

## E1 to Ethernet Protocol Converter, Interface Converter

### 4E1 - 4 x 10/100 Ethernet converter with VLAN dot1Q support and professional GUI NMS



#### Spot-light:

4 E1 - 4 x 10/100 Ethernet converter with GFP-F, VC (Virtual Concatenation), LCAS support and professional GUI NMS. It's a most latest product in n x E1 to Ethernet converter range in Winyuan product line. Besides the basic idea of bundling 4E1 to get 8 Mbps via professional GUI NMS access to wide array of user friendly features are possible now.

#### Description:

4 E1 - 4 x 10/100 Ethernet converter with GFP-F, VC (Virtual Concatenation), LCAS support and professional GUI NMS. It's a most latest product in n x E1 to Ethernet converter range in Winyuan product line. Besides the basic idea of bundling 4E1 to get 8 Mbps via professional GUI NMS access to wide array of user friendly features are possible now. 4E1-4ETH is the IP over TDM converter, which supports the conversion from MAC frames to 1 – 4 E1 lines. The maximum bit rate is 8 Mbps (4 E1 lines). With different LAN card, E1 card and power card, it can meet various requirements and can be customized to fit your network needs. It not only provides alarms and status of the E1 line and Ethernet interface together with advanced management functions, such as, throughput statistic of the Ethernet, but also supports the Unification Network Management via SNMP and GUI. Compliant to international standards, the device can communicate with products from other manufacturers adopting the same standards.

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4 Fast Ethernet interfaces operate in full or half duplex with flow control, the mode can be set or monitor by management software.

Unit also has a multi-port bridging capability handling up to 5 bridge ports. The Bridge supports two modes of operation: VLAN-Enable and VLAN-Disable mode. In VLAN-Enable mode, it creates sub-groups of bridge ports within the bridge. Each sub-group is associated with a unique **VLAN ID (VID)**. Frames containing a VID can be forwarded only between bridge ports which are members of the specific VLAN, enabling a total separation between different VLAN users within the same bridge;

In VLAN-Disable mode, the bridge forward frames ignoring the VID.

VLAN can be configured via GUI Management software.

Screenshot example of **GUI Professional Manager** for the units can be found below:

## **Features:**

### **For 4 E1 interface ports:**

Supports automatic removal and recovery of E1 channels that used for carrying payload. The E1 channels that have urgent alarm, such as LOS and LOF, or the Bit Error Rate (BER) exceeds 1E-6, are removed automatically, and during this period, some Ethernet packets may be lost; It will be resumed when the fault dismisses;

Supports the embedded E1 BER Tester function, to detect any E1 channel of 4 channels. When the embedded E1 BER Tester is used via CLI command, the particular E1 channel on testing mode can not convey E1 service, while the other E1 channels are not affected by the BER test;

The differential delay between any two of the 4 E1 can be up to 220ms; when the factual differential

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delay exceeds 220ms, alarm is generated and Ethernet is cut off.

Jitter tolerance and jitter transfer characteristic compliant to ITU-T G.823.

## **For 4 10/100 Ethernet Interface Ports:**

Provides up to 4 shared Ethernet interfaces.

1024 MAC address table and 5-minute aging time.

Accepts frames with length between 64 and 1916 bytes (otherwise filtering).

VLAN setting function based on tags compliant to IEE 802.1Q.

Throughout statistic of the Ethernet packets based on port, such as error packets.

Configurable pause flow control .

Optional optical Ethernet interface compliant to IEEE 802.3u 100BASE-FX standard (can communicate with remote optical transceiver) and electrical Ethernet interface compliant to IEEE 802.3u 100 BASE-TX standard.

By default, 4 Ethernet ports are 10/100 BaseT Based, but fiber optical FX type ports are also possible with ranges up to 120 km.

## **For GUI Professional Management Interfaces**

GUI via serial RS232 port and telnet.

4E1-4ETH network management platform based on SNMP.

## **Special features and compliances**

GFP-F encapsulation recommendation G.7041.

Virtual concatenation(VCAT) and Link Capacity Adjustment Scheme (LCAS) recommendation G.7042.

Ethernet to nxE1 mapping recommendation G.7043.

Ethernet to single E1 mapping recommendation G.8040.

Bandwidth is increased without damaging the Ethernet data, and can be decreased no injury through management;

E1s in the local and remote sides can be arranged arbitrarily, such as, the remote E1 port 1 can communicate with local E1 port

Supports bandwidth unbalanced usage – when some E1s cannot work properly (i.e. the bandwidth of the sending and receiving can be 2E1 and 3E1 respectively ).

Provides the E1 connection-ship between local and remote system (accessed via GUI).

E1 tributary signal loopback automatic detect and cut off; when some E1 signal is detected as looped back, it will be not employed for carrying payload temporarily, and when the loopback is broken, this

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E1 will resume to be used. Remote/local E1 loopback function will be convenient for E1 line(transmission system included) testing .

Complete alarm which is selectable to be shown between local and remote. Historical & Current alarm databases.

Single-board design with small dimension, 1U high and low power consumption.

## Specifications

### Electrical Ethernet Interface:

Connector: RJ-45

Working mode: Auto - negotiation is the default setting

Complies with IEEE 802.3 and 10/100 Base-Tx Ethernet Protocol

### E1 interface

Bit rate:2.048Mb/s±50ppm

Code format: HDB3

Impedance: 75 Ohm is default, Optional 120 Ohm

Jitter transfer, Jitter tolerance comply with ITU-T G.703、 G.704、 G.823 recommendations

### Ethernet related parameters

MAC address table capacity: 1024

MAC aging time: 5 min

Minimum frame-length: 64 bytes

Maximum frame-length: 1916 bytes

Working mode: Support auto-negotiation compliant to IEEE802.3u. Enabled as default

VLAN function: Disabled as default, you can set VLAN's from GUI

Flow control: Enabled as default

Bandwidth:  $\approx n \times E1$  (n=0~4) Default is  $4 \times E1 \approx 8\text{Mbps}$

### Physical:

Dimension: 210mm×44mm×155mm (width× height× depth)

Power consumption: 8W±10%

Ordering options for power supply are **DC 48**, or **AC 96 - 260 universal** with all kind of power plugs.

Double power supply on request.

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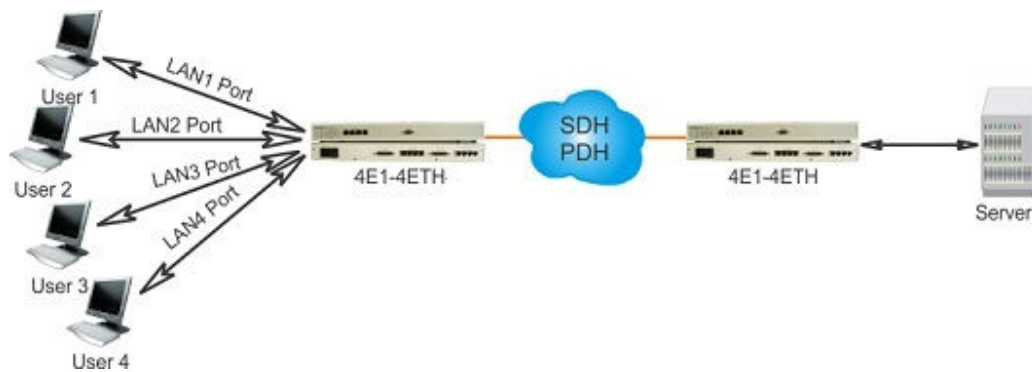
Operating temperature: -5°C~65°C

Storage temperature: -40°C~70°C

Humidity: ≤95%, free from condensing

## Typical Application:

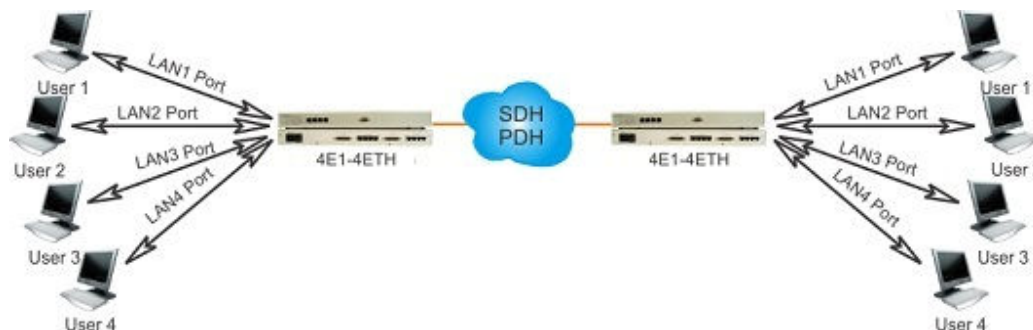
**Device networking application** - unit's are connected to using 4E1 lines directly to PDH or SDH network, and special interconnection features are possible at SDH level due to GFP-F, VC and LCAS technology support.



**Access Server** - Two 4E1-4ETH devices are connected via SDH or PDH transmission network interconnection. Using GFP and VC technology get together 1~4E1 and provide 4×2Mbps transmission channel bandwidth used to transport Ethernet services. Transmission channel bandwidth dynamic adjustment using LCAS technology.

'User 1' and 'User 2' can communicate with each other and are able to access to the 'Server', 'User 3' and 'User 4' can communicate with each other and are able to access to the 'Server', But 'User 1' and 'User 2' are isolated with 'User 3' and 'User 4'.

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## LAN interconnection:

1. User A1 only can communicate with User B1 for each other;
2. User A2 only can communicate with User B2 for each other;
3. User A3 only can communicate with User B3 for each other;
4. User A4 only can communicate with User B4 for each other

## Ordering Information

4E1-4ETH /AC

4E1 to 4 Ethernet converter with professional GUI manager, GFP/LCAS/VCAT support, AC 96-260 power

4E1-4ETH / DC

4E1 to 4 Ethernet converter with professional GUI manager, GFP/LCAS/VCAT support, -48VDC power