4*E1 Over IP

User's Manual

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.

1. Overview

The converter encapsulates the E1 data in the IP packet, supports the UDP packet mode, realizes E1 service to the 2*100Base-TX and 1*100Base-FX Ethernet conversion, in the same network segment or through the router to achieve different network segment communication.

2. Features

➢ Based on self -copyright IC;

➢ Provide Web and Console (RS232) management interface, easy to install and open;

➢ Ethernet interface rate of 10M / 100M, full duplex / half duplex adaptive;

➢ support Ethernet packet out-of-order recovery and cache to anti-network delay;

➢ Adjustable frame length to balance bandwidth and transmission delay;

➢ based on FPGA hardware design, start fast;

➢ DC-48V / DC24V power supply with polarity automatic detection function, the installation does not need to distinguish between positive and negative;

3. Parameters

➢ **E1 interface**

  Standard:　　　conform to G.703 standard

  Code rate:　　2.048Mbit/s±50ppm

  Code type:　　HDB3

Impendence: 75Ω（unbalance）/ 120（balance）

Connector: BNC（unbalance）/ RJ45（balance）

Jitter tolerance: conform to G.742 and G.823

➢ Ethernet interface: 10/100Base-T Port

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

➢ Ethernet interface: fiber Port

Wave Length: 1310nm, 1550nm

Interface rate: 1000M, full duplex

Interface Standard: Compatible with IEEE 802.3, 1000BASE-X

MAC Address Capability: 4096

Connector: LC

Fiber Transmission Distance is limited by optical circuit loss and additional loss as a result of connectors, fittings and patch panel. Transmission distance may also be limited by fiber optic bandwidth.

➢ Power

Power supply: AC100V ~ 260V；DC –48V；DC +24V

Power consumption: ≤5W

➢ Working Environment

Working temperature: -10°C ~ 60°C

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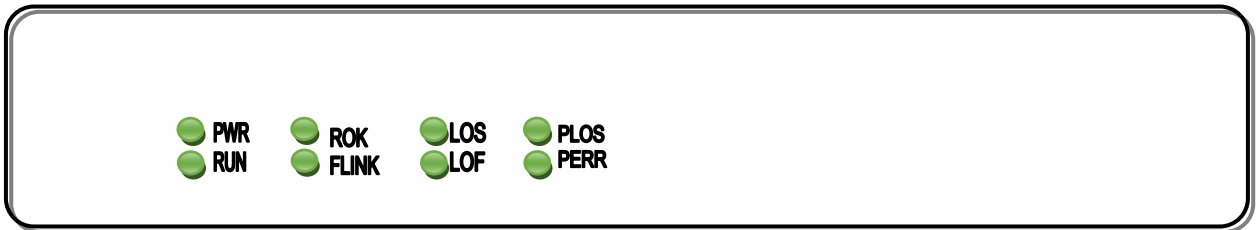
Storage temperature: -40°C ~ 80°C

Storage Humidity: 5% ~ 95 % (no condensation)
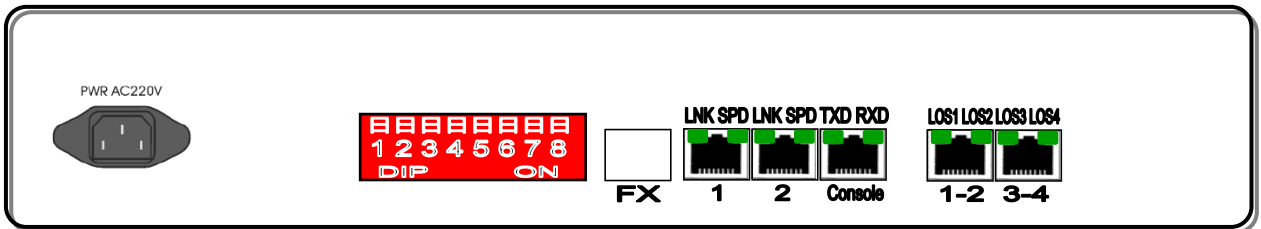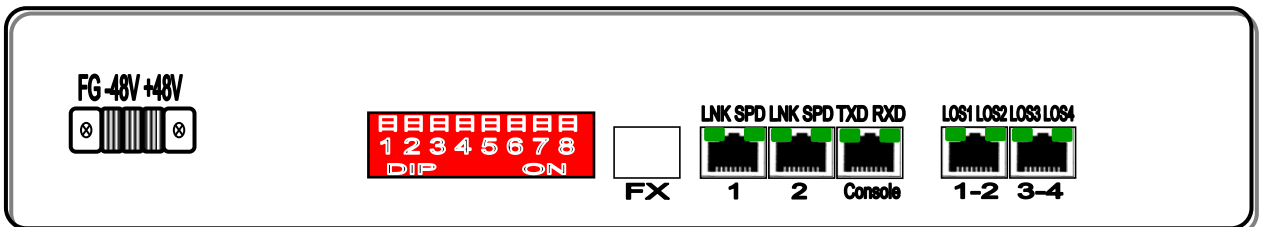
➢ **Dimension**

216×130×31mm(W×D×H)

4. Panel

Figure 1.   Front Panel

Figure 2.   Back panel

Figure3.   Back panel

Note: Extension interface is optional interface. The corresponding interface is invalid without custom.

5. Indicator LED

Name	Color	Condition	Description
PWR	Green	ON	Device power is ON
		OFF	Device power is OFF
RUN	Green	ON	The system is working properly
		FLASH	Test mode active
		OFF	The system is not working or working abnormally
ROK	Green	ON	Connect with the Remote equipment
FLNK	Green	ON	Fiber is connected
		OFF	Fiber is not connected
LOS	RED	ON	Reserve
LOF	RED	ON	Reserve
PLOS	RED	ON	No packet
PERR	RED	ON	Received packet error or packet loss

6. DIP Switch

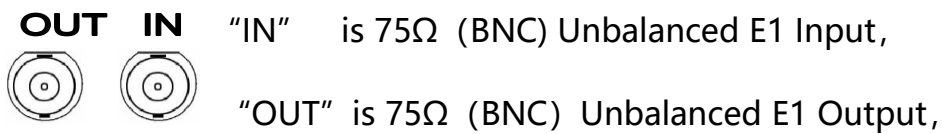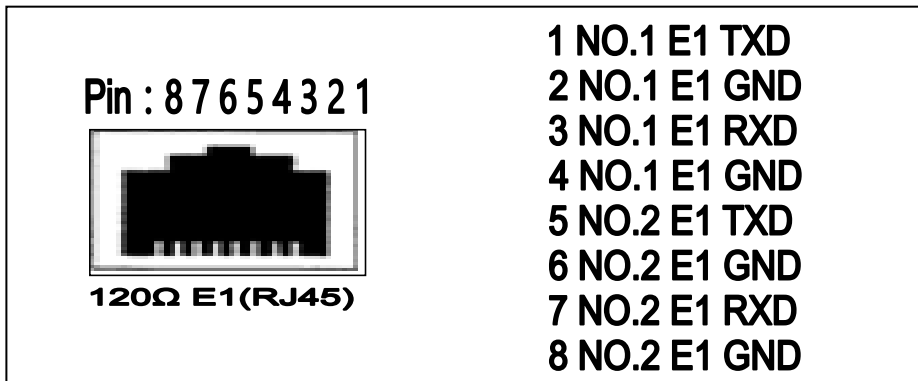| DIP	Condition	Description
1-4		Reserve
5	ON	E1 remote loop (TX to RX)
6	ON	E1 local loop (RX to TX)
7	ON	TEST MODE A
	OFF	TEST MODE B
8	ON	TEST MODE EN

Set a pair of devices to test mode A and test mode B will set IP 192.168.0.192 and 192.168.0.193, destination IP192.168.0.193 and 192.168.0.192, Can be connected directly, purpose to test devices without manager.
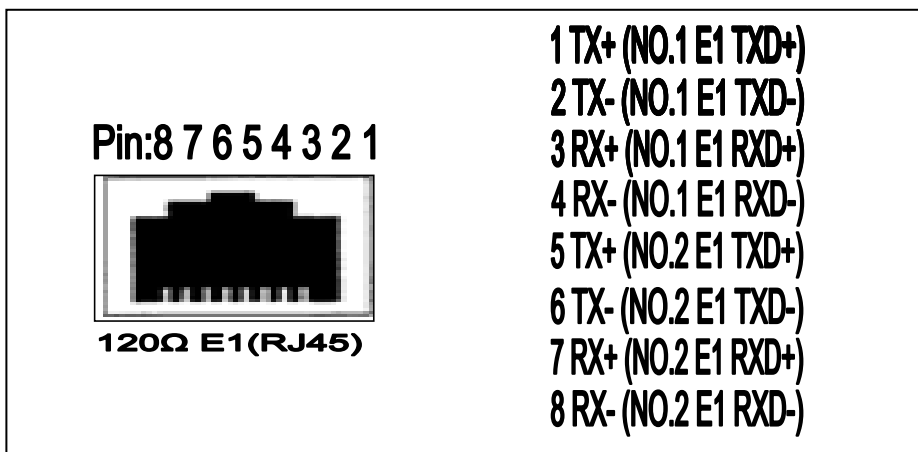
7. E1 Interface

Rear panel has 2 RJ45, each RJ45 out of 2 E1,75 Europe, configure a RJ45 to 4

BNC line

75 European E1 pin is defined as follows:

```
Pin : 8 7 6 5 4 3 2 1

120Ω E1(RJ45)
```

1 NO.1 E1 TXD
2 NO.1 E1 GND
3 NO.1 E1 RXD
4 NO.1 E1 GND
5 NO.2 E1 TXD
6 NO.2 E1 GND
7 NO.2 E1 RXD
8 NO.2 E1 GND

OUT   IN   "IN"   is 75Ω (BNC) Unbalanced E1 Input，

"OUT" is 75Ω (BNC) Unbalanced E1 Output，

120 Ω E1 Pin Define:

```
Pin:8 7 6 5 4 3 2 1

120Ω E1(RJ45)
```

1 TX+ (NO.1 E1 TXD+)
2 TX- (NO.1 E1 TXD-)
3 RX+ (NO.1 E1 RXD+)
4 RX- (NO.1 E1 RXD-)
5 TX+ (NO.2 E1 TXD+)
6 TX- (NO.2 E1 TXD-)
7 RX+ (NO.2 E1 RXD+)
8 RX- (NO.2 E1 RXD-)

8. Ethernet Int

2Channel Ethernet can be optional. Support 10/100M, half/full duplex auto- negotiation and AUTO-MDIX (crossed line and straightly connected line self-adaptable)

LNK	Green	ON	Ethernet is connected
		OFF	Ethernet is not connected
SPD	Green	ON	Ethernet rate is 100M
		OFF	Ethernet rate is 10M

RJ45 Connector and Crystal head PIN order as follows:

LNK SPD

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
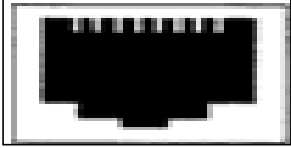
Crossed line order

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

9. Console Manager

Console

PIN 1 2 3 4 5 6 7 8

2 RS232 TXD(output)
3 RS232 RXD(input)
5 ground
(1 4 6 7 8)invalid

This is for PC hyper-terminal control.

Use DB9 cable to connect the PC's COM port with CONSOLE port;

Run the "hyper terminal" program under WINDOWS system, or run other

third-party serial port connection software, set the default parameters as following:

Baud rate: 9600;

Data byte: 8;

parity check: none;

Stop bit: 1;

Flow control: none;

Press "ENTER" continuously for several times, enter system's CLI interface and

begin management work.

```
====================== Main Menu ========================
== 1.Loop up current device information, Please input '1'
== 2.Config device setting, Please input '2'
== 3.Language Switch(Chinese or English)!Please input '3'
== 4.System reset, Please input '4'
== 5.Restore the factory settings, Please input '5'
===========================================================
[FCT /]:
```

Submenu introduction

1. Query current Ethernet settings information，input'1'

```
[FCT /]:1
Information of Device Settings:
  Source IP       :192.168.0.148
  Destination IP  :192.168.0.149
  Gateway         :192.168.0.1
Subnetmask      :255.255.255.0
  Source MAC      :00:00:00:fc:fc:00
  Source Port     :30000
  Destination Port:30000
  Buffer Depth    :4
  Frame Length    :2


Information of Device Messages:
  Source IP       :192.168.0.148
  Destination IP  :192.168.0.149
  Gateway         :192.168.0.1
Subnetmask      :255.255.255.0
  Source MAC      :00:00:00:fc:fc:00
  Destination MAC:00:00:00:00:00:00
  Source Port     :30000
  Destination Port:30000
  Buffer Depth    :4
  Frame Length    :2


Information of Port Status:
  port1-link: DOWN
  port2-link: DOWN
  FX-link: DOWN



====================== Main Menu ========================
== 1.Loop up current device information, Please input '1'
== 2.Config device setting, Please input '2'
== 3.Language Switch(Chinese or English)!Please input '3'
== 4.System reset,Please input '4'
== 5.Restore the factory settings, Please input '5'
===========================================================
[FCT /]:
```

2. Enter settings menu，input'2'

```
[FCT /]:2


===================== Config Menu ========================
== 1.Config local IPAddress, Please Input '1'
== 2.Config local MAC Address, Please Input '2'
== 3.Config TDMIP Setting, Please Input '3'
== 9.Inquire Current Config, please input '9'
== 0.Back To Previous Menu, please input '0'
==============================================================
[FCT /]:
```

You need to configure the source IP address and mac address, destination IP address, gateway, and subnet mask of the machine after the new device or factory reset.

Example 1: The local IP address is set to 192.168.0.145, the MAC address is set to 00: 00: 00: fc: fc: 11, to communicate with the 192.168.0.30 computer, the gateway is 192.168.0.1, the subnet mask for 255.255.255.0. Set as follows:

Under "Config Menu", input 1, to "Config local IPAddress" menu

set 0 192.168.0.145   (local IPAddress Config, press enter to effect)

set 1 255.255.255.0   (local Netmask Config, press enter to effect)

set 2 192.168.0.1   (local Gateway Config, press enter to effect)

input 0, press enter, to "Config Menu"

Under "Config Menu", input 2, to" Local MAC Config Menu"

set 00.00.00.fc.fc.11   (Local MAC Config, press enter to effect)

input 0, press enter, to "Config Menu"

Under "Config Menu", input 3, to "TDMIP Setting" Menu

dstip 192.168.0.30   (destination IP address, press enter to effect)

input 0, press enter, to "Config Menu"

input 9, confirm all setting succeed, repower device to take effect.

Example 2: Increase the cache depth when the network quality is poor to absorb the packet transmission delay, adjust the cache depth. Set as follows: buf 8 (numbers from 1 to 15)

Under "Config Menu", input 3, to "TDMIP Setting"   Menu

buf8   (buffer depth setting, buffer depth: 1<=buf<=15, press enter to effect)

input 0, press enter, to "Config Menu"

input 9, confirm all setting succeed, repower device to take effect.

Console Manager

Telnet address is local IP address, default ip address 192.168.0.148.

User name is admin, and password is admin;

Telnet menu like console menu, please refer to "Console Manager".
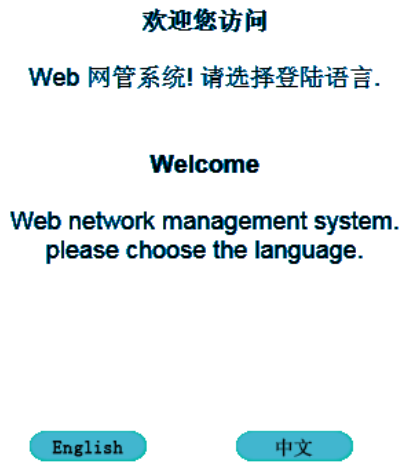
10.   Web Manager

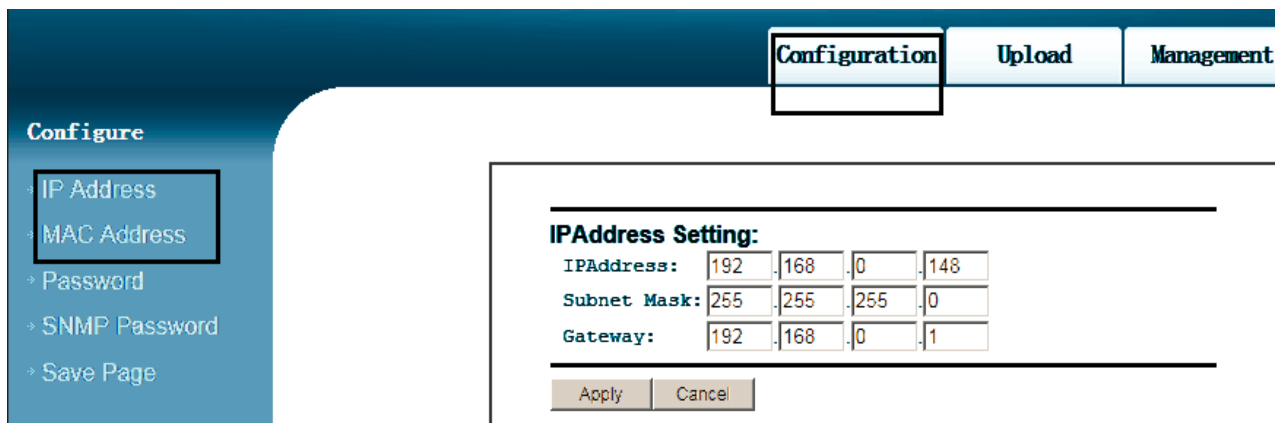1. Enter the IP address:192.168.0.148
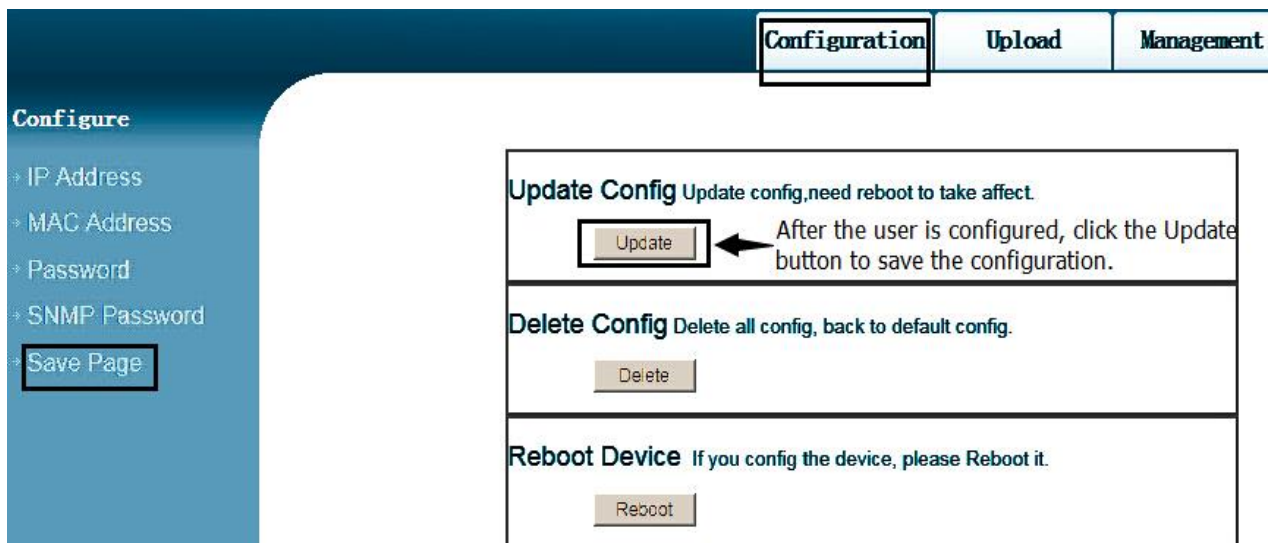
User name is admin, and password is admin;

2. Enter user name and password: admin, then choose the language.

欢迎您访问

Web 网管系统! 请选择登陆语言.

Welcome

Web network management system.
please choose the language.

English   中文

3.Enter the web page can be configured local IP MAC

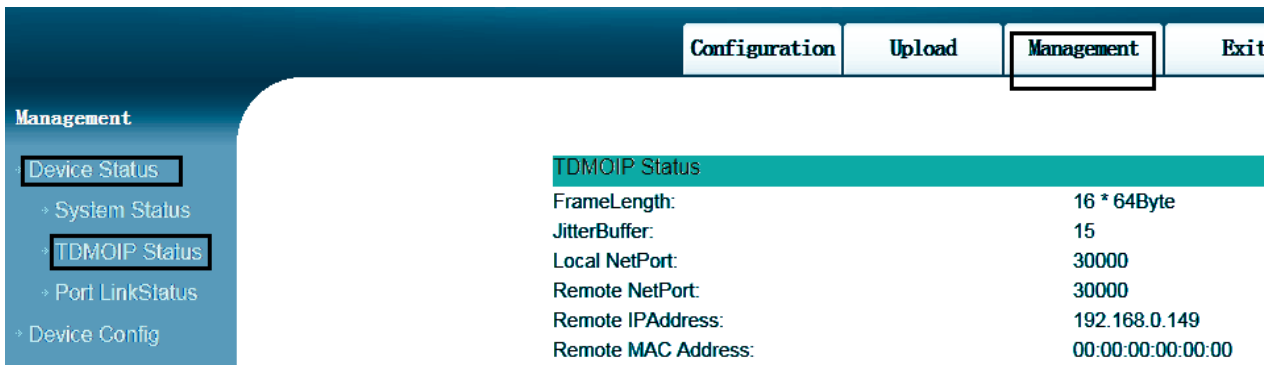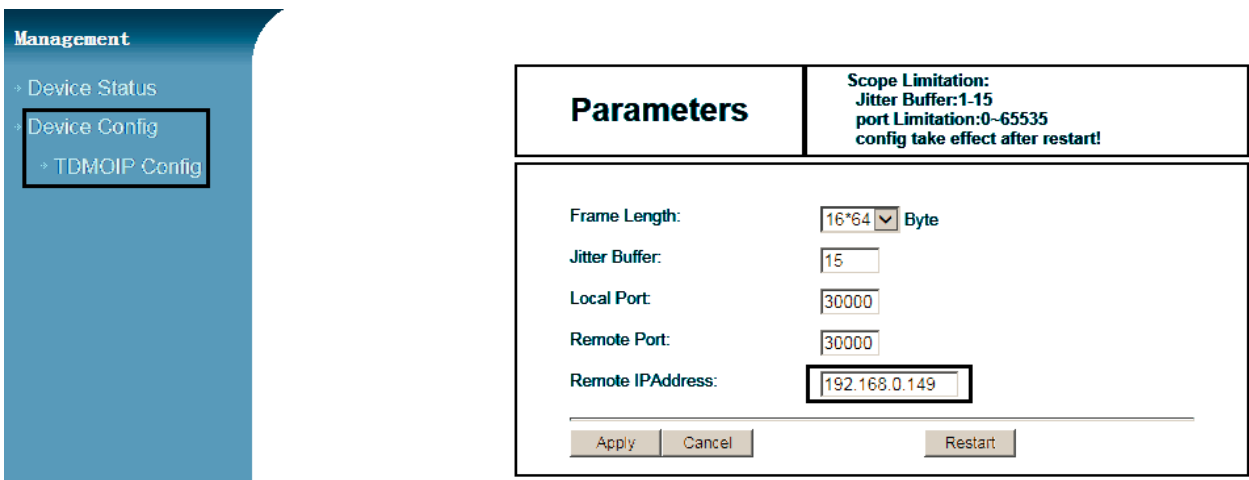Note: After the user is configured, click the Update button to save the configuration.

4.Click here can upgrade the firmware.

5.Click device management can view the device status.

6.Here can modify the target IP address and require the opposite IP keep

consistent, click "Apply" to save you configuration.

7.Click on the "Restart", setting up completed successfully.

11. Power

Dual power supply: AC220V and DC-48V：

AC220V socket: input voltage range AC100V～265V；Please insert power wire as the attachment;

DC-48V socket: input voltage DC-36V ~-72V. If the power of DC-48V is used, the positive and negative terminal can be optional because there is the self-test circuit for the polarity inside the fiber optical multiplexer.

Normal Connect way

"FG" **connect earth；**

"-48V" connect the power negative；

"+48V" connect the power positive；

12. After-sales Service

The series of our E1 Over IP 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.

13. 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 my company.