



# **VCL-HSL (High Speed Signaling Link) 64 T1 Port Hi-Z Monitoring Equipment**

Product Brochure & Data Sheet

**U.K.**

Valiant Communications (UK) Ltd  
1, Acton Hill Mews,  
310-328 Uxbridge Road,  
London W3 9QN, United Kingdom

**E-mail:** [gb@valiantcom.com](mailto:gb@valiantcom.com)

**U.S.A.**

Valcomm Technologies Inc.  
4000 Ponce de Leon, Suite 470  
Coral Gables, FL 33146  
U.S.A.

**E-mail:** [us@valiantcom.com](mailto:us@valiantcom.com)

**INDIA**

Valiant Communications Limited  
71/1, Shivaji Marg,  
New Delhi - 110015,  
India

**E-mail:** [mail@valiantcom.com](mailto:mail@valiantcom.com)

## Introduction

The VCL-HSL (High-Speed Signaling Link) 64 T1 Port Hi-Z Monitoring Equipment is suitable for “non-intrusive” monitoring applications and may be used to monitor upto 32, “live” HSL T1 (High Signaling Link) traffic links in both transmit and receive directions.



## Description

The VCL-HSL 64 T1 Port Hi-Z Monitoring Equipment is equipped with 64 T1 receive ports, through which the attenuated “tapped / monitored” signal of the 32 “live” HSL T1 links” is input from a high impedance (Hi-Z) point of a DDF / patch-panel. The equipment also provides 64 T1 transmit (output) ports from where the regenerated and reproduced T1 “monitored” link output is obtained by the user to connect to protocol analysers, test probes, billing servers etc. as a normal T1 output.

The VCL-HSL 64 T1 Port Hi-Z Monitoring Equipment is capable of monitoring an attenuated -20dBdsx (0.3 Volt Pulse) T1 signal received through a Hi-Z path, without in any way affecting or disturbing the “live” T1 traffic on the “live” T1 links which are being monitored.

The VCL-HSL 64 T1 Port Hi-Z Monitoring Equipment, occupies only a 2U high rack-space, and is a compact 19-inch stand-alone unit. The unit is powered by and operates from a -48V DC power supply.

An AC mains option is also available with an external AC-DC adapter.

The equipment is provided with an RS232 as well as a USB serial data interface for local equipment access and management through a serial data port. The equipment is also provided with a 10/100BaseT Ethernet interface for remote equipment access over a TCP/IP link.

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 TCP/IP 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 a TCP/IP link.

The equipment supports SNMP V2 Trap monitoring.

The system is also supplied with an easy to use Windows XP and Windows 7 compatible Graphical User Interface for easy equipment control and management.

Dry contact relay alarm output is also available at rear of the system to connect the system to an external alarm output through a dry relay contact.

Internal resistive high-impedance isolation may also be used in the equipment to eliminate the requirement of an external patch panel with high-impedance Protective Monitoring Points (PMP).

## Highlights, Features and Applications

- Monitors upto 32 bi-directional T1s, of up to -20dBdsx (0.3 Volt Pulse) isolated by Hi-Z protected monitoring points of a DDF / patch-panel
- Powered through dual - 48V DC power inputs for 1+1 power redundancy
- Remotely accessible and manageable over TCP/IP links
- User selectable resistive high impedance inputs eliminates the requirement of patch panel with external high-impedance Protective Monitoring Points (PMP)
- Compact 2U high, 19-inch rack mountable chassis
- Used in Billing, Network Quality Management, Fraud Management and Lawful Intercept applications
- SNMP V2 Monitoring
- RS232 and USB COM Port provide for the local access
- Windows XP / Windows 7 based GUI.

## Indications and Alarm Monitoring

- Loss of incoming signal at any T1 Port (LOS Alarm)
- All Ones Alarm (AIS Alarm)
- Configuration Error Alarm
- Status of the T1 Monitoring Port
- 3.3 V Volts Power Supply
- -48V DC Input Voltage present.

## Programmable Features

- Enabling or disabling (masking) of the T1 Ports that are not in use

## Status Monitoring

- Status of the T1 Ports in use
- Status of alarms on T1 Input Ports
- Status of Enabled / Disabled T1 Ports.

**Shelf Description**

VCL-HSL 64 T1 Port Hi-Z Monitoring Equipment is a 19 Inch Shelf, fitted with a backplane that provides rear access of all external interfaces, including the T1 1.5 Mbps electrical I/Os, safety ground and external alarm extension connectors. The system management and control interfaces are provided on the front panel for easy operator access.

VCL-HSL 64 T1 Port is available in two options:

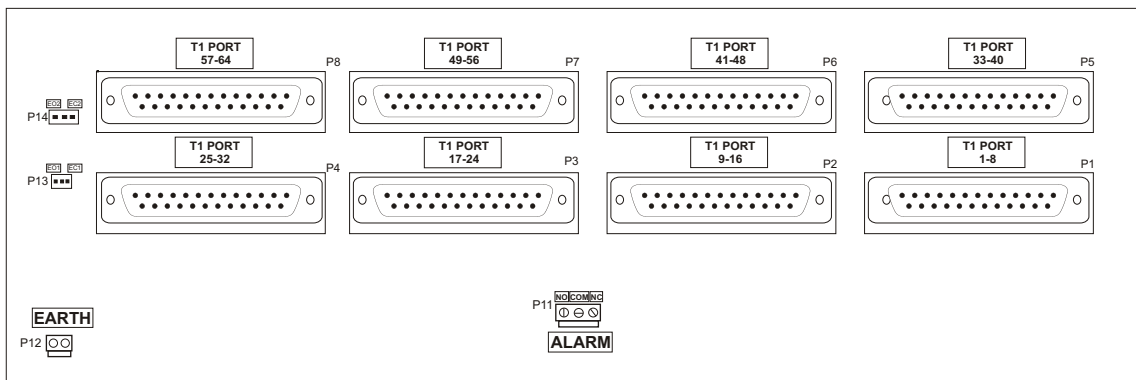
**Option 1: With DB-37 (Female) Connector - 19 inch 2U high**

The T1 1.544 Mbps, Input and the Output Interfaces are 100 Ohms, terminated on DB-37 connectors in the 19-inch 2U high version of the equipment.

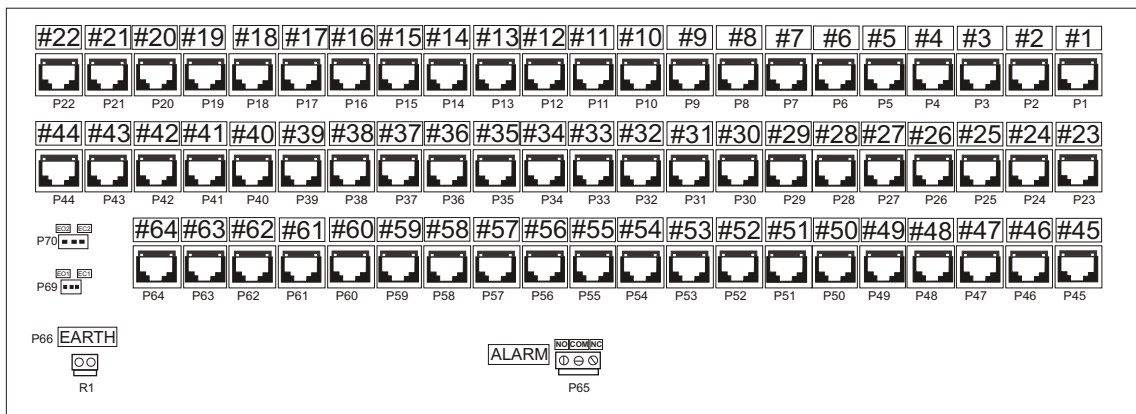
**Option 2: With RJ-45 (Female) Connector - 19 inch 3U high**

The T1 1.544 Mbps, Input and the Output Interfaces are 100 Ohms, terminated on RJ-45 (F) connectors in the 19-inch 3U high version the equipment.

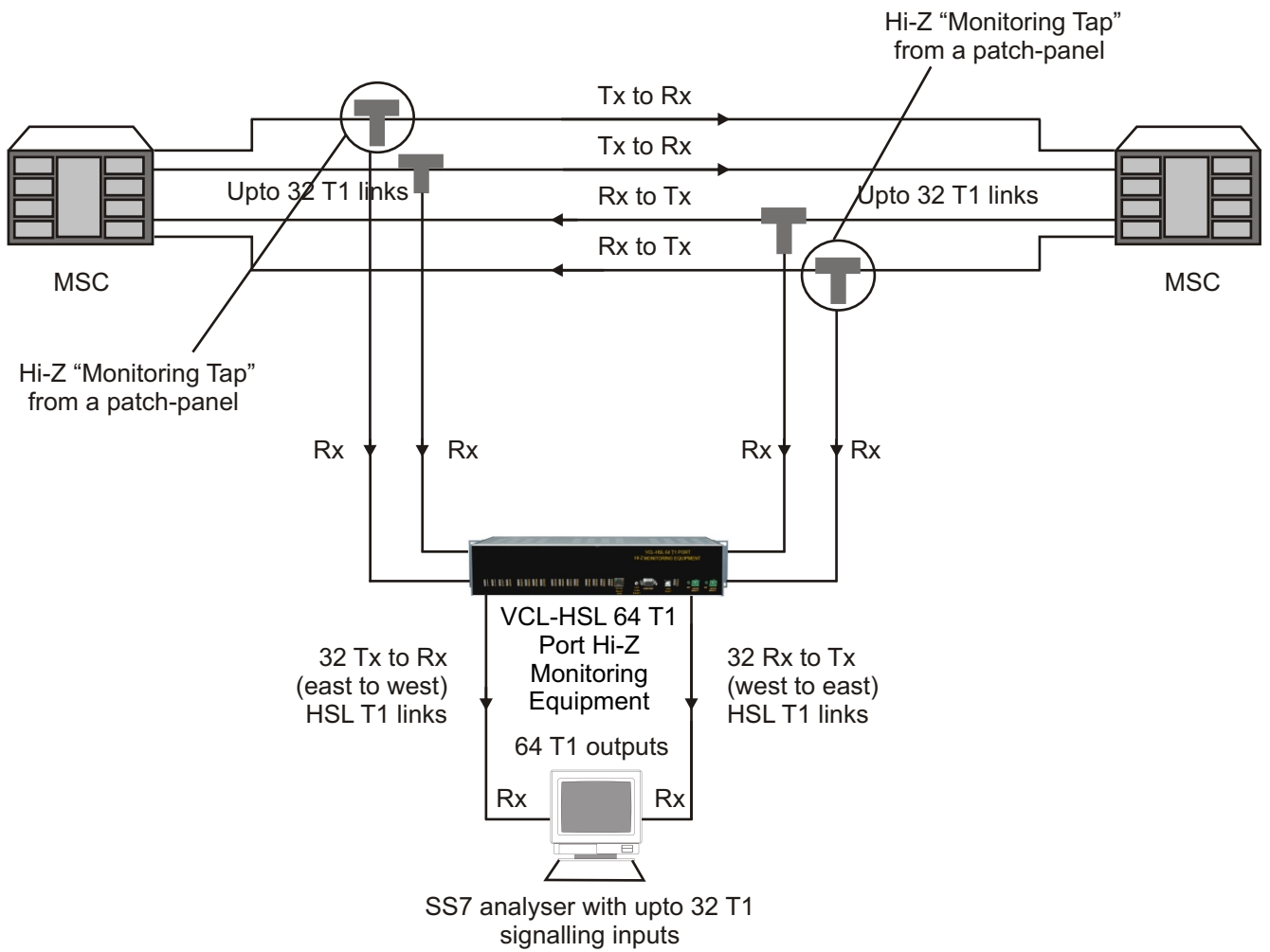
**Option 1: Rear View - with 2U high, rack-mountable DB-37 (F) 19-inch shelf**



**Option 2: Rear View - with 3U high, rack-mountable RJ-45 (F) 19-inch shelf**



**Application Diagram : 32 HSL T1 Link(s) Monitoring**



**Note:** The T1 link is "tapped" through a Hi-Z "Tapping" Port of a DDF Patch Panel.

## Technical Specifications

### Monitoring T1 Ports (shall connect to the T1 links that are to be Monitored) - Monitored Port (MP)

Line Rate	T1 (1.544 Mbps $\pm$ 50 bps)
Connector	DB-37 (19-inch 2U high version)
Impedance	Hi-Z for Non-Intrusive Monitoring
Compliance	G.703
Jitter	ITU-T G.823, ITU-T 1.431
Framing	Transparent. Suitable for both framed And un-framed T1 signals
Line Coding	Transparent. Suitable for both AMI and B8ZS T1 signals.
Compliance (for Hi-Z Monitoring)	G.772
Receive Signal Sensitivity	Upto -20dBdsx (0.3 Volt Pulse)
Number of T1 Receivers	64 T1 Receivers to monitor the 32 T1 bi-directional links that are being monitored.

### Test T1 Port (shall connect to the Test Equipment) - Test Port (TP)

Line Rate	T1 (1.544 Mbps $\pm$ 50 bps)
Connector	DB-37 (19-inch 2U high version)
Impedance	100 Ohms
Jitter	ITU-T G.823
Pulse Shape Compliance	G.703
Framing	Transparent. Suitable for both framed and un-framed T1 signals.
Line Coding	Transparent. Suitable for both AMI and B8ZS T1 signals
Number of T1 Receivers	64 T1 Transmitters / 64 T1 Outputs (to connect to the 32 T1 links which are being monitored) to Protocol Analysers, Test Equipment etc.

## Power Supply

Power Supply	-48V DC (-18V DC to -72V DC)
Power Consumption	$\leq$ 15 watts

## Clock Synchronization Options

Loop-timed	T1s synchronized to respective loop-timed clock(s) from the "monitored" / "input" T1 signals
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## Management and Control Interfaces

- Serial Management Port (RS232) - COM Port
- USB Serial Port
- 10/100 BaseT Telnet over a TCP/IP Network.

### System Access and Management

- Windows XP and Windows 7 compatible GUI
- Telnet - CLI (Command Line Interface)
- SNMP V2 (MIB File provided with the equipment)

### Command Language

- Telnet - Command Line Interface (english text commands)

### NMS (with Telnet) OAM Port Specifications

Network Interface	RJ-45 Ethernet 10BaseT or 100BaseTx (auto sensing),MDI-X.
Compatibility	Ethernet Version 2.0 IEEE802.3
Protocols supported	ARP, UDP/IP, TCP/IP, Telnet, ICMP, SNMP
LEDs	10Base-T and 100Base-TX Activity, Full/half duplex.
Management	SNMP , Serial login, 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>

### Option 1 - 2U high, rack-mountable DB-37 (F) 19-inch shelf

Depth	260 mm
Width	485 mm
Height	2U (90 mm)

### Option 2 - 3U high, rack-mountable RJ-45 (F) 19-inch shelf

Depth	292 mm
Width	485 mm
Height	3U (133.33 mm)

**Ordering Information**

<b>S. No.</b>	<b>Part #</b>	<b>Product Description</b>
1.	VCL-HSLMON-64T1-1469-DB37	VCL-HSL 64 T1 Port Hi-Z Monitoring Equipment DB-37 Connector 2U version
2.	VCL-HSLMON-64T1-1469-RJ45	VCL-HSL 64 T1 Port Hi-Z Monitoring Equipment RJ-45 Connector 3U version

Technical specifications are subject to changes without notice.  
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**U.K.**

Valiant Communications (UK) Ltd  
1, Acton Hill Mews,  
310-328 Uxbridge Road,  
London W3 9QN, United Kingdom

**E-mail:** gb@valiantcom.com

**U.S.A.**

Valcomm Technologies Inc.  
4000 Ponce de Leon, Suite 470  
Coral Gables, FL 33146  
U.S.A.

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**INDIA**

Valiant Communications Limited  
71/1, Shivaji Marg,  
New Delhi - 110015,  
India

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