Table of Contents

Preface

Version Description

    Manual version: 1.0 (V1.0)

Copyright Notice

    The copyright of this manual is reserved to our company, who retains the final rights of explanation and revision to this manual and notice. No part of this manual may be photocopied, excerpted, reproduced, revised, transmitted, translated into other languages, or used for commercial purpose in full or in part, without the prior written permission of the Company.

Disclaimer

    This manual is made according to currently available information and subject to change without further notice. Whilst every effort has been made to ensure the accuracy and reliability of the contents contained herein, the Company cannot be held liable for any harm or damage resulting from any omissions, inaccuracies or errors contained in the manual.

Brief Introduction

    This User Manual describes the installation and operation of FE1-V.35 Protocol Converter. Before you use our device for the first time, please read all the included materials carefully, and install and operate this series of products in keeping with items listed in the manual, so as to avoid damaging the device resulting from malpractice. Thank you for choosing our products.

Environmental Protection

    This product complies with the design requirements associated with environmental protection. The storage, use and disposal of the product should be conducted in accordance with related national laws and regulations.

    We welcome you to put forward advice and suggestion to our work, which shall be viewed as the ultimate support to us.

1. General Information

1.1 Introduction

Besides fulfilling the electrical conversion between G703 interface and V.35 interface, this device also has the functions of rate conversion and timeslot extraction, i.e. extraction of certain timeslots from G703/E1 to comprise V.35 channel of N*64K（N=1～32）, which is applicable for cases when the timeslot of E1 channel of transmission device is available and when V.35 exit port is avaible in data transmission device only. The data interface mode is DCE, which can be connected to DTE device or DCE device.

The products from our company are characterized by high degree of integration and reliability, low power consumption, small size, and comprehensive functionality, with a wide range of alarming indications to help establish connection.

1.2 Features

●The integrated circuit is based on our own intellectual property rights. G.703 E1 line adopts HDB3 encoding, and the E1 interface channel and coding mode are in line with the ITU-T G.703 and ITU-T G.704 protocols. All-digital clock recovery technology and integrated phase locked loop are adopted and the jitter performance is far superior to G.823 and G.742 protocol standards;
● Comprehensive control switches and intelligent alarming indications on the panel to indicate whether the device is correctly configured. The local indicators can display the status of all the indicators of remote device；
●Rate conversion and timeslot extraction, i.e. extraction of certain timeslot from G703/E1 to comprise V.35 channel of N*64K（N=1～32）
●Support multiple optional clock modes: master, external or slave.The phase of data sending, receiving and clock can be selected according to the specific situation, so as to gurantee the correct reading of data when the device connected to this converter keeps the phase of clock and data unchanged；
●Multiple testing functions for loopback and pseudo-random code. It can be used as an E1 Bit Error Detector to help establish connection and locate failures；
●Auto Reset function. The network management system can also

perform reset function to ensure a stable operation of the device in a particular environment.

2.   Function Description

2.1 Front Panel
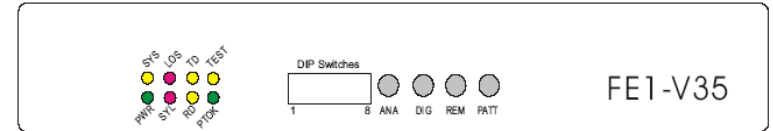
2.1.1 Front Panel LED Indicators

There are 8 LED indicators at the front panel. Their functions are described as follows:

Name	Function	Description	
PWR	Indication of power supply status	ON	5V Power supply is OK.
		OFF	5V Power supply is off.
SYS	Indication of following status of operating parameters	ON	Operating parameters follow the configuration of network management system
		OFF	The operating parameters follow the configuration of DIP switch.
		FLASH	Operating parameters follow the DIP switch and the lock key of DIP control switch is not locked.
LOS	E1 code loss and remote alarming indicator	ON	E1 Code loss alarming for local device.
		OFF	Normal
		FLASH	E1 alarming for remote device.
SYL	Out-of-frame indicator for E1 channel.	ON	E1 out-of-frame alarming for local device.
		OFF	Normal
TD	Data sending indicator	FLASH	Data sending of V35
		OFF	No data
RD	Data receiving indicator	FLASH	Data reveiving of V35
		OFF	No data
TEST	Indication of test status and	ON	Local device or remote device are in test mode.

			OFF	In normal operating status.
			Flash	The configuration of local device or remote device is wrong. Include: 1. Clock mode; 2. Starting timeslot and rate fo data; 3. The transmission circuit is physically looped.
			When the device workes normally, ANA, DIG, REM or PATT is pressed as On, the TEST lights of all devices in the circuit will be turned on at the same time.	
PTOK	Indication of pseudo-random code test	ON	Pseudo-random code test passed.	
		OFF	Bit error detected while in pseudo-random code test mode.	

2.1.3 Front Panel switches Specification

To prevent user's misoperation, when setting functions using DIP switch or button switch (excluding switches for setting network management address, matched reistance, E1 impedance, grounded total 12-bit DIP switch and PATT button switch), the S1 [1] control switch must be locked to "ON" at first, set the functions and then lock the S1[1] control switch to "OFF", and then the setting will be effective.

There are a set of 8-bit DIP switches and four button switches, and the functions are:

Switch Name	Function	Description	
ANA	Local loopback	ON	Loopback from E1 channel to V.35 channel
		OFF	The function of local lookback is disabled.
DIG	Local terminal is loopbacked to remote terminal.	ON	Loopback from V.35 channel to E1 channel
		OFF	The function of local is loopbacked to remote terminal is disabled.
REM	Remote terminal loopback testing key.	ON	Loopbakc from remote V.35 channel to E1 channel.
		OFF	The function of remote loopback is disabled.
PATT	1 pseudo-random code sending Key, and error code	ON	Any of ANA, DIG or REM is ON.	Send pseudo-random testing code.

				All of ANA, DIG and REM are OFF.	Make the local indicator display the status of the indicator of the remote device.
			OFF	The function is disabled.	
S1	[1]	Control switch lock	ON	The lock of switch is unlocked.	
			OFF	The lock of switch is locked.	
	[2..3]	Clock mode selecting （refer to the note of the table for principles for selection）	[2..3]=[ONON]	Master (internal) clock: the device adopts the clock produced by the internal crystal oscillator.	
			[2..3]=[ONOFF] [2..3]=[OFFON]	External clock: the device adopts clock from V.35.	
			[2..3]=[OFFOFF]	Slave (circuit) clock: the operating clock is extracted from the received E1 signal.	
	[4..6]	Remainder			
	[7]	The selection of clock phase position for V35 data receiving.	ON	The data are received at rising edge of synchronous clock at V35 interface.	
			OFF	The data are received at falling edge of synchronous clock at V35 interface.	
	[8]	The selection of clock phase position for V35 data sending.	ON	The data are sent at rising edge of synchronous clock at V35 interface.	
			OFF	The data are sent at falling edge of synchronous clock at V35 interface.	

2.2 Bottom panel introduction

There are two groups, totally 16 bits of DIP switches on the bottom panel.

	Switch Name	Function	Description		
S1,S2	[1]	PCM selection	ON	PCM30	
			OFF	PCM31	
	[2..6]	Startig timeslot selection	[2..6] are binary BCD code, [2] is the lowest bit and [6] is the highest bit; please refer to Appdix 1 for details	When all [2..11] DIPs are "on", it can be set to non-frame mode, that is, the rate is 2048 Kbit/s
	[7..11]	Rate selection	[7..11] are binary BCD code, [7] is the lowest bit, and [11] is the highest bit; and please refer to Appenidx 2 for details		

	[1..11]	Following the setting of on the remote end	When [1..11] are all set OFF, it is a combined switch to realize following remote end device PCM setting, staring timeslot setting and rate setting.	
	[12]	Reserved		
	[13..14]	E1 Impedance Selection	[13..14]=[ONON]	75 Ω un-balanced
			[13..14]=[OFFOFF]	120 Ω balanced
	[15]	Grounding of E1 receiving	ON	Groudning of 75 Ω E1 cable is connected to the grounding of loca device
			OFF	Groudning of 75 Ω E1 cable is disconnected from the grounding of loca device
	[16]	Grounding of E1 sending	ON	Groudning of 75 Ω E1 cable is connected to the grounding of loca device
			OFF	Groudning of 75 Ω E1 cable is disconnected from the grounding of loca device.
	Note:		It must be guranteed that only one end of the entire E1 transmission line is grounded.	
S3	[1..6] (Reserved, Invalid temporarily)	485 Address	The 1st to 6th bits of 485 address can be set. The 7th and 8th of 485 address are set to low, i.e, "00". Thus, the minimal binary address is "00000000" and the maximal, "00111111"	
	[7..8] (Reserved, Invalid temporarily)	Matched resistance selection for desktop device 485 network management	When point-to-point desktop devices requires uniform network management, S3[7]-S3[8] are used for desktop 484 network management matched resistance selection: 7th bit for receiving matching, 8th bit for sending matching. It must be guranteed that only one device on 485 network management bus has matched ressitance when all desktops are connected to 485 network management, i.e., DIP 7-8 are both set "ON".	

Note: Principles in clock selection:

1. Avoid that all devices adopt circuit clock. If a clock is provided by a device in the circuit, the other devices are set to adopt circuit clock, otherwise, the device is set to internal clock mode.
2. When V.35 interface is required to connect to DCE device (for example V.35 of DDN, ATMk HDSL and baseband MODEM),

cross line is required. If the V.35 interface of the counterpart DCE is internal clock, this device should be set to be external clock, i.e., extracting clock from V.35 interface.

3. It is recommended that only one device provides a clock in the circuit.

Appendix 1: Starting Timeslot Position Setting of V35 in V35

Switch / Timeslot Position	[2]	[3]	[4]	[5]	[6]
TS31	ON	ON	ON	ON	ON
TS30	OFF	ON	ON	ON	ON
TS29	ON	OFF	ON	ON	ON
TS28	OFF	OFF	ON	ON	ON
TS27	ON	ON	OFF	ON	ON
TS26	OFF	ON	OFF	ON	ON
TS25	ON	OFF	OFF	ON	ON
TS24	OFF	OFF	OFF	ON	ON
TS23	ON	ON	ON	OFF	ON
TS22	OFF	ON	ON	OFF	ON
TS21	ON	OFF	ON	OFF	ON
TS20	OFF	OFF	ON	OFF	ON
TS19	ON	ON	OFF	OFF	ON
TS18	OFF	ON	OFF	OFF	ON
TS17	ON	OFF	OFF	OFF	ON
TS16	OFF	OFF	OFF	OFF	ON
TS15	ON	ON	ON	ON	OFF
TS14	OFF	ON	ON	ON	OFF
TS13	ON	OFF	ON	ON	OFF
TS12	OFF	OFF	ON	ON	OFF
TS11	ON	ON	OFF	ON	OFF
TS10	OFF	ON	OFF	ON	OFF
TS9	ON	OFF	OFF	ON	OFF
TS8	OFF	OFF	OFF	ON	OFF
TS7	ON	ON	ON	OFF	OFF
TS6	OFF	ON	ON	OFF	OFF
TS5	ON	OFF	ON	OFF	OFF
TS4	OFF	OFF	ON	OFF	OFF

TS3	ON	ON	OFF	OFF	OFF
TS2	OFF	ON	OFF	OFF	OFF
TS1	ON	OFF	OFF	OFF	OFF
Invalid	OFF	OFF	OFF	OFF	OFF

Appendix 2: Used Timeslot Number Setting of V35 in E1 (V.35 Rate)

Switch / Rate (Kbit/s)	[7]	[8]	[9]	[10]	[11]
2048	7~11 all ON and at the same time 2~6 all ON.				
1984	ON	ON	ON	ON	ON
1920	OFF	ON	ON	ON	ON
1856	ON	OFF	ON	ON	ON
1792	OFF	OFF	ON	ON	ON
1728	ON	ON	OFF	ON	ON
1664	OFF	ON	OFF	ON	ON
1600	ON	OFF	OFF	ON	ON
1536	OFF	OFF	OFF	ON	ON
1472	ON	ON	ON	OFF	ON
1408	OFF	ON	ON	OFF	ON
1344	ON	OFF	ON	OFF	ON
1280	OFF	OFF	ON	OFF	ON
1216	ON	ON	OFF	OFF	ON
1152	OFF	ON	OFF	OFF	ON
1088	ON	OFF	OFF	OFF	ON
1024	OFF	OFF	OFF	OFF	ON
960	ON	ON	ON	ON	OFF
896	OFF	ON	ON	ON	OFF
832	ON	OFF	ON	ON	OFF
768	OFF	OFF	ON	ON	OFF
704	ON	ON	OFF	ON	OFF
640	OFF	ON	OFF	ON	OFF
576	ON	OFF	OFF	ON	OFF
512	OFF	OFF	OFF	ON	OFF
448	ON	ON	ON	OFF	OFF
384	OFF	ON	ON	OFF	OFF
320	ON	OFF	ON	OFF	OFF

256	OFF	OFF	ON	OFF	OFF
192	ON	ON	OFF	OFF	OFF
128	OFF	ON	OFF	OFF	OFF
64	ON	OFF	OFF	OFF	OFF
0	OFF	OFF	OFF	OFF	OFF

2.3 Rear Panel
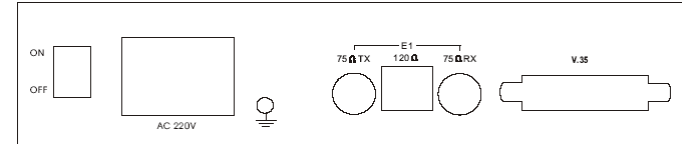
2.3.1 Power Supply

The power supply has two options: AC and DC, which should be specified upon ordering. The device supports two power versions: 220V and –48V, with up to 20% fluctuation. Note that the DC power supply has positive and negative poles. The negative/positive pole of –48V power source should be plugged into the negative/positive pole of the power input on the device. **The power is off when the switch is in "OFF" position. Otherwise the power is on.**

2.3.2 E1 interface

75Ω physical interface: Q9 120Ωphysical interface: RJ45
75Ω/RX：　　　　　　　75Ω un-balanced E1 input
75Ω/TX:　　　　　　　　75Ω un-balanced E1 output
120ΩE1：　　　　　　　120Ωbalanced E1 input and output

2.3.3 V.35 Data Interface

Rate:　　　　N×64Kbit/s(N=1～32)
Interface Characteristic:　 compatible with V.35 standard
Connector:　　　 DB25 female head (A commutator from DB25 male to DB34 female is supplied as an accessory.)
Connection Mode:　 DCE (can be connected to DTE and DCE devices peer to peer. When it is to be connected to DCE device by crossover cable, please specify in order）
Clock Mode:　　 Master, external or slave (optional)

3. Technical Specifications

3.1 Operating Environment

The device has a wide range of operating temperature and is able to work normally and stably in highly adverse environment.

Operating Temperature   0℃ ～ +50℃

Storage Temperature −40℃ ～ +70℃

Relative Humidity   10 %～95 %

Atmospheric Pressure   70～106 kpa

The environment should be free from corrosive and solvent gases, dust, and magnetic interference.

3. 2 Power Supply

Using high-quality power adaptor, the device has a wide fluctuation tolerance and strong anti-interference and isolation quality to ensure a stable operation.

Power Input   AC 220V / DC−48V

Power Fluctuation   165VAC～265VAC or −36VDC～−72VDC

Power Consumption ＜5 W

3.3 Mechanical Specifications

Dimensions   210mm Width ×41mm Height ×143mm Depth

3.4 E1 Interface

Electrical Characteristic: compatible with ITU-T G.703

Transfer Characteristic: compatible with ITU-T G. 823

Jitter Characteristic: compatible with ITU-T G. 823

Rate: E1 Interface 2048Mbps±50ppm

V35 interface N×64Kbps (N=1 ～ 32),i.e.,64Kbps to 2048Kbps adjustable

Code Type: HDB3

Interface Impedance: 75Ω/120Ω

Interface Connector: Q9（75Ω）、RJ45（120Ω）

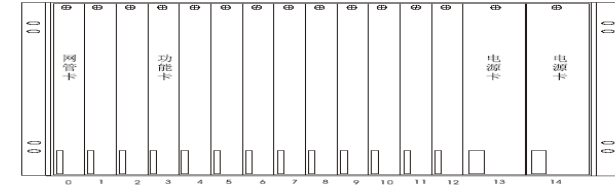## 3.5 V.35 Interface Specification

Electrical Characteristic: compatible with ITU-T recommendation V.35

Terminal Interface: compatible with ISO2593

Transfer Rate: N×64Kbps (N=1～32), i.e., 64Kbps to 2048Kbps adjustable

4. Description of Centralized Frame

4.1 Front Panel Description

4.1.1 Network Management Card

If network management is required, the network management card can be inserted into any of "0-12" positions. However, "0" position is strongly recommended for convenient management. If network management is not required, the service card can be inserted into "0" position. If multi-frame cascade connection is required (though given the response time of the network management system, such cascade connection is recommended within a limitation of two frames, since more frames will prolong the response time), it is recommended that the network management card be inserted into "0" position and service cards inserted into other positions.

4.1.2 Service Card

A total of 13 service cards can be inserted into one frame. Service cards for different ranges of devices of our company can be mixed together. The operation is the same as desktop device.

4.1.3 Power Card

The user can insert power card, which can display temperature, into the frame according to actual configuration. There are two types of power cards: 220V and –48V, with a power consumption of 75W and hot stand-by capability.

4.2 Rear Panel
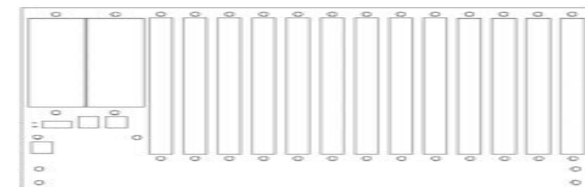
4.2.1 Address Switches

A total of 8 DIP switches are available at the rear panel (rear view), of which ON denotes "1" and OFF denotes "0". The switches are defined as follows:

1   8
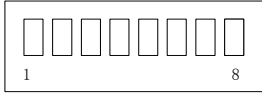
Bit 1- 4: these four bits are used to set the frame address, with S1 being the lowest bit and S4 being the highest bit.

The SNMP address is defined as a code of 8 binary bits. The card address contains two parts, with the lower 4 bits being the slot address and higher 4 bits being the frame address. Higher bits are arranged on the left and lower bits on the right of the 8-bit address.

Slot Address: the address of the first slot from the left of the front view of the front panel, i.e. slot 0, is defined as "0000". The second slot from the left, i.e. slot 1, is addressed as "0001". The address increases from the left to the right. The power slot at the farthest right, i.e. slot 14, is "1110".

Frame Address: the S1-S4 DIP switches at the rear panel of the frame are defined as the frame address, with S1 being the fifth bit of SNMP address and S4 being the eighth bit.

For example, suppose that the address of a frame is set as "1100".The address of the third slot from the left of the frame, i.e. slot 2, is "0010", therefore the SNMP address of the card shall be "0011 – 0010".

Bit 5-6: reserved.

Bit 7-8: S7 – S8 are used to select matched resistance of the frame device when in SNMP mode, with the seventh bit for RX and eighth bit for TX.

When in SNMP mode, a matched resistance should be added to the terminal device of the hub, which means that the S7-S8 switches of the last terminal device should be both in "ON" positions.

Notes:
◆ The device governed by the same network management card should have a unique address. Once address conflicts, it can paralyze the network management system, which can be solved by changing the conflicting addresses and then rebooting the network management system.
◆ In the event of cascade connection when all frames (or desktop device), are connected to SNMP system, make sure that only the last frame (or desktop device) linked to the SNMP hub has a matched resistance. That is, the S7-S8 of the last frame should be both in "ON" position and the S7-S8 of other frames (or desktop device) should be all in "OFF" position.

4.2.2 Cascade Connection Connector

On the right of the 8 DIP switches at the rear panel (rear view) are two RJ45 cascade connection connectors, which are defined as follows:
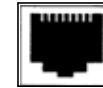
1，2，3，4，5，6，7，8

Special connecting cable should be made when the connectors are used as PC network management interface. While used in multi-frame cascade connection, two RJ45 connectors should be linked with straight-through cable.

Pin #	Signal Definition	Direction
2, 4	GND	Ground
5	RS485TP	Output
6	RS485TN	Output
8	RS485RN	Input
7	RS485RP	Input

Note: When cascade connection is needed, the number of frames should be set in network management card and the frame address should be set at the rear panel and be different from each other, based on real circumstances. For example, when the cascade connection involves two frames, the number of frames in the network management card should be set as 2, and the frame number at the rear panel can be set as "0000" and "0001" respectively. The network management card and software should be rebooted after such

setting.

5. Installation

5.1 Safety Requirements

Please read the following safety items before installation to avoid physical injury and damage to this product or any other products connected. To avoid potential hazard, the product can be used only within specified scope. **Maintenance can be conducted only by technical personnel authorized by our company.**

1. Avoid fire or physical injury.

2. All power supply should be shut off during installation, which can be turned on only when all terminals have been connected correctly and checked to be free from mistakes.

3. Connect and disconnect in a properly. When device is powered up, do not connect or disconnect data cable without due cause.

4. Grounding. The product should be linked to the ground through earthed conductor. To avoid electric shock, the earthed conductor must be in connection with the ground. Make sure that the product is correctly earthed before connecting with the input or output terminals.

5. Correct connection. Users are expected to use accompanied accessories. In the event that special connections are needed, please pay attention to the corner allocation requirements.

6. Don't operate when there is no cover plate over the device. Do not operate the product if the cover plate or panel has been dismounted.

7. No contact with bare circuit is allowed. Do not touch bare connectors or components when power is on.

8. No operation is allowed if there is suspicion of failure. Call authorized maintenance personnel for examination and reparation should the product be suspected of damage.

9. Good ventilation. Do not operate under humid or explosive environment.

10. Maintain the surface of the product clean and dry.

11. Do not point the optical header toward eyes, lest that laser injures the retina.

5.2 Inspection upon Unpacking

After unpacking the product, inspect the type, quantity and condition of device and accessories inside according to the list of contents specified in this manual. Contact the Company or its distributors and agencies immediately should abnormal circumstances arise.

5.3 Power Supply

Check the power supply of the device. The power input should be configured in accordance with related requirements. Pay particular attention to the voltage and polarity if the power supply is DC.

5.4 Test

The following tests should be conducted before use:
1. Examine whether the switch lock (the first DIP switch at the front panel) is ON while the rest switches are OFF. After the device is powered-up correctly, check whether PWR and LOS are on, SYS is flashing, and the rest LED indicators are off.
2. When the uplink ports of two back-to-back devices are connected via E1 cable and other operation modes are configured correctly, the LOS indicators of both devices should be off.

5.5 Configuration and Connection

If indicators work correctly as described in 5.4, turn off the power, configure clock, E1 impedance based on the overall requirements of network environment, plug on E1 cable and V.35 cable , and then turn on the power. The device will enter into normal operation.

If the device fails to work properly as described in 5.4, see failure diagnoses and troubleshooting section of the manual. If the failure still exists, contact the Company or its distributors and agencies

immediately.

6. Accessories

6.1 Cable Making

6.1.1 How to make E1 connecting cable

75Ωmode：

The core connects with core,

sheath connects with sheath, and

core is isolated from sheath.

Sheath

Core

120Ωmode：

The pins of 120Ω mode are

illustrated below

1，2，3，4，5，6，7，8

1（+）、2（-）are output ports

4（+）、5（-）are input ports

6.1.2 How to make V.35 interface connecting cable

The device of our company is set to be used as DCE by default, V.35 data interface adopts DB25 interface and the pins are defined as follows of V.35 on DTE side (direct circuit):

Pin No.	Pin Name
1	Protective Grounding
7	Signal Grounding
2	V35 sends data A(from DTE)
14	V35 sends data B(from DTE)
3	V35 receives data A(from DCE)
16	V35 receives data B(from DCE)
4	Request for sending
5	Sending clearing
6	DCE ready
20	DTC ready
8	Data carrier detected
24	Send clock A(from DTE)
11	Send clock B(from DTE)

15	Send clock A(from DCE)
12	Send clock B(from DCE)
17	Receive clock A(from DCE)
9	Receive clock B(from DCE)

A V.35 head is accompanied when this device leaves the factory, which can be used to convert DB25M into DB34F, so as to connect to DTE device directly. If the device shall be connected to a DCE device, a crossover cable is applicable, which must be spedified in order.

6.2 Failure Diagnoses and Troubleshooting

Phenomena	Potential Cause	Measures
The device power indicator PWR is OFF	1. Control switch is not fully turned on. 2. The power supply is not connected with correct polarity. 3. External power source is not correctly plugged. 4. Conductor is dropped into the frame, causing short-circuit between power source and the ground. 5. Failure at power supply module.	1. Fully turn on the control switch. 2. Swap the polarity connection. 3. Properly plug the outside power source. 4. Remove the conductor. 5. Contact the distributor.
LOS and SYL warning after the connection of E1	1. RX and TX of E1 are reversed. 2. The making of connection cable is not correct. 3. Transmission distance exceeds the standard specification. 4. Fault of E1 module circuit.	1. Swap RX and TX. 2. Make the lines correctly. 3. 75Ω: 300M 120Ω: 500M 4. Please contact the distributor.
TD and RD indicators flash normally with packages lost yet	1. The phases of clock and data are not synchronized. 2. Two devices of our company on the line are set to be slave clock. 3. V.35 circuit module failure	1. Set the 7th and 8th bits of DIP on the front panel; 2. Set one device as master clock or external clock. 3. Please contact the distributor.
TD indicator is ON but RD indicator is OFF	1. Only one clock source on the loop is allowed. 2. Configuration error of external terminal devices.	1. Set the clock correctly. 2. Press on ANA switch，and if TD and RD both flash，the error is on the remote end.

6.3 Warranty Card

The Company guarantees:

1.   Maintenance Service

(1)   Within the free-of-charge warranty period (12 months from the date of purchase), the Company will replace or repair any damaged components free of charge, should the device fail under normal operation circumstances recognized by the Company.

(2)   Within the charged warranty period (24 months from the date on which the free-of-charge warranty period expires), the Company will charge for the replacement component, yet continue to provide free-of-charge maintenance service, should the device fail under normal operation circumstances recognized by the Company.

2.   The warranty does not cover the follows, in which replacement components and maintenance services will be charged accordingly.

(1)   After 36 months from the date of purchase;

(2)   The user fails to provide the certificate of purchase date, or the serial number of the product indicates that the product has left the factory 39 months ago.

(3)   Include, but not limited to, damages resulting from abnormal operating conditions such as violent collision, squeezing, falling, and liquid intrusion.

(4)   The frangibility label is damaged.

(5)   Unauthorized disassembling of the product by the User.

(6)   Damage from force majeure such as earthquake, flood and lightening strike.

3. The Company will repair the replacement components free of charge within a period of 12 months starting from the date of replacement.

4. The User may choose to send the product back to the Company for maintenance or deliver the product to maintenance service agencies of the Company throughout the country.

5.   The Company shall not be held liable for damages arising from any improper operation. The Company will assume liabilities not exceeding the price of the product for any direct or indirect damages, including but not limited to loss of information, resulting from defects of the product.

Repair and Maintenance Record

Product Name: FE1-V35 Protocol Converter		Device No.:
	Date	No. of Service Bill
1		
2		
3		
4		
5		