FE1-FE1*ETH Converter

User Manual

1 General Safety Information

Please read the following safety rules to avoid any harm to human body and any damage to other devices when this device is connected to other devices. The product shall be used in specified applicable areas and shall be fixed by technical engineer authorized by us.

To prevent fire and to avoid any harm to human body, please

- ✓ Use the appropriate power supply, check power supply type and differentiate anode and cathode carefully;
- ✓ Connect and cut-off properly: when device is powered, do not connect or cut off the data cable;
- ✓ Use proper grounding: before using the product, make sure the proper grounding is made , grounding impendence shall be less than 4ohm;
- ✓ Make the correct connection: ensure to use the default accessories provided along with the device. If you need to make the special connection, please note the PIN definition and make the proper connection;
- ✓ Avoid to touch exposed circuit When the circuit is on, do not touch exposed components if any;
- ✓ Do not operate the device without front panel;
- ✓ Provide good ventilation;
- ✓ Do not operate the device in the humid environment;
- ✓ Do not operate the device in the volatile environment;
- ✓ Keep the surface clean and dry.

2. Fast track

FE1-FE1*ETH converter can combine and multiplex an Ethernet and an E1(user side) into an E1 channel and transmit through E1 channel. The bit rate of E1 and Ethernet can be adjusted provided the total bit rate does not exceed the E1 bit rate (1984Kbps).

E1-M is uplink channel; E1-S is downlink channel. The PCB for standalone and rack version is same. Please indicate your requirement when order. The following are the operation steps:

- ✓ Connect with appropriate power supply as per back panel power indication; Power on, the device will do self-detection, PWR,E1LOS-M,E1LOS-S indicators shall be on, rest shall be off;
- ✓ Connect Rx of E1-M with Tx of E1 channel on transmission equipment, Tx to Rx ; E1LOS-M alarm indicator shall be off; if there is an error, you can press button to pinpoint the error;
- ✓ Based on client's need, configure the time-slot of E1-S, connect E1 line to TX ,RX of E1-S, the E1LOS-S indicator shall be off;
- ✓ Based on Ethernet transmission requirement set up fixed timeslots (through 17~22th dipswitch), connect Ethernet cable, the LINK indicator shall be on, SPD,F/D indicator status shall be as per Ethernet working mode;
- ✓ If you operate as per above steps, the device still does not work, please contact your supplier or our technical staff for assistance.

3. Product Features

- ✓ Provide rich auto-operation and auto-calculation options. Users can configure the device easily;
- ✓ Self-learn Ethernet MAC address, decide forward or filter the data frame based on sourc MAC address and destination MAC address;
- ✓ Ethernet data rate can be configured based on E1-S data rate configuration;
- ✓ Local device can follow the configuration of remote device automatically or users can command remote device to follow local configuration;
- ✓ Provide rich alarming and loop testing function;

4. Technical Specifications

E1 Interface

- ✓ Data rate: N*64Kbit/s (N=1-31)
- ✓ Coding: HDB3
- ✓ Impedance: 75Ω(unbalanced)/120Ω(RJ48-C balanced)
- ✓ Standard: compliant with G.703□G.704
- ✓ Jitter: compliant with G.832
- ✓ Connector: Q9/RJ45
- ✓ Alarm Indicators: code breaking, frame loss, CRC alarm, AIS

Ethernet

Interface data rate: N*64Kbit/s□N=1-31□

Transmission speed: 10/100M auto negotiation

Duplex mode: full/hall duplex auto negotiation

Power supply:

Voltage: Stand-alone AC 220V/DC -48V optional

Chassis-based: AC220V/DC-48V□hot redundancy and swappable;

Voltage range: 180 VAC□260 VAC or -38 VDC □ -72 VDC

Power consumption: stand-alone: <5W

Chassis-based: <75W

Dimension:

Stand-alone mini type: 218mm*136mm*44mm , 2 sets can be mounted on 1 19" rack

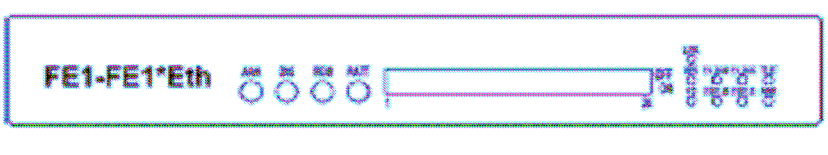
Chassis-based: 483mm*165mm*177mm

Operating environment:

Working Temp.: -20□ □ +70□

Humidity: 95%

5. Front panel



5.1 Indicators

There are 9 indicators on the front panel

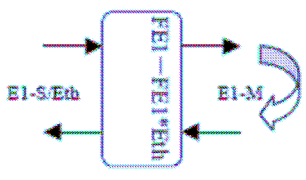
Indicator			Device Status
Name	Function	Status	

PWR	Power supply indicator	ON	Power supply normal
		OFF	No power supply
TEST	Testing status indicator	Blinking	One of the testing button is pressed at local or remote end
		OFF	Normal
E1LOS-S~E1LOS-M	E1 link alarm	ON	E1 link code error alarm
		Blinking	AIS alarm
		Intermittent blinking	Remote device alarm
		OFF	E1 link normal
E1SYL-S~E1SYL-M	E1 data flow alarm indicator	ON	E1 frame not synchronized
		Blinking	CRC-4 error checking
		Intermittent blinking	Remote device frame not synchronized
		OFF	E1 data receiving normal
LINK	Ethernet Link indicator	ON	Ethernet connected
		OFF	Ethernet not connected
SPD	Ethernet data rate indicator	ON	Ethernet data rate: 100Mbps
		OFF	Ethernet data rate: 10Mbps
F/D	Ethernet Duplex mode indicator	ON	Full duplex
		OFF	Half duplex

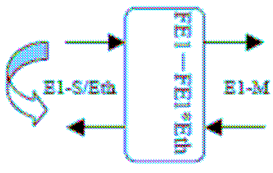
5.2 Push button

There are 4 push buttons on the front panel;

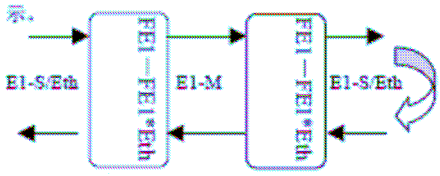
ANA: Loop from local E1-M to E1-S/ETH , used to check if local link is ok or not;



DIG Loop from local E1-S/Eth to E1-M , used to check remote E1 link and remote device;



REM Remote E1-S/ETH loop, the status of REM as follow:



PATT Invalid

Note: when any one of button is pressed, the normal data communication will be terminated,

TEST indicator will be ON.

5.3 Dip Switch

There are 3 group of dipswitch on the front panel, the definition of 1~24th position is as follow:

S.No	Description	Configuration
1~5	Starting time slot of E1-M set by E1-S	0~31 time slots of E1-M see table 1; When all set OFF, means starting time slot is 0;
6~8	Invalid	reserved
9~13	The time-slot number of E1-M set by E1-S	Detailed configuration see table 2; When time-slot number is 0, means E1-S is not used;
14	Invalid	reserved
15	Framed mode enabled	When this position set to ON, framed mode is enabled
16	Close E1LOS-S E1SYL-S blinking alarm	When connected with remote E1 multiplexer, remote E1 device is not E1-S interface, E1LOS-S blinks. Set this position to ON to close this function;
17~21	Ethernet Time-slot number in E1-M	Corresponding Ethernet time-slot number, from 0 to 31 ,in E1-M, see table 3; When time-slot number is 0, means Ethernet is not used; When the Ethernet time-slot number is automatically configured, above setup is invalid;
22	Close automatic Ethernet time-slot number configuration	OFF-automatic configuration ON- Close automatic configuration When the device is in the automatic configuration mode, based on the 15th dipswitch setup, the time-slot numbers in E1-M is what left by E1-S time slot numbers
23	Command remote device to follow local 's configuration	--Valid when set as ON; --If this position is valid, all dipswitch except 6th and 23rd dipswitch are invalid for remote device; --if this position of local and remote are both set as ON, wrong configuration will be reported; --If 23rd,24th dipswitch of local device are set as ON, remote alarm message will not be sent to remote device;
24	Command local device to follow remote's configuration	--valid when set as ON; --if this position is valid, all dipswitch except 6th and 24th dipswitch are invalid for local device; ----If 23rd,24th dipswitch of local device are set as ON, remote alarm message will not be sent to remote device;

Table 1: 1~5 dipswitch starting time-slot configuration

**when starting time-slot is 3, E1-S will count time-slot number from 3rd position;

5	4	3	2	1	Starting time-slot
OFF	OFF	OFF	OFF	ON	1
OFF	OFF	OFF	ON	OFF	2
OFF	OFF	OFF	ON	ON	3
OFF	OFF	ON	OFF	OFF	4
OFF	OFF	ON	OFF	ON	5
OFF	OFF	ON	ON	OFF	6
OFF	OFF	ON	ON	ON	7
OFF	ON	OFF	OFF	OFF	8
OFF	ON	OFF	OFF	ON	9
OFF	ON	OFF	ON	OFF	10
OFF	ON	OFF	ON	ON	11
OFF	ON	ON	OFF	OFF	12
OFF	ON	ON	OFF	ON	13
OFF	ON	ON	ON	OFF	14
OFF	ON	ON	ON	ON	15
ON	OFF	OFF	OFF	OFF	16
ON	OFF	OFF	OFF	ON	17
ON	OFF	OFF	ON	OFF	18
ON	OFF	OFF	ON	ON	19
ON	OFF	ON	OFF	OFF	20
ON	OFF	ON	OFF	ON	21
ON	OFF	ON	ON	OFF	22
ON	OFF	ON	ON	ON	23
ON	ON	OFF	OFF	OFF	24
ON	ON	OFF	OFF	ON	25
ON	ON	OFF	ON	OFF	26
ON	ON	OFF	ON	ON	27
ON	ON	ON	OFF	OFF	28
ON	ON	ON	OFF	ON	29
ON	ON	ON	ON	OFF	30
ON	ON	ON	ON	ON	31

Table 2: 9~13□17~21□dipswitch configuration and data rate

13 □21□	12 □20□	11 □19□	10 □18□	9 □17□	Data rate Kbit/s
OFF	OFF	OFF	OFF	ON	64
OFF	OFF	OFF	ON	OFF	128
OFF	OFF	OFF	ON	ON	192
OFF	OFF	ON	OFF	OFF	256

OFF	OFF	ON	OFF	ON	320
OFF	OFF	ON	ON	OFF	384
OFF	OFF	ON	ON	ON	448
OFF	ON	OFF	OFF	OFF	512
OFF	ON	OFF	OFF	ON	576
OFF	ON	OFF	ON	OFF	640
OFF	ON	OFF	ON	ON	704
OFF	ON	ON	OFF	OFF	768
OFF	ON	ON	OFF	ON	832
OFF	ON	ON	ON	OFF	896
OFF	ON	ON	ON	ON	960
ON	OFF	OFF	OFF	OFF	1024
ON	OFF	OFF	OFF	ON	1088
ON	OFF	OFF	ON	OFF	1152
ON	OFF	OFF	ON	ON	1216
ON	OFF	ON	OFF	OFF	1280
ON	OFF	ON	OFF	ON	1344
ON	OFF	ON	ON	OFF	1408
ON	OFF	ON	ON	ON	1472
ON	ON	OFF	OFF	OFF	1536
ON	ON	OFF	OFF	ON	1600
ON	ON	OFF	ON	OFF	1664
ON	ON	OFF	ON	ON	1728
ON	ON	ON	OFF	OFF	1792
ON	ON	ON	OFF	ON	1856
ON	ON	ON	ON	OFF	1920
ON	ON	ON	ON	ON	1984

6 Rear panel

6.1 power supply

The device supports AC220V/DC-48V, you can choose power supply based on your requirement;

When power switch is switched “48V”, means you want to use -48VDC power supply; when the power switch is switched to “220VAC”, means you want to use 220VAC power supply;

When you use -48VDC power supply, you shall connect cathode of DC power supply to cathode of the device, anode of DC power supply to anode of device ;

6.2 E1 connector

75Ω/RX□ 75Ω unbalanced input

75Ω/TX： 75Ω unbalanced E1 output;

“M” mark means uplink E1 channel, “S” mark means downlink user side E1 channel;

6.3 Ethernet Interface (LAN interface)

Ethernet interface supports cross-connection and cut-through auto-sensing;

Note: when LAN cable is too long , please make sure to connect two PIN of RX into a same UTP, two PIN of TX into a same UTP;

6.4 Bottom panel

ON： means grounding of E1 link is connected with grounding of system;

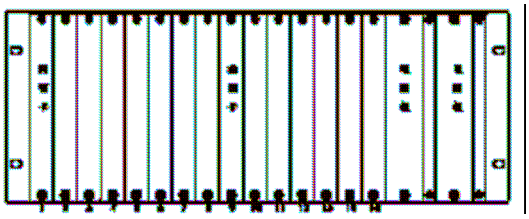
OFF：means grounding of E1 link is disconnected with grounding of system;

The first position is RX grounding, the second position is TX grounding;

Note : please make sure there shall be at least one side to be grounded. For example: if transmission equipment’s TX is grounded, our device is not necessary to be grounded; If transmission equipment is not grounded, our deviced shall be gournded;

7. Rack

7.1 Front panel



Front panel

There are 17 slots, 15 for NMS card and functional card, 2 for power supply card.

NMS Card:

If users need network management, the NMS card must be plugged into the first slot; if users do not need network management, this slot can be used for functional card;

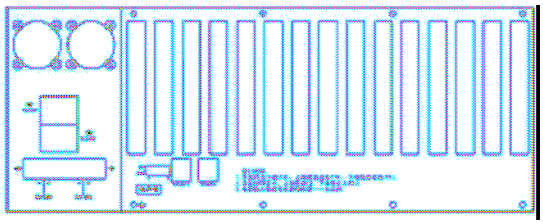
Function cards:

Maximum 15 functional cars can be plugged. Various functional cars can be used.

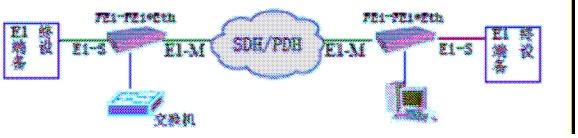
Power supply card:

Users can plug the power supply module based on the requirement, the power can be 220VAC, -48VDC. 1+1 redundancy is supported.

7.2 Real panel



8. Typical application



1~5th dipswitch should be all OFF

6-8th dipswitch : reserved OFF

14 is invalide , it is resered

15th dipswith is also used to set PCM3 and PCM31

ON-PCM30

OFF-PCM31

16th dipswtich is used close the alarm of sub E1 is sub E1 is not connected to any E1 devices

22: OFF-automatical confirgure Etherent time slot ON-close automatic config

23: command remote device to follow local configuration, it's valid if ON

24: command local device to follow local config

normanlly make if OFF , 23,24

CRC check is always enalbed;