Table of Contents

Preface

Version Description

Manual version: V1.0

Copyright Notice

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 2FE1-4ETH Protocol Converters Equipment. 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.

Chapter One Overall Introduction

1.1 Summary

2FE1-4ETH Interface Protocol Converters are capable to support four network devices or other devices for remote centralized management. Remote users can perform centralized management for 2FE1-4ETH series devices by Telnet, WEB Server or centralized management software. It also can remotely perform such actions like restart and upgrade the 2FE1-4ETH series devices;

The devices are widely used for remote management of devices room, servers, routers and other key equipment in the situation of industrial control, water treatment, radio and television, public facilities and unattended room management.

1.2 Features of Equipment

- Support 220V AC or 48V DC Power Input
- Build in intelligent switch fabric, provide 4 fast Ethernet ports
- Support packet length up to 2047 Bytes
- Provide up to 2K MAC address entries
- Support IEEE802.1Q VLAN
- Support QinQ double tagging
- Support HDLC/PPP-BCP(RFC3518)/GFP-F encapsulation when 1xE1 mode; GFP for 2xE1 mode.
- Support E1 frame or un-frame application when select 1xE1 HDLC mode
- GFP-F encapsulation comply with ITU-T G.7041 standard
- Support LCAS and VCAT function comply with G.7042 and G.7043
- Provide statistics for each ports
- Support Console or telnet CLI management
- Support SNMP(v1/v2c) and Web management
- Support software and firmware upgrade
- Support E1 floated or connected to PGND by switch
- 75Ω and 120Ω impedances are selected by switch

Chapter Two Function Specification

2.1 Introduction to Front Panel of the Device

2.1.1 Device Front Panel

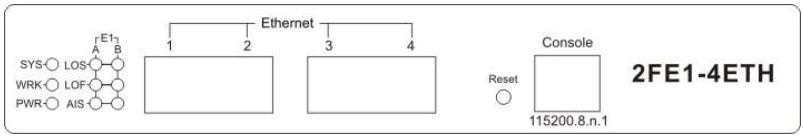


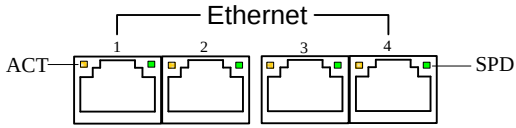
Figure1.1 of Front Panel

2.1.2 Front Panel Indicators Specification

There are 9 indicators on the front panel of the device, and their functions are:

LED Name	Colors	Functions	Status	Description
PWR	GREEN	Power Indication	on	Power supply normal
			off	Power off
WORK	GREEN	Device Work Status	on	Device working
			off	Not working
SYS	YELLOW	System status	flash	System working
LOSA/B	RED	A/B E1 Loss code alarm	on	A/B E1 Loss code alarming
			off	Normal
LOF/B	RED	A/B E1 Loss Frame alarm	on	A/B E1 Loss Frame alarming
			off	Normal
AISA/B	RED	A/B E1 ALL 1 alarm	on	A/B E1 ALL 1 alarming
			off	Normal

2.1.3 Ethernet



LED Name	Colors	Functions	Status	Description
SPD1~4	GREEN	Ethernet Speed Rate	on	100M
			off	10M
ACT1~4	YELLOW	Ethernet Connection Status	flash	Data transmitting
			on	Connected
			off	Dis-connected

2.1.4Reset

The system is in normal operation, if continuously press the Reset button more than 3 seconds, the system will restore factory default configuration and reboot.

2.1.5Console

The device provides a series of Config commands and command line interfaces for configuring and managing the device. Local Config via the Console port.

2.2 Introduction to the rear panel of the equipment

2.2.1 Device Rear Panel

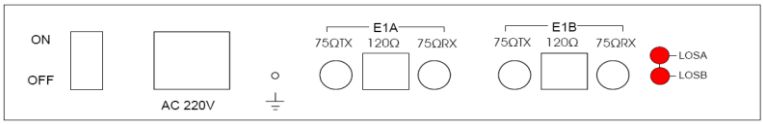
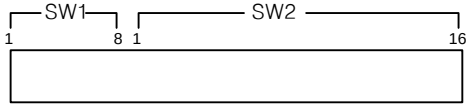


Figure 1.2 of Rear Panel

2.2.2 Rear Panel Specification

Two channels of E1 interface with Q9 (75ohm) or RJ45 (120 ohm) connectors. 220VAC/48VDC Power Interface with a switch. The second channel of E1 will be disabled when the device under HDLC/PPP-BCP/GFP-F single E1 mode.

2.3 DIP Switch



SW1[1-2]	E1 Impedance	ALL ON	75 ohm
		ALL OFF	120 ohm
SW1[3-6]	E1 75 ohm unbalanced selection	ALL ON	unbalance
		ALL OFF	balance
SW1[7]	E1 75 Ohm unbalanced	ON	E1 shield grounded
		OFF	E1 grounded shielded by

	shielded cable grounding connection		connected with discharge tube
SW2	undefined	undefined	

Chapter Three 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.

Working 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 Section

Input Voltage: AC 220V/DC 48V

Voltage Fluctuation: 100VAC~240VAC/36VDC~72VDC

Power Consumption: ＜5 W

3.3 Mechanical Specifications

Appearance dimension: 210mm*143mm*41mm

3.4 E1 Interface

Interface Impedance: 75Ω, 120Ω

Connector Type: Q9 (75Ω), RJ45 (120Ω)

3.5 Ethernet Interface

Speed rate: 10M/100M Auto-negotiation、10M half-Duplex、10M Full Duplex、100M Half-Duplex, 100M Full Duplex Optional.

Support VLAN and QinQ function

Chapter Four Web setting

4.1 WEB Management Requirements

- ✧ PC Operating system: Win 2000/Win XP/Win7/Linux
- ✧ Network Connection:Ethernet/FastEthernet
- ✧ WEB Browser : IE6 or later version,FireFox,and others.
- ✧ The PC must be in the same subnet with 2FE1-4ETH.

4.2 WEB Login

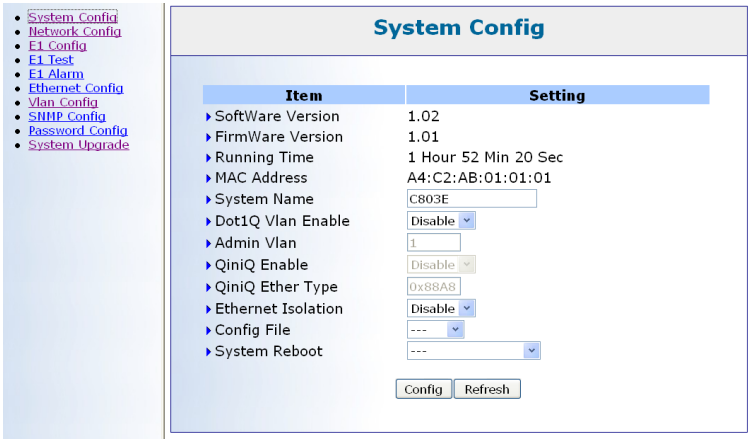
We use Internet Explorer as the example.Run the browser program, input the IP address of 2FE1-4ETH in the address bar with the prefix "http://". The default address is 192.168.0.168.

The fowling picture shows the login dialog box, input the right user name and password. User and password both are "root".

The password of the default user "root" can be modified through CLI(Command Line Interface) or WEB.

4.3 System Config

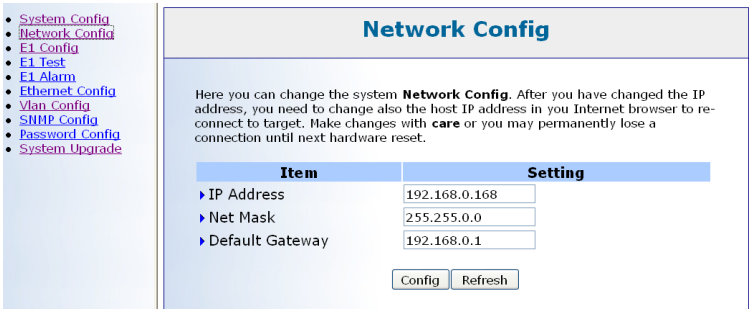
4.3.1 System Info



- ✧ Software Version: The device software version.
- ✧ Firmware Version: The device firmware (FPGA) version.
- ✧ Running Time: The time since the device last boots.
- ✧ MAC Address: The device mac address.
- ✧ System Name: The system name. Each device can be assigned different name.
- ✧ Dot1Q Vlan Enable : The global 802.1Q vlan function.
- ✧ Admin Vlan : The Admin Vlan, valid when dot1q vlan is enabled.
- ✧ QinQ Enable : The QinQ Function, valid when dot1q vlan is enabled.
- ✧ QinQ Ethernet Type : The QinQ ethernet type, valid when dot1q vlan & qinq enabled.
- ✧ Ethernet Isolation : The 4 ethernet ports isolation.
- ✧ Config File : If 'Save' option selected, the current configuration will be saved to the flash. If 'Erase' option selected the saved config will be erased from the flash.

✧ System Reboot：Reboot the system Immediately without save, or after save , or to factory settings(by erasing the saved configuration).

4.3.2 Network Config

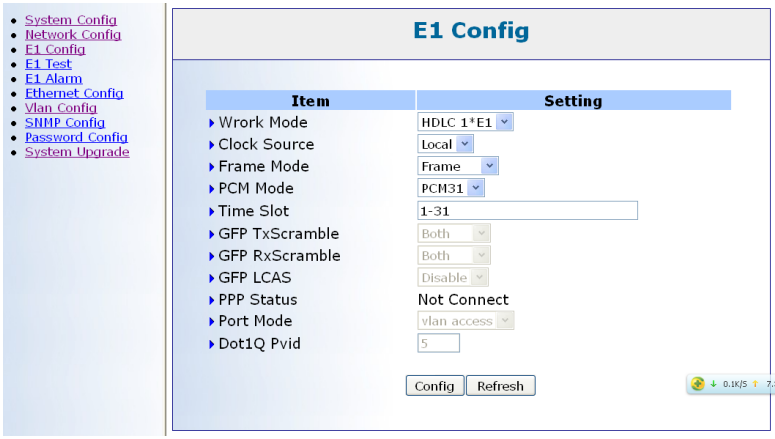


✧ IP Address：The device IP Address. (default is 192.168.0.168)

✧ Net Mask： The device netmask.

✧ Default Gateway：The device gateway

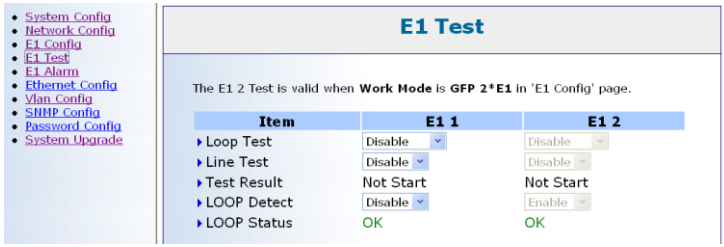
4.3.3 E1 Config



✧ Work Mode：2FE1-4ETH support 4 work mode：HDLC 1*E1 / PPP 1*E1/ GFP 1*E1 / GFP 2*E1.

- ✧ Clock Source：Local or Line.
- ✧ Frame Mode：Frame or Unframe. Valid when work mode is HDLC/PPP
- ✧ PCM Mode：PCM30 or PCM31. Valid when work mode is HDLC/PPP and Frame Mode is Frame.
- ✧ Time Slot：Such as 1,4,5-31. Valid when work mode is HDLC/PPP and Frame Mode is Frame.
- ✧ GFP TxScramble：Disable,Header,Payload or Both. Valid when work mode is GFP.
- ✧ GFP RxScramble：Disable,Header,Payload or Both. Valid when work mode is GFP.
- ✧ GFP LCAS：Enable Or Disable. Valid when work mode is GFP.
- ✧ PPP Status：PPP Link Status. Valid when work mode is PPP.
- ✧ Port Mode：Vlan-Access(Untag) or Vlan-Trunk(Tag). Valid when dot1q vlan enable.
- ✧ Dot1Q Pvid：Port Vlan ID.Valid when dot1q vlan enable.

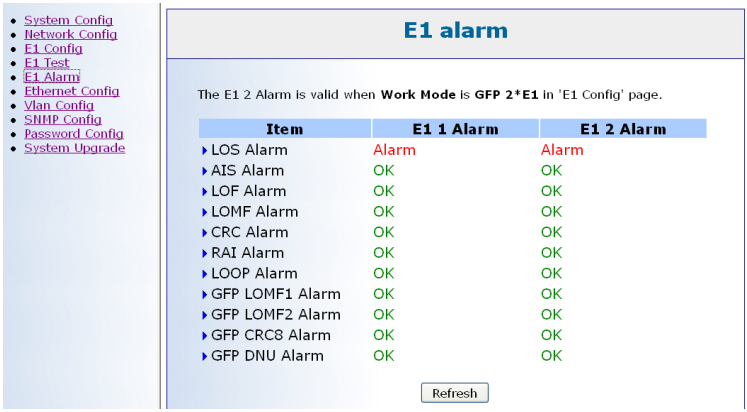
4.3.4 E1 Test



- ✧ Loop Test：Disable, Local Loop or Line Loop.
- ✧ Line Test：Disable or Enable
- ✧ Test Result：Line Test Result.
- ✧ Loop Detect：Disable or Enable
- ✧ Loop Status :OK or Alarm.

The E1 2 Test is valid when Work Mode is GFP 2*E1 in 'E1 Config' page

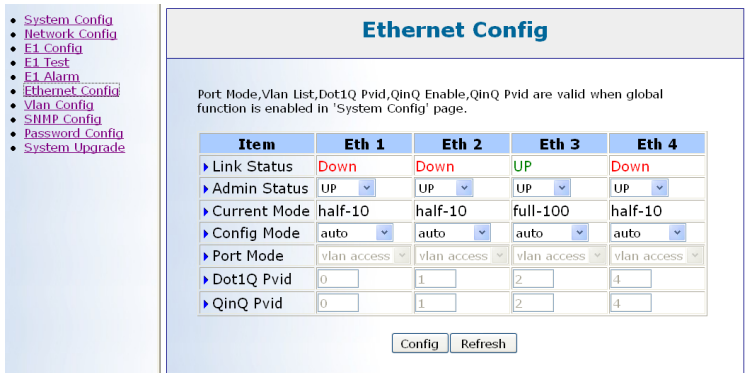
4.3.5 E1 Alarm



This Page Display The E1 Alarms

The E1 2 Alarm is valid when Work Mode is GFP 2*E1 in 'E1 Config' page

4.3.6 Ethernet Config

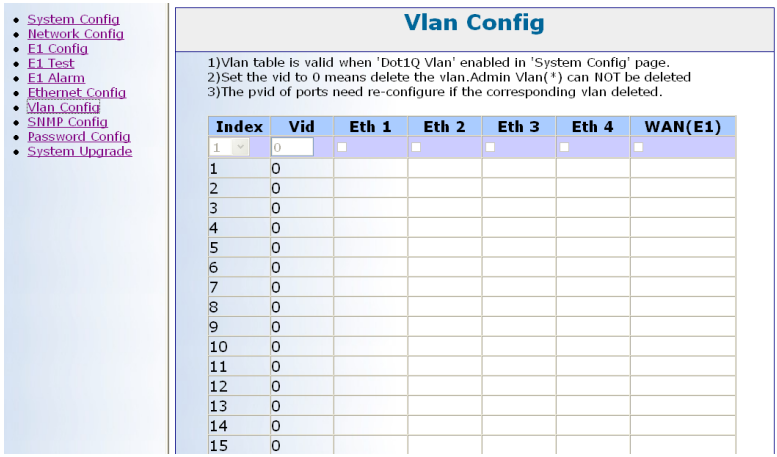


- ✧ Link Status : UP or Down.
- ✧ Admin Status : UP or Down
- ✧ Current Mode : half-10/full-10/half-100/full-100.
- ✧ Config Mode : auto/half-10/full-10/half-100/full-100
- ✧ Loop Status :OK or Alarm.
- ✧ Port Mode : Vlan-Access(Untag) or Vlan-Trunk(Tag). Valid

when dot1q vlan enable.

- ✧ Dot1Q Pvid：Port Vlan ID.Valid when dot1q vlan enable.
- ✧ QinQ Pvid：QinQ Pvid.Valid when dot1q vlan & qinq enable.

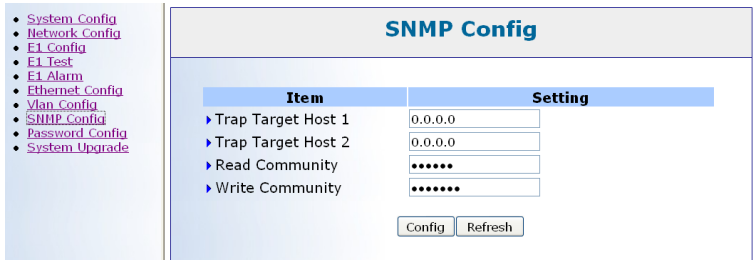
4.3.7 Vlan Config



2FE1-4ETH supports 16 vlan tables.

- ✧ 1)Vlan table is valid when 'Dot1Q Vlan' enabled in 'System Config' page.
- ✧ 2)Set the vid to 0 means delete the vlan.Admin Vlan can NOT be deleted
- ✧ 3)The pvid of ports need re-configure if the corresponding vlan deleted.

4.3.8 SNMP Config

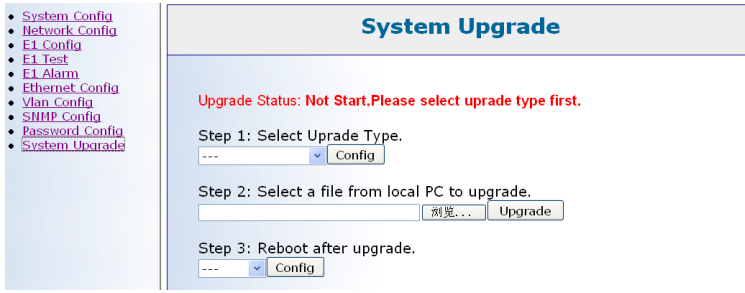


2FE1-4ETH supports 2 Trap Target Hosts and 2 Communities.

4.3.9 Password Config

This page allows you to change the CLI and WEB password for the user 'root'.After you change the password,you need to re-login with the new password.

4.4.0 System Upgrade



You can upgrade Software(APP) or Firmware(FPGA) via this page.

The software file name must be *.bin,and the firmware file name must *.rbf.

Please follow the Step 1 to Step 3 to upgrade,it takes about 10 seconds to upgrade.

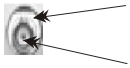
Chapter Five Accessories

5.1 Method of making lines

5.1.1 How to make E1 connecting cable

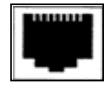
75ΩLine Making Method:

Connection between core and core and between skin and skin;
No connection between skin and core



120ΩLine Making Method:

The pins are arranged as follows:



1，2，3，4，5，6，7，8

1(+), 2(-) pins are output pins
4(+), 5(-) pins are input pins

5.1.2Making of Ethernet Interface Connecting Cable

Ethernet interface Connecting Cable adopts twisted pair line with its specific making methods divided into two international standards, which are EIA/TIA568A and EIA/TIA568B. Position the tail of crystal head downward (i.e. the flat side upward), determine the lines with figures as 1 2 3 4 5 6 7 8 from left to right, and the distributions of each line are as follows:

(EIA/TIA568A standard)			(EIA/TIA568B standard)		
Pin No.	Connection signal	Sequence of twisted pair line	Pin No.	Connection signal	Sequence of twisted pair lines
1	TX+(transmission)	White and green 1	1	TX+(transmission)	White and orange
2	TX-(transmission)	Green	2	TX-(transmission)	orange
3	RX+(receive)	White and orange	3	RX+(receive)	White and green
4	Not to be used	Blue	4	Not to be used	Blue
5	Not to be used	White and blue	5	Not to be used	White and blue

6	RX-(receive)	Orange	6	RX-(receive)	Green
7	Not to be used	White and brown	7	Not to be used	White and brown
8	Not to be used	Brown	8	Not to be used	Brown

RJ-45 twisted pair line is specified as follows:

1)1, 2 used to send; 3, 6 used to receive; 4, 5， 7, 8 are bi-directional lines.

2)1, 2 must be pair twisted; 3, 6 pair twisted; 4, 5 pair twisted; 7, 8 pair twisted.

Making of straight-through line: both heads are connected as per T568B line sequence standard. Making method of crossover line: one head is connected as per T568A line sequence while the other head is connected as per T568B line sequence. The follows are specific connection conditions:

1) The device is connected with PC and router: straight-through line shall be adopted with the same connecting method on both ends of network line.

2) The device is concatenated with switch (or HUB): crossover line shall be adopted with different connecting method on both ends of network line.

5.2 Warranty Card

Our company is committed to provide users with the following terms:

1. Warranty service

1) Within the charge free warranty term (within 12 months since the purchase of the product), damaged parts can be exchanged free of charge and maintenance charges will be free in the conditions that the device is considered to be malfunctioned in normal service by our company.

2) Within the charged warranty term (more than 12 months and within 36 months since the purchase of the product), damaged parts will be charged for corresponding cost with free maintenance service in the conditions that the device is considered to be malfunctioned in normal service by our company.

2. Users can not enjoy warranty service with the following cases and corresponding cost of damaged parts replacing and maintenance service will be charged

（1） Exceed 36 months since the purchase of the product

（2） Can’t provide certificate of purchasing date, and serial No. of

product shows that ex-works term has exceeded 36 months;

（3） Include but not limit to the abnormal service conditions such as violent knocking, extrusion, drop, liquid immersion that cause damages;

（4） Fragile label on the device is damaged;

（5） User disassembles this product himself

（6） Force majeure that leads to product damage, such as earthquake, flooding and lightening stroke;

3. The newly installed parts after maintenance will be repaired free of charge within 12 months since the installation date.

4. When malfunction occurs, users can choose to send it to our company to receive maintenance service or to post it to maintenance points of our company all over the country to be repaired.

5. Our company does not undertake any responsibilities for losses caused by abnormal operation; for losses really caused by product itself, including but not limited to all direct or indirect losses due to data loss, our company will only undertake responsibilities within the selling price of products.

Repair and Maintenance Record

Product Name: 2FE1-4ETH		**Device No.:**
Maintenance date		**No. of Service Bill**
1		
2		
3		
4		
5		

修改记录：

2012-09-10 Liucf

修改机械尺寸