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

Product Brochure & Data Sheet
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**CAUTION**

ELECTROSTATIC SENSITIVE DEVICES

DO NOT OPEN OR HANDLE EXCEPT AT A STATIC-FREE WORKSTATION
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

- Single - card implementation
- Plug and Play Multiplexers
- Modular 2Mbps transmission units
- Standard CCITT (ITU-T) compliant interfaces
- Monitoring and control by CLI (Command Line Interface)
- TCP/IP Remote Access for monitoring alarms and management
- Extensive alarms and status indication facility
- Service bit monitoring and insertion
- Operates on nominal -48V DC input
- Distributed on-board power supply
- Microprocessor controlled with powerful diagnostic facilities
- Loopback facility for 34Mbps stream
- Stored program controlled
- Highly reliable and compact

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External Interfaces

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

- 16 primary rate, 2Mbps, 120 Ω balanced interface
- 1 third order, 34Mbps, 75 Ω 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
- L2 - E3 Sync/Alarm
- L3 - E3 BER
- L4 - E3 CLK FAULT
- L5 - E3 REMOTE ALARM
- L6 - E3 AIS ALARM
- L7 - E3 TX FAULT
- L8 - E1 LOS
- L9 - ST ERROR
- L10 - "LAN ON"
- L11 - Positive 5V present
- 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

- 48 V DC Power Input

ALARMS 16 E1 Port

RS 232 Management and Control Port

34 MBps, E3 I/O.
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

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Technical Specifications

34Mbps, Third Order Interface

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

2Mbps Primary Rate Interface

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

NMS (with Telnet)

XPort Specifications

<table>
<thead>
<tr>
<th>Network Interface</th>
<th>RJ-45 Ethernet 10BaseT or 100BaseT-TX (auto sensing)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compatibility</td>
<td>Ethernet Version 2.0 IEEE802.3</td>
</tr>
<tr>
<td>Protocols Supported</td>
<td>ARP, UDP/IP, TCP/IP, Telnet, ICMP, SNMP, DHCP, BOOTP, TFTP, Auto IP, SMTP and HTTP</td>
</tr>
<tr>
<td>LEDs</td>
<td>10Base-T and 100Base-TX Activity, Full/half duplex.</td>
</tr>
<tr>
<td>Management</td>
<td>Internal web server, SNMP (read only), Serial login, Telnet login</td>
</tr>
</tbody>
</table>

Power Consumption

| Power Consumption | 7.20 Watt |

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### Ordering Information

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Product Description</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>VCL-E3, 2/34Mbps PDH Multiplexer 19&quot; Shelf 2U High Rack Mount Version Supports:</td>
<td>234010RK-1262-1261</td>
</tr>
<tr>
<td></td>
<td>- 1 x 34Mbps E3 [75Ω, BNC (F)],</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- 16 x 2Mbps E1 [120Ω, RJ45 (F)]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- 1 x -48V DC Power Supply Input</td>
<td></td>
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<tr>
<td></td>
<td>- 1 x Systems Core Cables, Installation Accessories, Documentation, System User</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Manual / Disk etc (Set)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- OAM : 10/100BaseT Ethernet - RJ45 (Telnet) and Serial Port (DB-9 COM Port)</td>
<td></td>
</tr>
</tbody>
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