

# COMARRA

TELECOM TRANSMISSION SOLUTION



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## 4 x VCL-E1 Over Ethernet Multiplexer (TDM Over IP)

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Product Brochure & Data Sheet

**COMARRA**

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## Description

The 4 x VCL-E1 over Ethernet multiplexer (TDM over IP) product is used to provide up to 4, E1 communication channels over Ethernet or IP networks. This product transmits information at E1 (2048kbit/s).

To transport E1 channels over an Ethernet or an IP network, and to accelerate traditional telecom services to migrate to the IP packet networking technology, the 4 x VCL-E1 over Ethernet multiplexer product uses TDM over IP technology. This solution transports the legacy E1 data through the existing Ethernet or IP network.

4 x VCL-E1 over Ethernet multiplexer product is the new generation of the TDM over IP equipment with IP circuit emulation that supports transportation of four E1 and two local Ethernet ports over an Ethernet or an IP network. The uplink Ethernet ports and user data port are IEEE 802.3 compliant, 10/100BaseT auto-sensed ports.

The state-of-art design provides the highest availability with the accurate timing signal and data bit stream reconstruction. Predefined system parameter profiles that according to different application requirement, ultimately simplify the installation process and saving the maintenance cost.

Telecom and Enterprise users can save a lot of access and equipment costs and generate new revenue resources by offering different types of legacy services over Ethernet networks. It is also suitable for connecting to the Ethernet based wireless equipment to achieve fast deployment of E1 services. One particular application is to provide a combination of Ethernet and E1 services using low cost Wireless LAN bridges, or over RPR Ethernet rings. Operators can use the 4 x VCL-E1 over Ethernet multiplexer to provide a combination of Ethernet and legacy E1 (TDM) services over wired or wireless packet networks, or RPR rings.

TDM technology occupies fixed transmission bandwidth which is suitable for real-time applications such as voice and video. Ethernet technology is based on statistical multiplexing, transmitting and exchanging information in packets. It does not take up a fixed transmission bandwidth, which is good for achieving higher bandwidth utilization. But Ethernet technology does not provide adequate QoS for real time applications.

The 4 x VCL-E1 over Ethernet can be used to emulate transparent E1 channels over an Ethernet link with an acceptable QoS (Please see the note:QoS, below), so that a majority of the existing E1 based applications can be readily setup over Ethernet LANs and WANs.

*(Note: QOS shall depend on the quality of the Ethernet link and packet losses)*



Front View



Back View

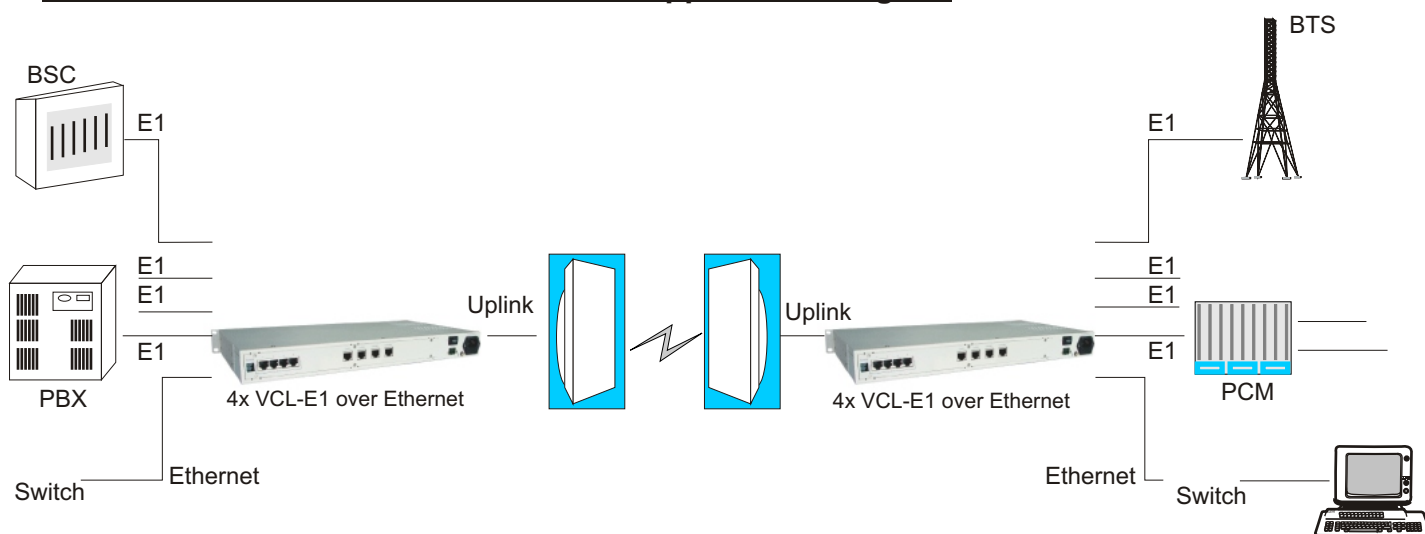
## Features

- Four E1 ports supported, E1 or T1 easily selected by Web Manager
- User-friendly Web server supported for easy setup and maintenance
- Point to point and point to multi-point application supported
- Uplink ports : 1+1 backup supported
- Stable E1 clock recovery, low jitter and wander
- Low processing delay for E1 channels, high bandwidth usage efficiency
- Resist to packet loss, with PCM frame synchronization protection
- User definable encapsulation packet size for different application
- Enough jitter buffer to resist packet delay variation (PDV)
- Local Ethernet port throughput limiting, assuring E1 QoS
- Local and remote E1 LOS and AIS and packet loss indication for trouble-shooting and maintenance
- Support cascade concatenate for more than 4 E1 ports

## Application

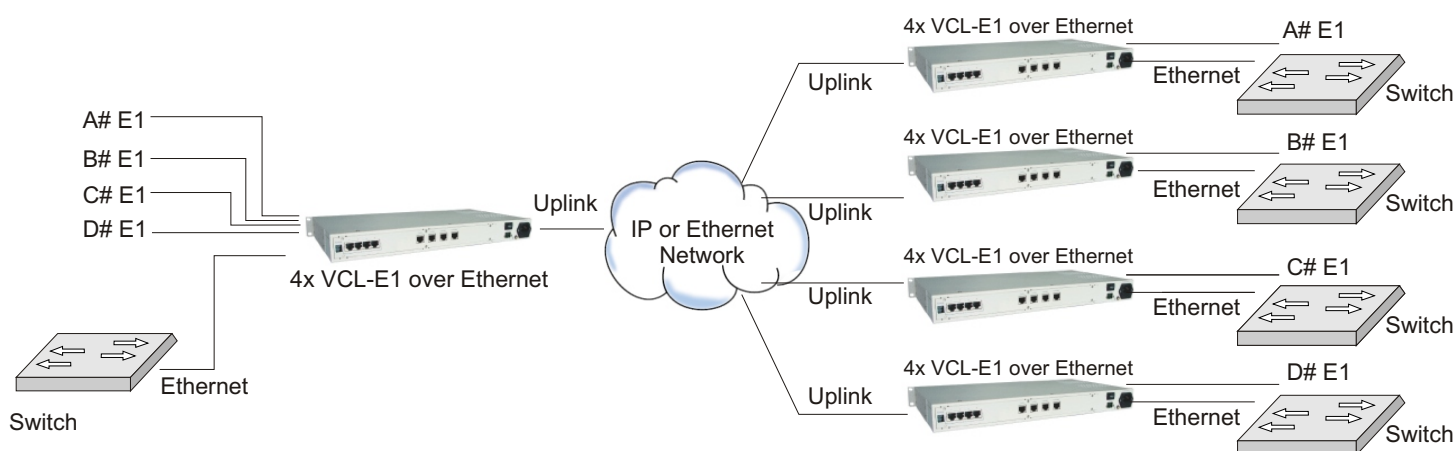
4 x VCL-E1 over Ethernet is used to setup 1 to 4 clear E1 channels over LAN or IP networks, as depicted in Fig. 1 and Fig 2.

### Point to Point 4x VCL-E1 over Ethernet Application Diagram



**Figure 1**  
**(a) Point to Point Application**

**Point to Multipoint 4x VCL-E1 over Ethernet Application Diagram**



**Figure 2**  
**(b) Point to Multipoint 4 x VCL-E1 over Ethernet application**

In the figure, a pair of 4 x VCL-E1 over Ethernet multiplexers create clear E1 channels over the packet network, providing connections between the PBX and telephone exchange, or other terminal devices. At the same time, computers connect to each other through the *local* Ethernet ports on the 4 x VCL-E1 over Ethernet multiplexers. This configuration guarantees that the E1 channels get higher priority over computer data for maximum QoS.

The most widely used application of 4 x VCL-E1 over Ethernet multiplexers is to set up point to point wireless E1 links using low cost wireless LAN bridges or Ethernet RPR fiber links. 4 x VCL-E1 over Ethernet multiplexers can work with most LAN bridges available in the market. It may be necessary to adjust different parameters such as packet size and packet jitter absorption buffer size for best operation for different LAN bridges.

**Product: VCL TDMoIP-EthMux x 4E1-xx**

User Interfaces	Ethernet Uplink Port	Complies with IEE 802.3
	E1 Port(s)	4 E1, or 4 T1 ports. Comply with ITU-T G.703.
	User (Local) Data Port(s)	2 x 10/100BaseT Ethernet Local User Data ports. Comply with IEEE 802.3 10/100 Mbps auto-sensed. Full/Half duplex auto-sensed

## Technical Specifications

### E1 Interface

Line Rate	E1 (2.048 Mbps $\pm$ 50 bps)
Available Time-Slots	1-31
Framing	G.704
Electrical	G.703
Jitter	G.823
Impedance	120 Ohm
Connector	RJ-45 (F)

### Configuration and Monitoring:

HTTP Web Manager  
SNMP

### Power Supply Options:

Power	Supply	-48 DC, or 220V (110V) AC, and dual power supply options.
	Consumption	+<10W

### Environmental:

Environmental	Temperature	0°C 50°C
	Relative Humidity	<90% (non-condensing)

### Mechanical:

Dimension	W x H x D (mm):	440 x 44 x 320
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## Ordering Information:

Model Number / Ordering Code	Description
VCL TDMoIP-EthMux x 4E1-DC	2 Uplink Port (1+1), 4 E1, 2 user data port
VCL TDMoIP-EthMux x 4E1-AC	2 Uplink Port (1+1), 4 E1, 2 user data port
VCL TDMoIP-EthMux x 4E1-Dual	2 Uplink Port (1+1), 4 E1, 2 user data port

## Compliance and Regulatory

- EMC FCC Part 15 Class 2
- Operation ETS 300 019 Class 3.2
- Storage ETS 300 019 Class 1.2
- Transportation ETS 300 019 Class 2.3
- CE

Technical specification are subject to change without notice.  
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