	7	7	White and Brown
Brown	8	8	Brown

*** Crossed line order**

A end Crystal head PIN		B end crystal head PIN	
Twisted Pair Color	PIN	PIN order	Twisted Pair Color

	order		
White and Orange	1	1	White and Green
Orange	2	2	Green
White and Green	3	3	White and Orange
Blue	4	4	Blue
White and Blue	5	5	White and Blue
Green	6	6	Orange
White and Brown	7	7	White and Brown
Brown	8	8	Brown

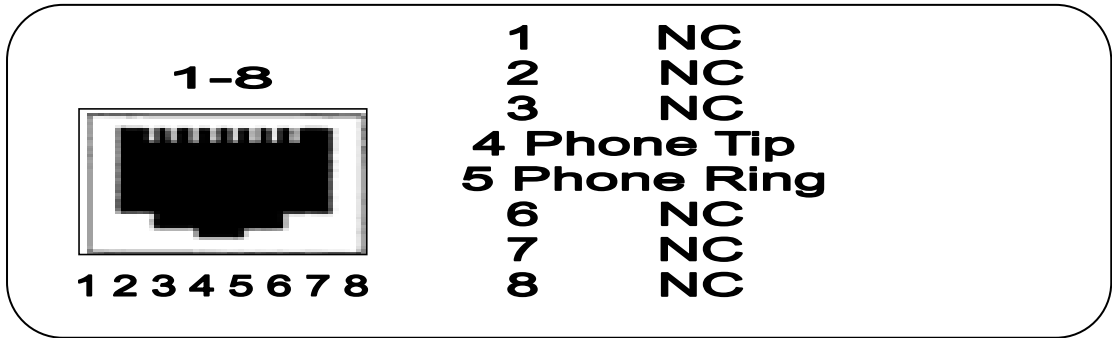
Description: Crossed line A end "1" connects with "3"; A end "2" connects with "6".When the connected Ethernet line is very long, you should be sure that "1"and "2" "3"and"6"are a pair line of Twisted Pair.

:Telephone Interface

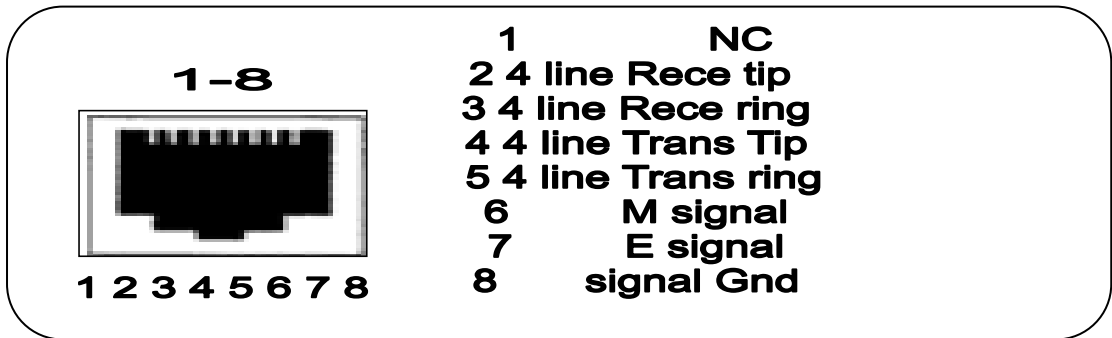
There are eight RJ45 connectors on back panel, support 1-2 analog line telephones access. The device supports two interfaces: FXO and FXS. If this device is built-in FXO module, the interface is FXO interface, you can insert the phone line that that through switch into FXO interface. If this device is built-in FXS module, the interface is FXS interface, you can insert it into telephone directly.

One RJ45 connector can support 2Channel analog telephone access (telephone interface),PIN defined as follows:

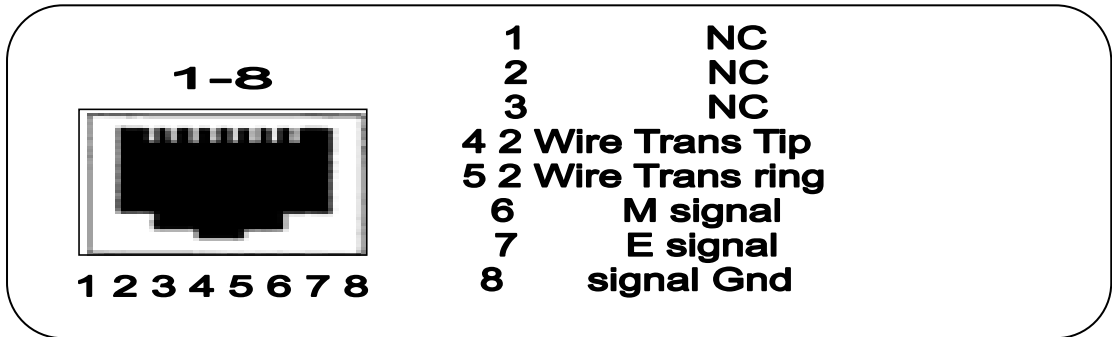
FXO/FXS Pin define:



EM4 Pin define:



EM 2 Pin define:



Power

Device supports AC220V, DC -48V and DC24V (Optional)

If you use AC220V power, you should connect device power input port with power socket by using random power line to provide AC220V power device.

If you use DC to supply power, DC-48V as an example, please connect as follows:

General Connection

“FG” polarity Connect ground

“DC-48V” polarity Connect power negative polarity

“GND” polarity Connect power positive polarity

Note: Device has polarity protection measures. If positive and negative polarity is connected reversely, device will not damage, function well and ease of installation and maintenance. (The power contains DC48V, DC -48V, DC24V, DC -24V, and so on).

Installation

- Unpack, inspect the content carefully. Verify that all items are included with your carton. Contact us or local agent if there is any content missing or damaged.
- Check power supply configuration. Care about the value of voltage if use DC input.
- Take following tests before usage:
 - Check loop test buttons on back panel, to see if loose or not, PWR and LOS on, others OFF.
 - Connect one Ethernet line, LINK on, at the same time the connected device LINK also on.
 - If the device work on framed status, LOS and LOF on.
 - Press PATT button, TEST should be ON, PTOK should be OFF. Then Press ANA button, PTOK ON and LOS OFF.
 - If used in pair, when press PATT button, you may not press ANA, then press DIG or REM of remote device, PTOK should be ON.
 - FXO port connect with phone line, FXS connect with phone. Can hear alarm when phone off.
- If indicator LED works normal, unpress all switch on the back panel and power off, set clock, plug FIBER wires, then power on, the device should work normally.
- If device does not work normally, please refer to chapter 4: trouble shooting. Contact us or our local agent in time if the

problem can't be solved.