



F5-23xx Series TDM over IP Converter

Beijing Fibridge Co., Ltd.

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1. Overview

F5-23xx is a low-cost and high-efficient converter, which could transmit up to 4 E1/T1 channels over the IP networks. The device supports framed and unframed E1/T1 channel, and supports all of the traditional E1/T1 service, such as voice, data, fax, signaling, and the other all kinds of communication services. And furthermore, F5-23x5 provides an additional 10/100Mbps Ethernet channel to transmit traditional IP data, protecting customer's investment at most. With the inside compensation mechanism for the delay variation introduced by the IP networks, F5-23xx supports up to 256ms delay time for E1/T1 signal transmitting over IP networks, to ensure data transmission with high stability and efficiency. And also, it supports IEEE802.1Q VLAN.

F5-23xx complements VoIP in those cases where VoIP is not applicable, and in those cases where VoIP price/performance is not sufficient. Most importantly, F5-23xx provides higher voice quality with much lower latency than VoIP. Unlike VoIP, F5-23xx can support all applications that run over E1/T1 circuits, not just voice.

F5-23xx is widely used for TDM services over Ethernet MAN, broadband wireless, CATV, 2G/2.5G cellular backhaul over IP, PSTN-IP network bridging, SS7 transport over IP, etc. More information about software, please refer to software user manual for reference.

2. Features

2.1. Hardware Features

- Transmit Framed and Unframed E1/T1 signal over IP network
- Provide up to 4 E1/T1 channels
- All E1 channels support 75 Ohm unbalanced and 120 Ohm balanced PnP(Plug and Play)
- Provide one 10/100Mbps Ethernet port for uplink, and another one for traditional IP data transmission
- IP network transmission delay compensation inside, supporting up to 256ms delay time for each E1 channel, and up to 340ms(unframed) delay time for each T1 channel
- Four clock sources selectable, Internal Clock, External Clock, Network Adaptable Clock and Recovered from E1 Channel Clock
- Ensure Network Adaptable Clock jitter and wander levels conform to ITU-G G.823/824

recommendation, even for networks that introduce high packets delay variation and packet loss

- Fully compliant with IEEE802.3, 802.3u, 802.3x standards on Ethernet ports
- Fully compliant with ITU-T G.703, G.704, G.823, G.824 recommendation
- E1 information transmitted on the IP network has QoS guarantee
- Support IEEE802.1Q VLAN
- Convenient to use, no complicated configuration
- Transmitted package based on the IP address, through switches, routers network equipment etc
- General UTP Ethernet interface, 10/100Mbps, half/full duplex auto-negotiation and force mode
- Provide external 2Mbps or 2Mbits reference clock input
- Support Console, SNMP and WEB management *

2.2. Software Features

2.2.1. System

- Support Console, WEB and SNMP-based management *
- Reset device to factory default
- Support firmware updating, with the update tool and new version firmware file download from our website
- Support SNMP management. Set Trap Destination, Community Name, and authority *
- Provide MIB file, make it easy to be integrated into the third-party SNMP management software *
- Tree-view structure makes it easy to manage many chassis from a single management software based on SNMP *

2.2.2. Monitor and Setting

- Show details of system information, including device name, location information, management IP address, start-up time, software and hardware version
- View & configure the working status of device, including connection status, port status, E1/T1 mode selection, clock source selection, and so on
- Set the speed(bandwidth) limitation of the Ethernet port from 0Mbps to 100Mbps with step of 32Kbps on uplink port and local Ethernet data port
- Set the IEEE802.1Q VLAN *
- Support local loop back test function
- Summarize the data flow information and show the communication state of each port *

2.2.3. Alarm *

- Real-time Alarm can be added to a float window automatically or pop up to get more attention
- One history alarm message window for searching, deleting and printing

2.2.4. Security

- 3 levels of the users to advance the security of the software system

3. Interface Specification

3.1. Ethernet Port

- 1) Data Rate: 10/100Mbps auto-negotiation or forced manually
- 2) Half/full duplex mode auto-negotiation or forced manually
- 3) Connectors: RJ45 Jack
- 4) Support automatic MDI/MDI-X crossover
- 5) Fully compliant with IEEE 802.3, 802.3u and 802.3x standards

3.2. E1 Port

- 1) Data rate: 2.048Mbps for unframed E1, $N \times 64\text{Kbps}$ ($N=1\sim 31$) for framed E1
- 2) Code type: HDB3
- 3) Impedance: 75Ω unbalanced and 120Ω balanced PnP(plug and play)
- 4) Connector: BNC coaxial jack for 75Ω , RJ45 jack for 120Ω
- 5) Compliant with ITU-T G.703, G.704, G.823, G.824 recommendation

4. General

4.1. Device Size

Width × Depth × Height: 434mm × 200mm × 44mm

4.2. Power Supply

AC: 100V~240V, 50/60Hz

DC: -48V

Power Consumption: < 5W with full load

4.3. Environment

- Working environment:
Temperature: $5^{\circ}\text{C} \sim 40^{\circ}\text{C}$;
Humidity: 30% ~ 90% (25°C);

Atmosphere pressure: 86 kPa ~ 106 kPa.

- Store and transportation environment:

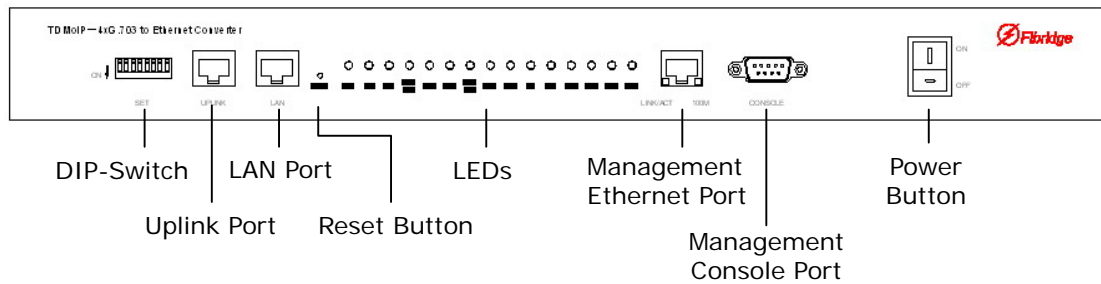
Temperature: -20°C ~ 60°C;

Humidity: 20% ~ 90% (25°C);

Atmosphere pressure: 86 kPa ~ 106 kPa.

5. Appearance

5.1. Front Panel



5.2. Rear Panel

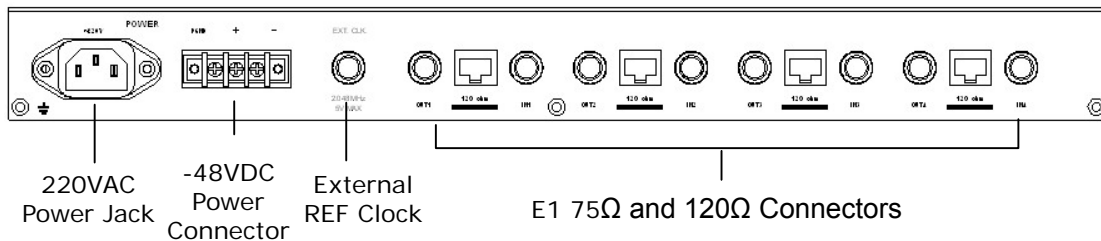


Figure 1 Front Panel and Rear Panel

5.3. LEDs on the Device

Table 1 LEDs on the Device

LED	Color	Function	Status	Description
PWR	Green	Power Status	ON	Power Supply Ok
			OFF	No Power Supply
RUN	Yellow	Embedded software running status	BLINK	Embedded software running normally
			ON/OFF	Embedded software paused abnormally
ALM	Red	Device alarm indication	ON	At least on alarm on device
			OFF	No alarm
Link/ACT1	Yellow	Uplink port Link/Act status	ON	Uplink port linked
			BLINK	Uplink port is transferring data
			OFF	Uplink port not linked

FDX1	Green	Uplink port duplex mode	ON	Full duplex
			OFF	Half duplex
SPD1	Green	Uplink port speed	ON	100Mbps
			OFF	10Mbps
Link/ACT2	Yellow	LAN port Link/Act status	ON	LAN port linked
			BLINK	LAN port is transferring data
			OFF	LAN port not linked
FDX2	Green	LAN port duplex mode	ON	Full duplex
			OFF	Half duplex
SPD2	Green	LAN port speed	ON	100Mbps
			OFF	10Mbps
AIS	Red	E1 AIS indication	ON	E1 AIS indication
			OFF	No E1 AIS
CRC	Red	CRC error indication	ON	CRC error
			OFF	No CRC error
LOS _n n=1~4	Red	E1 loss of signal	ON	E1 loss of signal
			OFF	No E1 loss of signal

6. Typical Applications



E1/T1 Transmission over WLAN



Use IP network to Transmit E1 signal
(IP network including switches and/or routers)

Figure 2 Typical Application Topology of TDM over IP

7. Management Port Setting

7.1. RS-232 Management Port

Baud Rate: 57600

Data Width: 8

Odd/Even Parity: None

Stop Bit: 1

Flow Control: None

Connector: DB9, Male

7.2. Twist-pair Management Port *

Support 10/100Mbps, Half/Full duplex mode auto-negotiation

Support MDI/MDI-X auto-crossover

Connector: RJ45 jack

7.3. Default User and Password

Name: admin

Password: None

7.4. Default IP Address *

The default IP address of the chassis: 192.168.0.216

8. Installation

- 1) Put the device on a flat desk or mount it into the 19 inch wide standard chassis
- 2) Connect the uplink cable to Uplink port, and E1 cable to E1 ports
- 3) Connect the device to a management computer with a console cable and/or a twist-pair Ethernet cable
- 4) Connect the power supply, turn on the power switch on the front panel
- 5) After power-on self test, the device starts operation with the LED RUN blinking
- 6) Open the program HyperTerminal in Windows, you could view and configure the device easily

9. Order information

9.1. Model

F5-4511

9.2. Part Number

F5-2315A	1E1 over 2 Ethernet pot, Standalone, AC220V power supply
F5-2315D	1E1 over 2 Ethernet pot, Standalone, DC-48V power supply
F5-2325A	2E1 over 2 Ethernet pot, Standalone, AC220V power supply
F5-2325D	2E1 over 2 Ethernet pot, Standalone, DC-48V power supply
F5-2345A	4E1 over 2 Ethernet pot, Standalone, AC220V power supply
F5-2345D	4E1 over 2 Ethernet pot, Standalone, DC-48V power supply

NOTE: We Reserve the right to vary descriptions and specifications without notice due to Fibrbridge's policy of continuous product improvement.