



# **VCL-MegaConnect™ 64 Port Plus - E1 Monitoring Groomer**

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Product Brochure & Data Sheet

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## Introduction

The VCL-MegaConnect™ 64 Port Plus - E1 Monitoring Groomer is suitable for non-intrusive monitoring of up to 32, bi-directional "live" E1 traffic links (i.e. in both transmit and receive directions) through its 64 E1 receivers. The Groomer is capable of receiving the "monitored" E1 signal inputs through the high impedance (Hi-Z) path of a patch-panel, without in any way disturbing the "live" E1 traffic links. The Groomer provides the "user" the facility to cross-connect 64Kbps time-slots through a completely "non-blocking" TSI switch, through which the selected SS7 signaling time-slots on the INPUT side E1 Ports can be connected to the OUTPUT side E1 Ports. The equipment provides 16 E1 Ports on the OUTPUT side from where the selected / cross-connected / aggregated SS7 time-slots may be connected to the protocol analysers, test probes, etc.



## Description

The VCL-MegaConnect™ 64 Port Plus - E1 Monitoring Groomer, occupies only a 3U high rack-space and is a compact 19-inch stand-alone unit. The unit is powered by and operates on a dual (1+1 redundant) -48V DC power supply. An AC input adapter is also optionally available for AC mains operation.

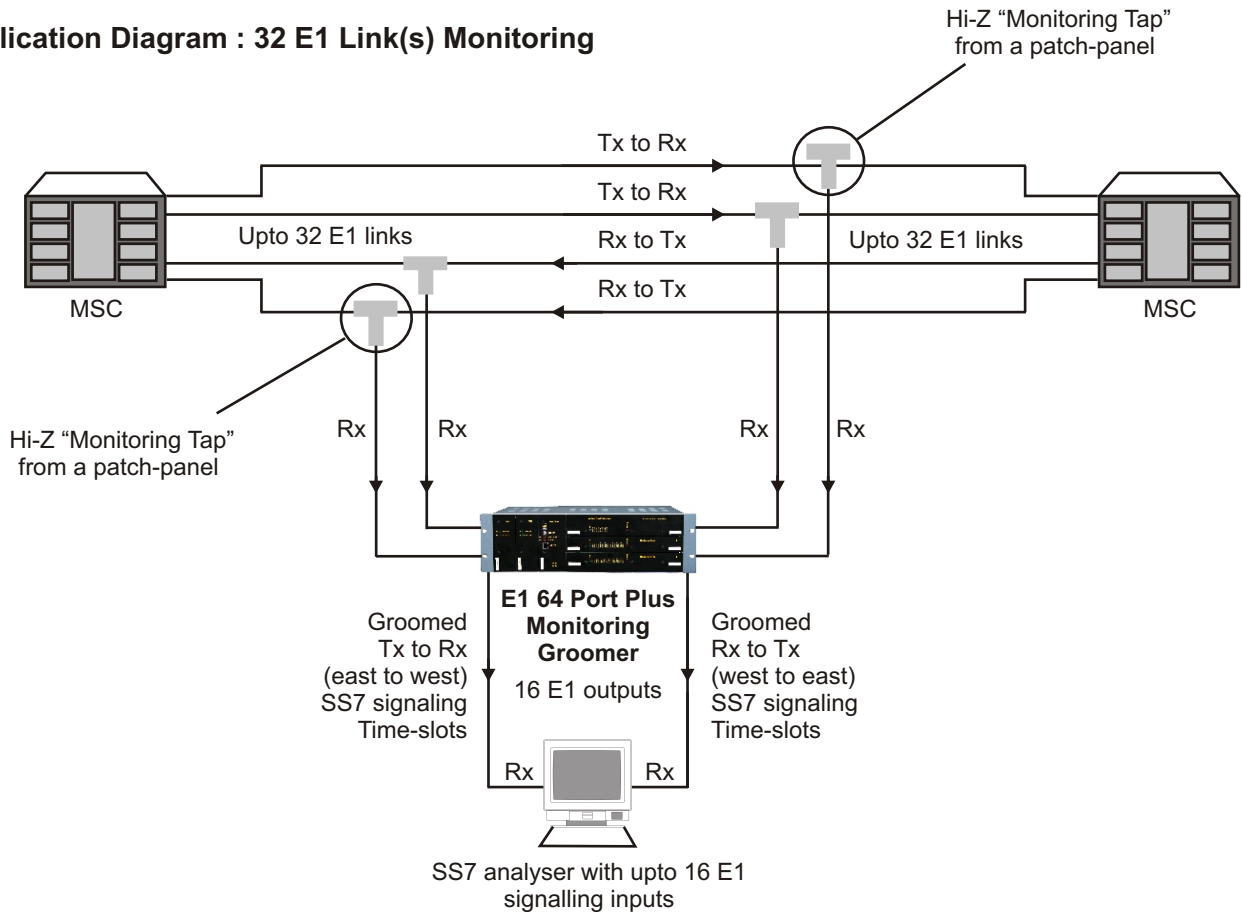
The equipment is provided with a USB and an RS232 Serial Interface for COM Port connections as well as a TCP/IP LAN Interface (10/100BaseT) for providing equipment access through Telnet over a TCP/IP link. The user may select and use either of these ports for executing HyperTerminal text commands for configuration etc. The access for configuration and system management is provided through CLI (Command Line Interface) text commands which may be executed either from a serial (COM) Port of a PC or through the 10/100BaseT LAN Interface. The 10/100BaseT LAN Interface allows the equipment to be connected on a TCP/IP network for remote access for configuration and monitoring over LAN and TCP/IP link, remotely. The system is also supplied with an easy to use (Windows XP, Windows 7) Graphical User Interface that provides the user a complete control to prepare multiple configuration "maps" and store them, as easy to read data files. Dry contact relay alarm output is also available at rear of the system to connect the system to external audio/visual alarm output through a dry relay contact.

The E1 Groomer is capable of non-intrusively monitoring upto 32 "live" E1 links and grooming the selected 64 Kbps time-slots to the 16 additional E1 Ports provided in the equipment. The 64, E1 receivers of the Groomer shall connect to the 32, E1 "live traffic" links which are to be monitored, non-intrusively, 16 additional (Normal-Z) E1 Ports are also provided by the equipment which shall route the aggregated data of the "monitored" time-slots to the user's test equipment, such as protocol analysers, test probes, billing servers etc.

The E1 Groomer (E1 Monitoring DACS) is capable of monitoring a -20dBsx signal (0.3 Volts) E1 signal through a Hi-Z path, without in any way affecting or disturbing the "live" E1 traffic that is required to be monitored.

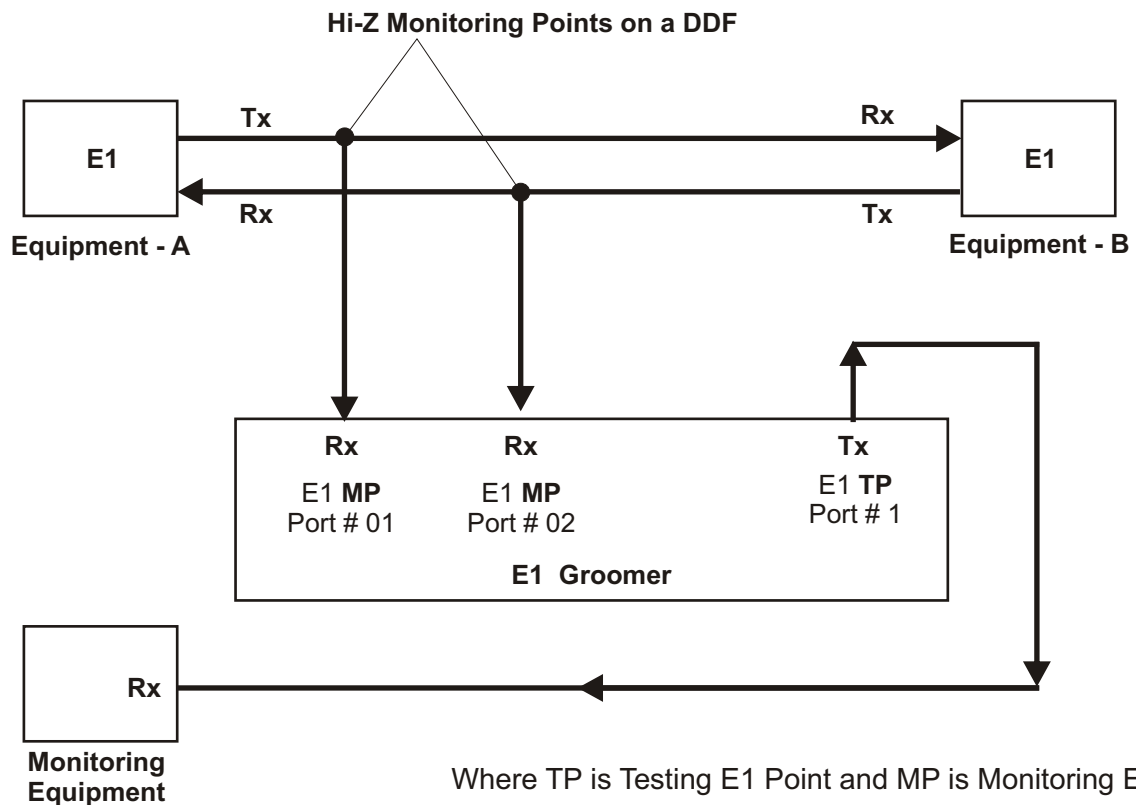
Alternately, the E1 Groomer (E1 Monitoring DACS) may be also ordered in an "extreme" sensitivity version which is capable of monitoring a -30dBsx signal (0.1 Volts) and a -40dBsx signal (0.03 Volts), through a Hi-Z patch-panel, without in any way affecting or disturbing the "live" E1 traffic that are being monitored.

**Application Diagram : 32 E1 Link(s) Monitoring**



**Note:** The E1 link is "tapped" through a Hi-Z "Tapping" Port of a DDF Patch Panel.

**Non-Intrusive Monitoring Application**



Where TP is Testing E1 Point and MP is Monitoring E1 Point.

The extreme sensitivity version of the E1 Groomer provides the user with a signal equalizer and a wave-shaper option to handle very low / attenuated E1 input signals.

The equipment offers the user with complete flexibility to select and cross-connect time-slots from each of the 32 E1 links that are being monitored, without limitation or restrictions, through the internal TSI non-blocking switch. Any of the 64 Kbps time-slots on any of the "input" (monitoring-MP) ports can be cross-connected and aggregated to any "output" (test-TP) port.

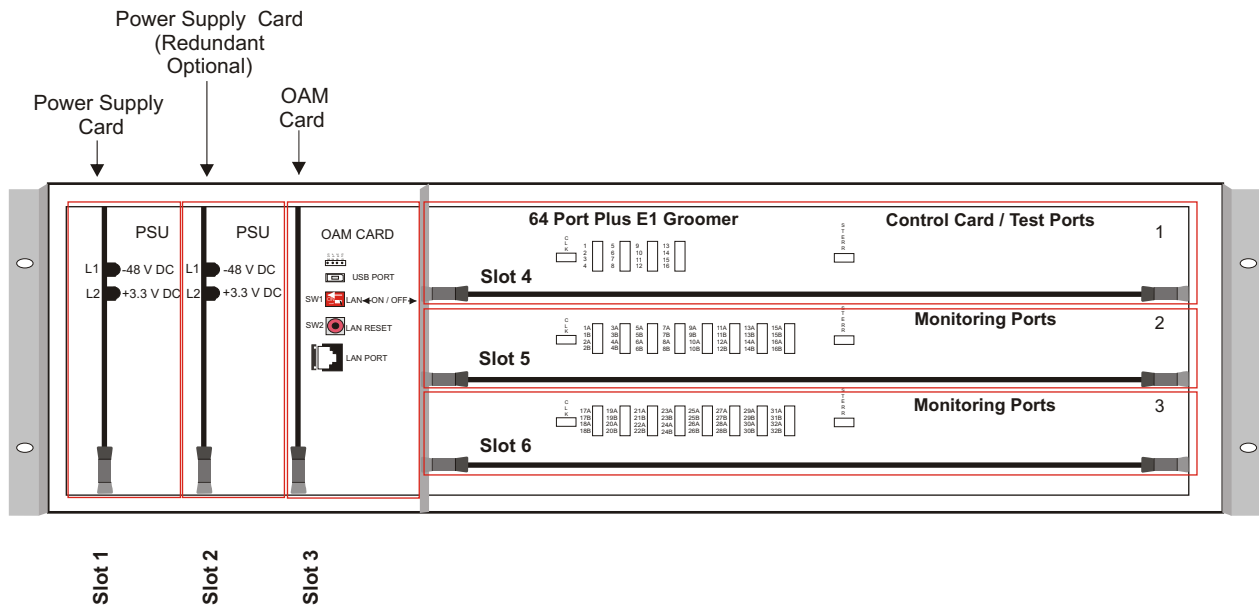
**Shelf Description**

The VCL-MegaConnect™ 64 Port Plus - E1 Monitoring Groomer unit is a 3U, 19-inch shelf, fitted with a backplane that provides rear access of all external interfaces. The E1, 2 Mbps electrical I/Os, power input, alarm extension, RS232 management port, 75 Ohms TTL external clock input and 120 Ohms Bits clock input and output are accessed from the backplane.

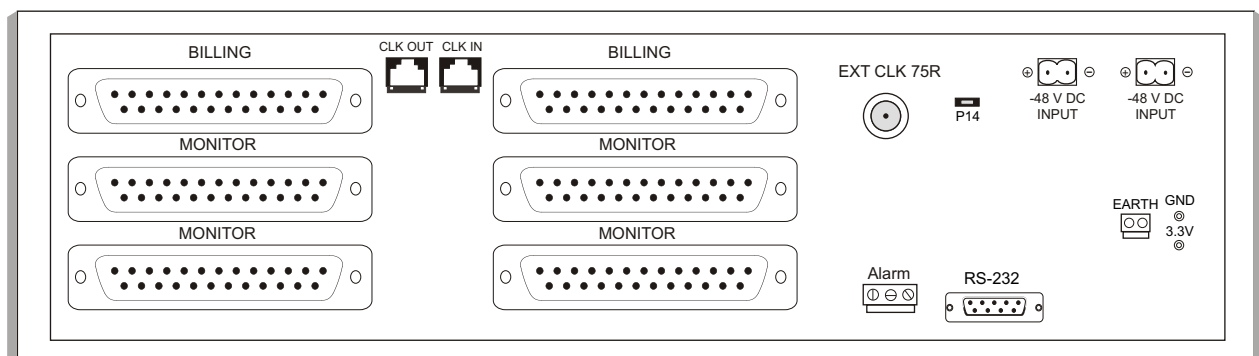
USB Serial Management Port, 10/100BaseT LAN management port and LEDs indications are provided in the front of the system.

The 2 Mbps, Input E1 Interfaces are, 120 Ohms twisted pairs. Optionally the 2Mbps, Input E1 interfaces may be also ordered with 75 Ohms (BNC / BT43 / M4 / DIN-1.6/5.6F) connectors through an external interface panel.

**Front View**



**Rear View**



## Indications and Alarm Monitoring

- Loss of incoming signal at any E1 Port
- Configuration Error Alarm
- E1 Synchronization Clock Status
- 1 to 64 E1 Ports - LED indicators to indicate the status of each E1 Monitoring Port
- 1 to 16 E1 Ports - LED indicators to indicate the status of each E1 Test Port
- 3 Volts Power Supply
- -48V DC Input Voltage present
- Configuration Error
- External alarm output - through a dry contact relay
- SNMP V2 Traps.

## Programmable Features

- Specifying the priority sequence for clock selection
- Enabling or Disabling E1 Ports (masking) of the E1 Ports that are not in use
- Creating a cross-connect between E1s at DS-O level (single time-slot level) using the CLI text commands or Windows based GUI (Graphical User Interface)
- Telnet for remote programming
- Programmable input signal sensitivity options: -20dBsx (0.3 Volt Pulse), 30dBsx (0.1 Volt Pulse) and -40dBsx (0.03 Volt Pulse) - Extreme sensitivity version Groomer only
- Signal Equalizer to handle very low / attenuated E1 input signals - Extreme sensitivity version Groomer only
- Wave-shaper to handle very low / attenuated E1 input signals - Extreme sensitivity version Groomer only.

## Status Monitoring

- E1 Synchronization Clock Status
- Status of alarms
- Enabled/Disabled status of E1 Ports
- Monitoring of the VCL-MegaConnect™ 64 Port Plus - E1 Monitoring Groomer, status and configuration.

## Management Options

- Telnet for remote configuration and monitoring
- Windows based GUI (Graphical User Interface) with a in-built feature to back-up and restore existing configuration files.

## Technical Specifications

### Monitoring E1 Ports (shall connect to the E1 links that are to be Monitored) - Monitored Port (MP)

Line Rate	E1 (2.048 Mbps $\pm$ 50 bps)
Connector	DB-37 (Female)
Impedance	Hi-Z for Non-Intrusive Monitoring
Compliance	G.703
Available Time-Slots	1-31
Jitter	G.823
Framing	G.704
Compliance (for Hi-Z Monitoring)	G.772
Receive Signal Sensitivity	Upto -20dBsx (0.3 Volt Pulse)
Receive Signal Sensitivity Extreme sensitivity version	-20dBsx (0.3 Volt Pulse) -30dBsx (0.1 Volt Pulse) -40dBsx (0.03 Volt Pulse)
Number of E1 Receivers to connect to the Monitored Links	64 E1 Receivers. Capable of non-intrusively monitoring upto 32 E1 links bidirectionally

### Test E1 Port (shall connect to the Test Equipment) - Test Port (TP)

Line Rate	E1 (2.048 Mbps $\pm$ 50 bps)
Connector	DB-37 (Female)
Impedance	120 Ohms
Available Time-Slots	1-31 per each E1 Port (i.e. 31x16) time-slots
Jitter	G.823
Pulse Shape Compliance	G.703
Signal Pulse	3.0 Volts - as per G.703
Framing	G.704
Number of output E1 Ports	16

## Power Supply

Power Supply	-48V DC (-40V DC to -60V DC)
Power Consumption	30 watts

## DS-0 (time-slot) cross-connect capability

Any MP to Any TP through an internal non-blocking TSI Switch.
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## E1 Synchronization Clock options

Internal	AT&T TR62411, Telcordia GR-1244-CORE Stratum 3, Stratum 4, Enhanced and Stratum 4, ETSI ETS 300 011, ITU-T G.813 Option 1
Loop-timed	Synchronized with incoming E1 clock (MP Port clock)
External	75 Ohms - 2.048 Mhz TTL Clock 120 Ohms - 2 Mbps Bits Clock

## Management and Control Interfaces

- Serial Management Port (RS232) - COM Port
- USB Serial Port
- 10/100 BaseT for Remote Management over a LAN / TCP/IP Network.
- SNMP V2 Traps.

## Ethernet Management Port (Telnet and SNMP) Specifications

Network Interface	RJ-45 Ethernet 10BaseT or 100BaseT-TX (auto sensing), MDI-X.
Compatibility	Ethernet Version 2.0 IEEE802.3
Protocols Supported	ARP, UDP/IP, TCP/IP, Telnet, ICMP, SNMP
Management	SNMP (read only), Telnet login
EMI Compliance	<ul style="list-style-type: none"> <li>- Radiated and conducted emissions - complies with Class B limits of EN55022:1998</li> <li>- Direct and Indirect ESD - complies with EN55024:1998</li> <li>- RF Electromagnetic Field Immunity - complies with EN55024:1998</li> <li>- Electrical Fast Transient/Burst Immunity - complies with EN55024:1998</li> <li>- Power Frequency Magnetic Field Immunity - complies with EN55024:1998</li> <li>- RF Common Mode Conducted Susceptibility - complies with EN55024:1998</li> </ul>

## Command Language

- Telnet - Command Line Interface (english text commands)
- Windows based GUI (Graphical User Interface).

## Chassis

- 3U High
- 19-inch rack-mounting shelf.

## Mechanical Specifications

Rack mounting	Standard 19-Inch. DIN Rack
Height	132.00 mm.
Depth	290.00 mm.
Width	485.00 mm.
Weight	6.20 kg

## Ordering Information

S. No.	Part #	Descriptions
1	MC-64E1/16-MON-GROOMER	VCL-MegaConnect™ 64 Port Plus - E1 (32, "Live" E1 traffic links, bi-directionally) Groomer for non-intrusive Monitoring through a high impedance (Hi-Z) with 16, additional E1 output interfaces includes: <ul style="list-style-type: none"> <li>- 1 x 19 inch 3U Shelf fitted with connectorized backplane</li> <li>- 2 x VCL-PSU-1495-3.3 (-) 48V DC Power Supply Card</li> <li>- 1 x VCL-OAM-1440-3.3 OAM Management Card</li> <li>- 1 x Test Ports/Control Card</li> <li>- 2 x 32 Port E1 Monitoring Cards</li> <li>- System Cables</li> <li>- System Manual Printed Copy</li> <li>- System Manual and GUI - CD</li> </ul>
2	MC-64E1/16-MON-GROOMER-ES	VCL-MegaConnect™ 64 Port Plus - E1 (32, "Live" E1 traffic links, bi-directionally) Groomer for non-intrusive Monitoring through a high impedance (Hi-Z) with 16, additional E1 output interfaces includes: <ul style="list-style-type: none"> <li>- 1 x 19 inch 3U Shelf fitted with connectorized backplane</li> <li>- 2 x VCL-PSU-1475-5.0 (-) 48V DC Power Supply Card</li> <li>- 1 x VCL-OAM-1490-5.0 OAM Management Card</li> <li>- 1 x Test Ports/Control Card</li> <li>- 2 x 32 Port E1 Monitoring Cards</li> <li>- System Cables</li> <li>- System Manual Printed Copy</li> <li>- System Manual and GUI - CD</li> </ul>
3	E1-32-120-RJ45	32 Port, 120 Ohms Interface Panel with RJ45 connectors to interface with 16 bi-directional E1 inputs.
4	E1-32-75-x* <b>Note:</b> where x* may be BNC / BT43 / M4 / DIN-1.6/5.6F	32 Port, 75 Ohms Interface Panel with 75 Ohms, BNC / BT43 / M4 / DIN-1.6/5.6F connector options to interface with 16 x bi-directional E1 inputs.

Technical specifications are subject to changes without notice.  
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