



60FXO/FXS+4E1+4GE Voice Multiplexer

User's Manual

: Introduction

Dear users:

Thank you for using our product. 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

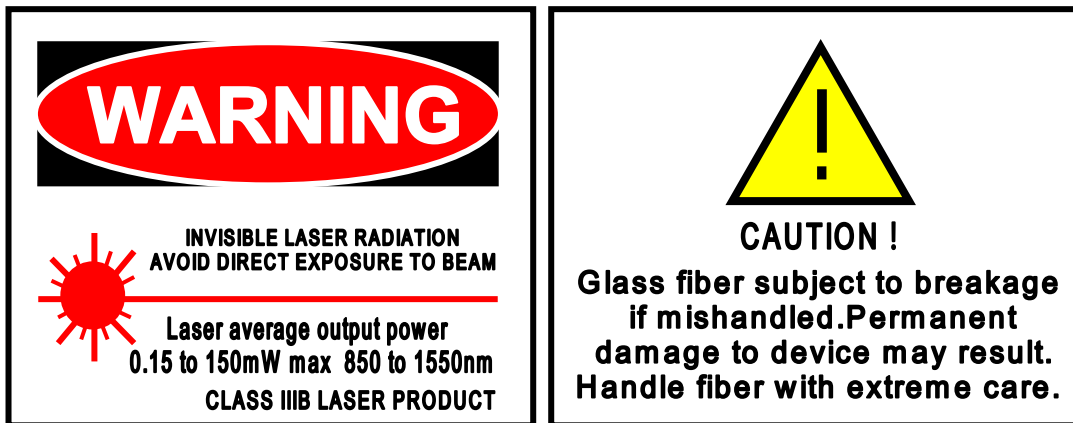
To avoid personal injury or the product and other products connected with being damaged, you should be careful of the safety information. Make sure use the product according to the rules to prevent the occurrence of some potential harm.

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 series of equipment is the point-to-point optical transmission equipment developed on the basis of optical fiber transmission special VLSI developed by our company. It can provide 60 channels of telephone, 4 channels of E1 interface (75ohm or 120ohm) and 4 channels of 1000m line speed Ethernet interface. The application is very flexible. It has perfect alarm function, stable and reliable operation, low power consumption, high integration and small size.

: Features

- Integrated circuits based on independent intellectual property rights;
- 06 channel voice access, supporting caller ID function and reverse polarity billing function;
- Support the mutual number release function of each station;
- The voice port supports FXO port and FXS port, FXO port is connected with SPC exchange, and FXS port is connected with user's telephone
- E1 interface conforms to the recommendation of G.703 and adopts full digital clock recovery and smooth phase locking technology;
- Ethernet interface speed is 10m / 100/1000M adaptive; four Ethernet interfaces, and each Ethernet interface has independent bandwidth and line speed of 1000m

- When the optical signal is lost, it can detect whether the opposite end equipment is powered down or the optical fiber is blocked, and indicate the alarm through the indicator light;
- It has the function of viewing and displaying the working status of remote equipment at the local end;
- Provide command remote interface loopback function to facilitate line maintenance;
- Provide console management interface to facilitate installation and opening;
- The transmission distance without relay can reach 2-120 km;

:Parameters

◆ Fiber

Multi-mode Fiber

50/125um, 62.5/125um,

Maximum transmission distance: 5KM@62.5/125um single mode fiber, attenuation (3dbm/km)

Wave Length: 820nm

Transmitting power: -12dBm (Min) ~-9dBm (Max)

Receiver sensitivity: -28dBm (Min)

Link budget: 16dBm

Single-mode Fiber

8/125um, 9/125um

Maximum transmission distance: 40Km

Transmission distance: 40KM@9/125um single mode fiber, attenuation (0.35dbm/km)

Wave Length: 1310nm

Transmitting power: -9dBm (Min) ~-8dBm (Max)

Receiver sensitivity: -27dBm (Min)

Link budget: 18dBm

◆ **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

◆ **Ethernet interface (10/100M/1000M)**

Interface rate: 10/100/1000Mbps, 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

◆ **FXS Phone Interface**

Ring voltage: 75V
Ring frequency: 25HZ
Two-line Impedance: 600 Ohm (pick up)
Return loss: 40 dB

◆ **FXO Switch Interface**

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

◆ **Power**

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

◆ **Working Environment**

Working temperature: $-10^{\circ}\text{C} \sim 50^{\circ}\text{C}$

Working Humidity: $5\% \sim 95\%$ (no condensation)

Storage temperature: $-40^{\circ}\text{C} \sim 80^{\circ}\text{C}$

Storage Humidity: $5\% \sim 95\%$ (no condensation)

:Panel

Figure 1. 75ohm front panel

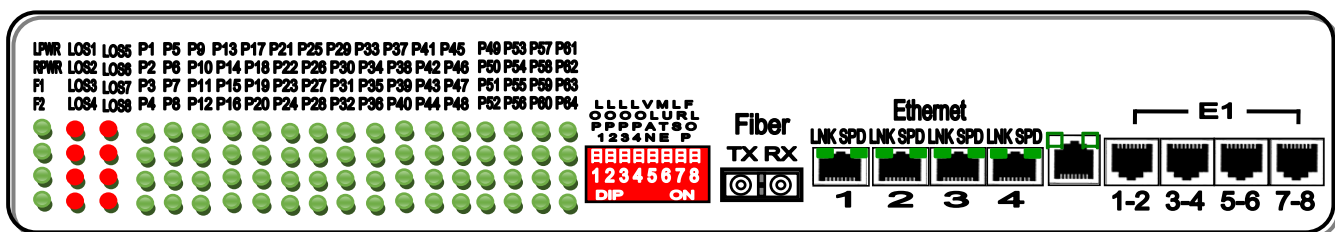


Figure 2. 120ohm front panel

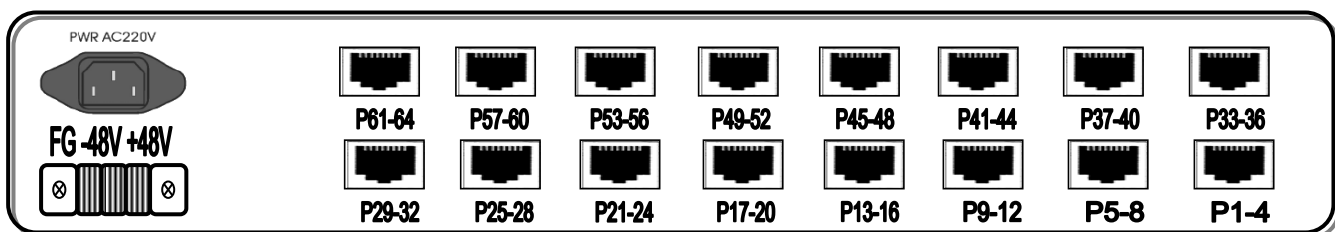


Figure 3 back panel

:Indicator LED

Name	Color	Condition	Description
	Indicator light as follows,		
LPWR	Green	ON	Device power is ON
		OFF	Device power is OFF
RPWR	Green	ON	The remote device power is ON
		OFF	The remote device power is OFF
FIB1	Green	ON	Fiber line 1 is connected ok
FIB2	Green	ON	Fiber line 2 is connected ok
LOS1-4	Red	ON	The corresponding 1-4 Channel E1 signal lost
		OFF	The corresponding 1-4 Channel E1 signal received
P1-64	Green	ON	Corresponding 1-30 Channel voice is busy or picking up
		ON/Flash	Caller ID display
		OFF	Corresponding 1-30 Channel voice is not busy or no caller

RPWR Description:

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

OLOS ON, RPWR OFF: The remote PDH device is power off;

OLOS ON, RPWR ON: Fiber is broken;

OLOS OFF, RPWR OFF: Normal Work

: DIP Switch

DIP1(1-4)

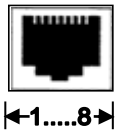
DIP1-1	DIP1-2	DIP1-3	DIP1-4	COMMAND PEER E1
OFF	OFF	OFF	OFF	All E1 no loopback (default)
ON	ON	ON	OFF	Command the 8th E1 loop back
OFF	OFF	OFF	ON	Command the 7th E1 loop back
ON	OFF	OFF	ON	Command the 6th E1 loop back
OFF	ON	OFF	ON	Command the 5th E1 loop back
ON	ON	OFF	ON	Command the 4th E1 loop back
OFF	OFF	ON	ON	Command the 3th E1 loop back
ON	OFF	ON	ON	Command the 2th E1 loop back
OFF	ON	ON	ON	Command the 1th E1 loop back
ON	ON	ON	ON	Command all E1 loop back

DIP2(1-8):

DIP1	CON DICT ION	FUNCTION
5(VLAN)	OFF	Do not enable VLAN isolation (default)
	ON	When two VLAN interfaces are available (4 Ethernet interfaces are selected)
6(MUTE)	OFF	When two VLAN interfaces are available (4 Ethernet interfaces are selected)
	ON	Alarm tone off
7(LRS)	OFF	Indicator light indicates the working status of local device (default)
	ON	The indicator light indicates the working state of the remote device
8(FLOP)	OFF	Do not enable fiber local loopback (default)
	ON	Enable fiber local loopback

Phone Interface

There are 16 RJ45 interfaces on the rear panel of the device, and each interface has 4 analog line interfaces, supporting 1-60 analog line telephone access. The device supports two interfaces: FXO and FXS. If FXO module is set in the device, the interface is FXO port, and the telephone line from the switch can be inserted into this port. If FXS module is set in the device, the interface is FXS port, and the telephone can be inserted directly.



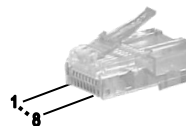
Pin	Description
pin1-2	Line 1
pin3-4	Line 2
pin5-6	Line 3
pin7-8	Line 4

Ethernet Interface

1Channel Ethernet and 4Channel Ethernet can be optional. Support 10/100/1000M, half/full duplex auto- negotiation and AUTO-MDIX (crossed line and straightly connected line self-adaptable)

LINK	Green	ON	Ethernet is connected
		OFF	Ethernet is not connected
100M	Green	ON	Ethernet rate is 1000M
		OFF	Ethernet rate is 100M

RJ45 Connector and Crystal head PIN order as follows:



10/100/1000M 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 order	PIN order	Twisted Pair Color
White and Orange	1	1	White and Green
Orange	2	2	Green
White and Green	3	3	White and Orange
Blue	4	4	White and brown
White and Blue	5	5	brown
Green	6	6	Orange
White and Brown	7	7	Blue
Brown	8	8	White and blue

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.

: Fiber Interface



Physical Interface: FC/SC (Optional), single-fiber and dual-fiber

(Optional).

Dual-Fiber: TX-Transmit RX-Receive

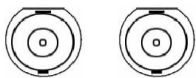
Single-Fiber: Transmit and Receive (Note: 1310nm and 1550nm

device used in pair)

: E1 Interface

75Ω-BNC Socket

OUT IN



“IN” means 75Ω(BNC) unbalance E1 input

“OUT” means 75Ω(BNC) unbalance E1 output

IN: 1-4 is 1-4Channel E1 interface signals receive input

OUT: 1-4 is 1-4Channel E1 interface signals transmit output

120Ω-RJ45 Socket

PIN defined as follows:

pin 1 2 3 4 5 6 7 8



120Ω E1(RJ45)

1 TX+ (E1 TXD+)
2 TX- (E1 TXD-)
4 RX+ (E1 RXD+)
5 RX- (E1 RXD-)
(3 6 7 8) is NC

: 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

“+48” 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).

: After-sales Service

The series of our Fiber Media Converter products, our company promises three-years warranty. During product warranty time, our company provides free repair service, but if the following cases, we will charge the cost of materials.

1. Damage due to not complying with the manual.
2. Tear down the device without authorization, which leads to bad situations.
3. Lightning, fire and inevitable natural disasters.

4. Our products don't match with other company products because of bad design to cause damage.

: Company Statement

1. As we are adopting new technology, if our product technical parameters are changed, we won't notice you.
2. The final interpretation right of this manual belongs to **ITTELECOM Technology Co., Ltd.**