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## VCL - E3, 2/34 Mbps PDH Multiplexer

### Product Description

VCL E3-2/34Mbps, PDH Multiplexer is a third order skip multiplexer/demultiplexer unit, based on PDH (Plesiochronous Digital Hierarchy) technology. It multiplexes sixteen 2.048Mbps (hereafter referred to as 2Mbps) E1 tributaries into a single 34.368Mbps (hereafter referred to as 34Mbps) E3 tributary. The multiplexer/demultiplexer also does the reverse processing i.e. demultiplexing a received 34Mbps stream into 16, 2Mbps E1 tributaries.

The VCL-2/34 Mbps Multiplexer system consists of two VCL-2/34 Mbps terminals, one each at the local and remote ends, connected

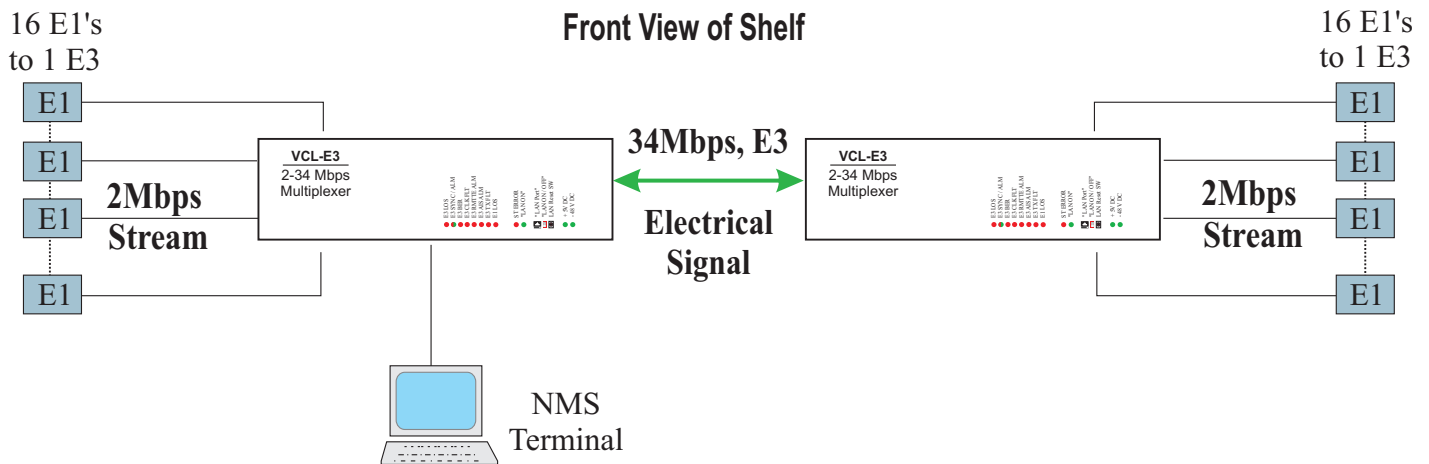
through a 34Mbps stream, providing end to end services for sixteen 2 Mbps streams. The VCL-2/34 Mbps PDH Multiplexer provides 16, 2Mbps

### Front View



### VCL - E3, 2/34 Mbps PDH Multiplexer

E1 electrical interfaces which are multiplexed to 1, ITU-T compliant E3, 34Mbps G.703 electrical interface.



### Features and Highlights

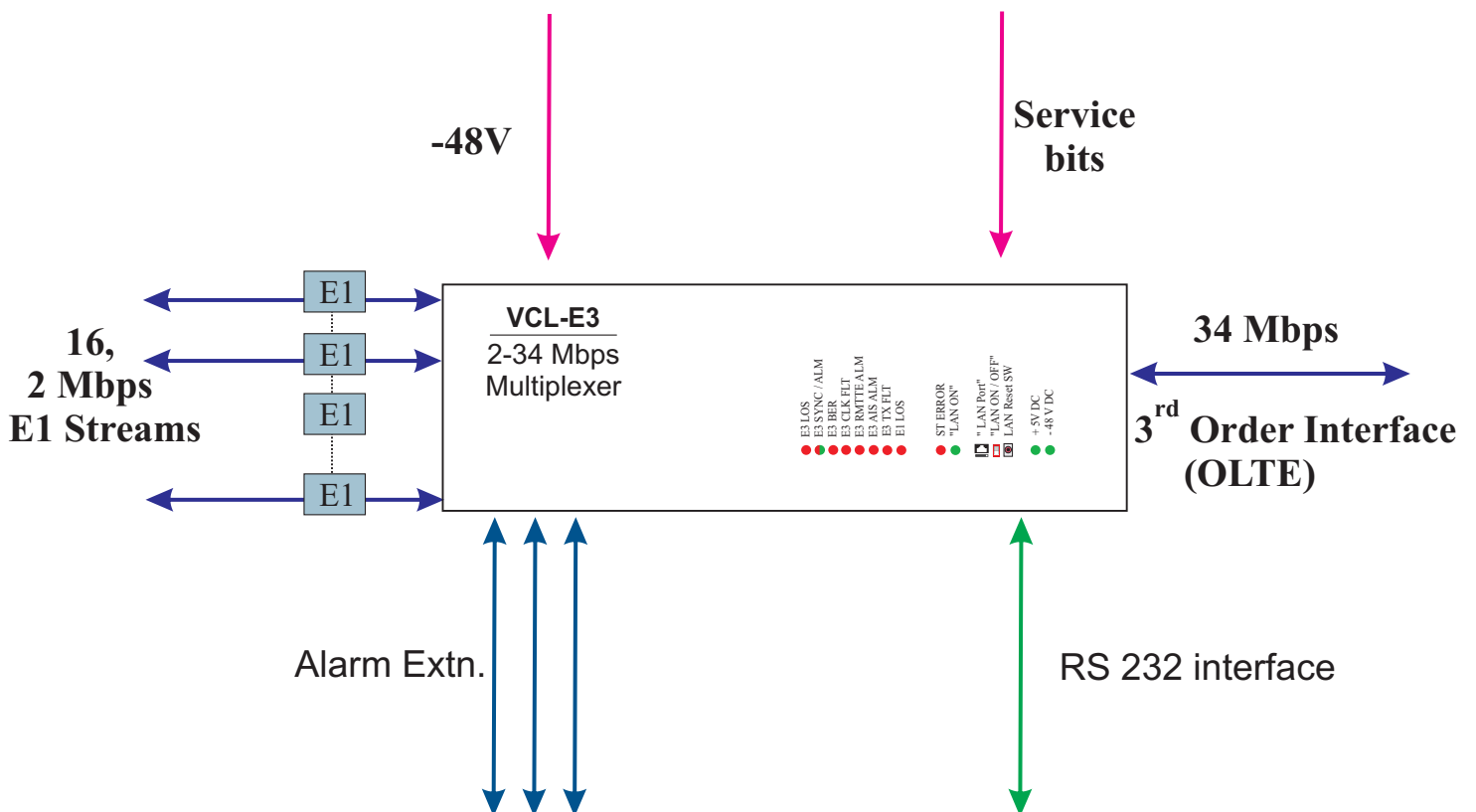
<ul style="list-style-type: none"> <li>• Single - card implementation</li> <li>• Plug and Play Multiplexers</li> <li>• Modular 2Mbps transmission units</li> <li>• Standard CCITT (ITU-T) compliant interfaces</li> <li>• Monitoring and control by CLI (Command Line Interface)</li> <li>• TCP/IP Remote Access for monitoring alarms and management</li> <li>• Extensive alarms and status indication facility</li> </ul>	<ul style="list-style-type: none"> <li>• Service bit monitoring and insertion</li> <li>• Operates on nominal -48V DC input</li> <li>• Distributed on-board power supply</li> <li>• Microprocessor controlled with powerful diagnostic facilities</li> <li>• Loopback facility for 34Mbps stream</li> <li>• Stored program controlled</li> <li>• Highly reliable and compact</li> </ul>
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## External Interfaces

VCL-E3 unit provides the following interfaces to the external world:

- 16 primary rate, 2Mbps, 120  $\Omega$  balanced interface
- 1 third order, 34Mbps, 75  $\Omega$  unbalanced interface
- -48V input for VCL-2/34 on-board power supply
- RS232 interface for connection to Local Management System, used for configuration and monitoring of the VCL-2/34 multiplexer
- NO/ NC Dry contact Relay alarm.

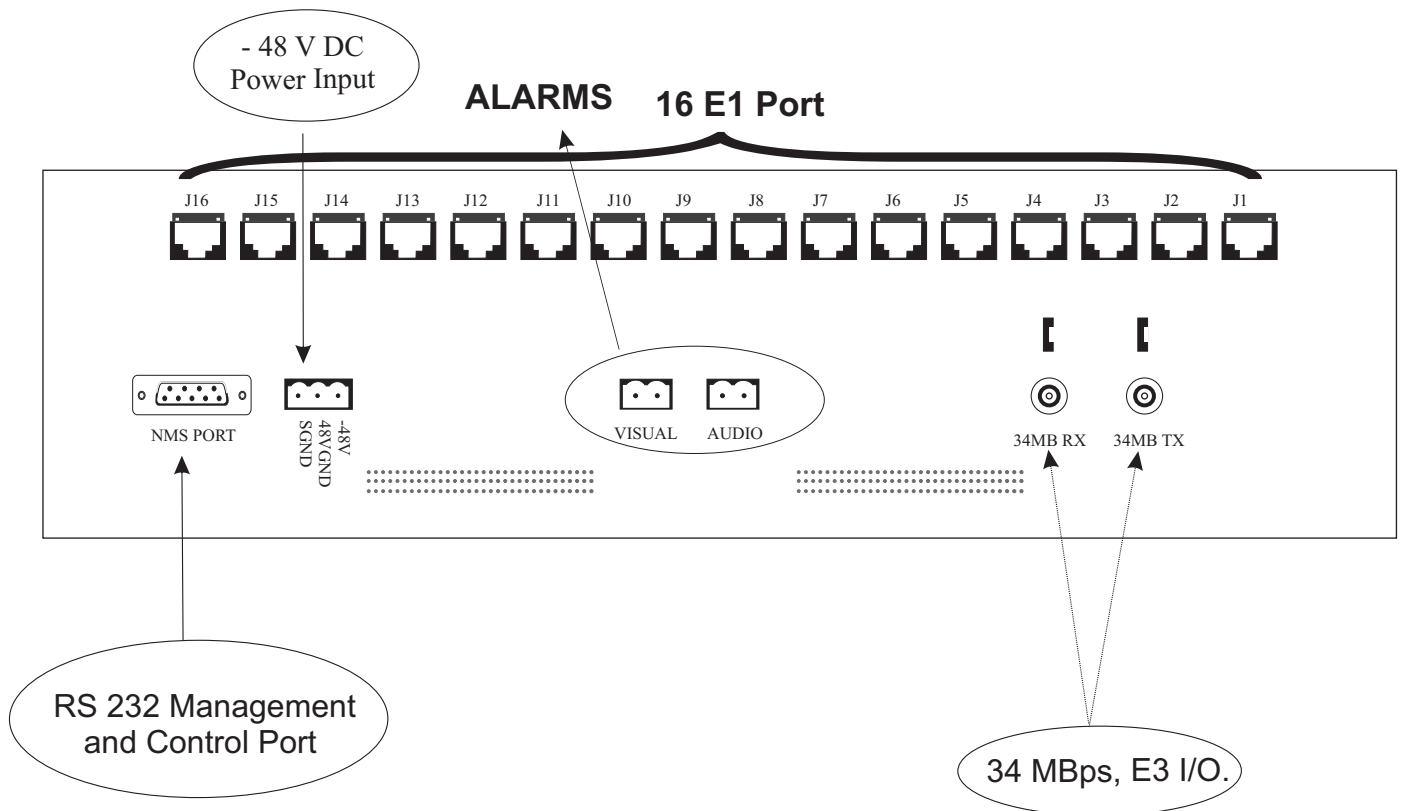
### Front View of Shelf



The front panel LEDs provide the following indications:

L1 - E3 LOS	L7- E3 TX FAULT
L2- E3 Sync/Alarm	L8- E1 LOS
L3- E3 BER	L9- ST ERROR
L4- E3 CLK FAULT	L10- "LAN ON"
L5- E3 REMOTE ALARM	L11- Positive 5V present
L6- E3 AIS ALARM	L12- Negative 48V input present
RJ-45 "LAN Port"	SW1 "LAN ON/OFF" Toggle Switch
	SW2 LAN Reset Switch

## Back Panel of E3, 2/34Mbps Multiplexer RJ-45 Version



## Programming and Monitoring

VCL-2/34 Mbps Multiplexer offers programming via an RS232 port for control and monitoring of the terminals. Multiplexer can be monitored and controlled using a PC with the Hyperterminal connected to the local terminal.

### Programming Features

- Setting loopbacks on 2Mbps or 34Mbps
- Enabling or disabling 2Mbps channels
- Initiating self tests
- Alarm acknowledgment option

### Status Monitoring

- Priority sequence of clock selection and current clock on which the system is working
- Status of alarm
- Presence or absence of loop-back on 34Mbps and 2Mbps streams
- Enabled/disabled status of 2Mbps channels
- Monitoring healthy/unhealthy state of micro controller and 2Mbps line interface units

### Alarm Status Monitoring

- Loss of incoming signal at all 2Mbps ports
- Loss of incoming signal at 34Mbps Port
- Loss of frame alignment at 34Mbps
- Remote Alarm at 34Mbps
- AIS at 34Mbps
- Excessive Error Rate at 34Mbps
- Status of audible alarm

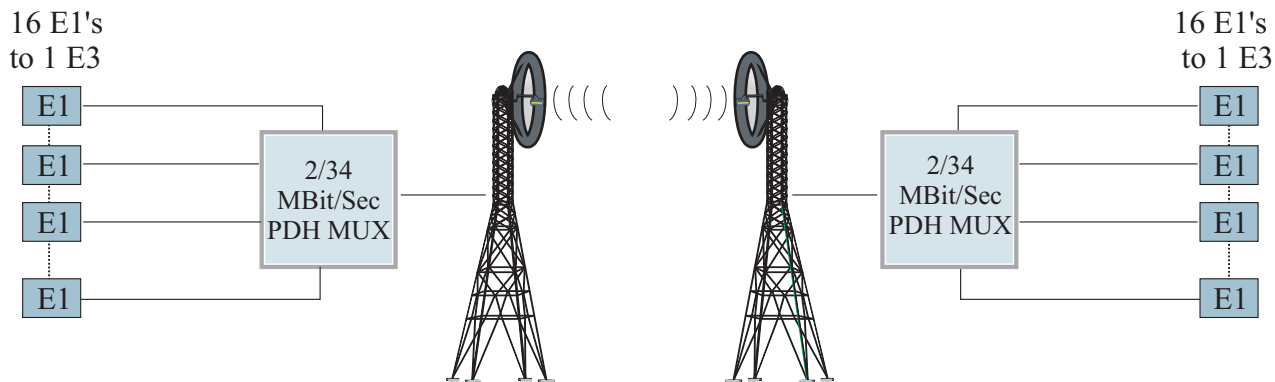
### Monitoring VCL-E3 via LED Indications

- Loss of signal at 2Mbps
- Loss of signal at 34Mbps
- Loss of frame alignment at 34Mbps
- Remote Alarm at 34Mbps
- AIS at 34Mbps
- Excessive Error Rate at 34Mbps
- +5V failure
- -48V input failure
- Processor unhealthy alarm
- Prompt Maintenance alarm

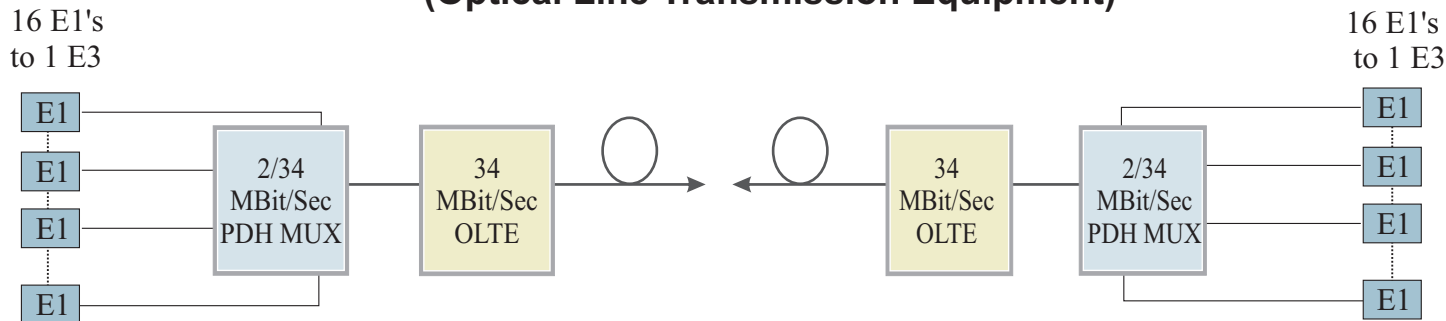
In addition to the above monitoring facilities, VCL-2/34Mbps Multiplexer is provided with LEDs on the front panel of the multiplexer, which indicate various fault conditions.

## Application Diagram of VCL-2/34 Mbps PDH Multiplexer

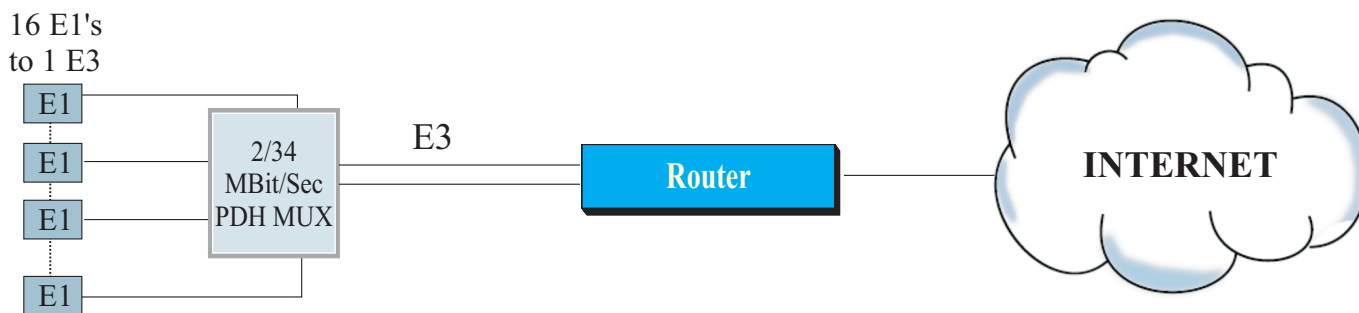
### VCL 2/34 Mbps multiplexer with Digital Microwave Radio



### VCL-2/34 Mbps multiplexer with 34 Mbps OLTE (Optical Line Transmission Equipment)



### VCL-2/34 Mbps multiplexer - Internet Access Application



## Technical Specifications

### 34Mbps, Third Order Interface

Number	1
Nominal bit rate	34368kbps
Bit rate tolerance	± 20ppm
Line code	HDB3
Frame structure	As per G.751
Interfaces	As per G.703
Connectivity	BNC connector (75 Ohms)
Cable	75 Ω unbalanced
Permissible attenuation	12dB at 17184KHz

### 2Mbps Primary Rate Interface

Number	16
Nominal bit rate	2048kbps
Bit rate tolerance	±50ppm
Line code	HDB3
Frame structure	As per G.704
Interfaces	As per G.703
Connectivity	RJ-45 Female connector (120 Ohms)
Cable	120 W balanced
Permissible attenuation	6dB at 1024 KHz

### NMS (with Telnet)

### XPort Specifications

Network Interface	RJ-45 Ethernet 10BaseT or 100BaseT-TX (auto sensing)
Compatibility	Ethernet Version 2.0 IEEE802.3
Protocols Supported	ARP, UDP/IP, TCP/IP, Telnet, ICMP, SNMP, DHCP, BOOTP, TFTP, Auto IP, SMTP and HTTP
LEDs	10Base-T and 100Base-TX Activity, Full/half duplex.
Management	Internal web server, SNMP (read only), Serial login, Telnet login
EMI Compliance	Radiated and conducted emissions - complies with Class B limits of EN 55022:1998 Direct and Indirect ESD - complies with EN55024:1998 RF Electromagnetic Field Immunity - complies with EN 55024:1998 Electrical Fast Transient/Burst Immunity - complies with EN55024:1998 Power Frequency Magnetic Field Immunity - complies with EN55024:1998 RF Common Mode Conducted Susceptibility - complies with EN55024:1998

### Power Consumption

Power Consumption	7.20 Watt
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