

VALIANT COMMUNICATIONS LIMITED



VCL-Ethernet over SDH (Ethernet over STM-1)

Product Brochure

INDIA

Valiant Communications Limited

71/1, Shivaji Marg, New Delhi - 110015, India
Phone: +91-11 4105 5601, +91-11 4105 5602,
+91-11 4105 5603, +91-11 2592 8415,
Fax: +91-11 4105 5604, +91-11 2543 4300
E-mail: getinfo@valiantcom.com
Website: <http://www.valiantcom.com>

U.K.

Valiant Communications (UK) Ltd

1, Acton Hill Mews, 310-328 Uxbridge Road,
London W3 9QN
United Kingdom
E-mail: uk@valiantcom.com
Website: <http://www.valiantcom.com>

U.S.A.

Valcomm Technologies Inc.

4000 Ponce de Leon, Suite 470
Coral Gables, FL 33146
United States of America
E-mail: fl@valiantcom.com
Website: <http://www.valiantcom.com>

U.A.E.

Valiant Communications FZE

P.O. Box No. 121523 SAIF Zone,
Sharjah,
U.A.E.
E-mail: uae@valiantcom.com
Website: <http://www.valiantcom.com>

Product Overview

Valiant's Ethernet over SDH (STM-1) Equipment is a modular platform unit with two pluggable 155.52Mbps optical / electrical interfaces, which may be used in a point-to-point, chain or ring application to provide a compact, cost effective and flexible solution to deliver multiple Ethernet channels.



VCL-Ethernet over SDH (STM-1)

Interface card options include the 4x100BaseT Ethernet interface card (1 VCG, 4 Ports 1 Channel), 4x100BaseT Ethernet interface card (4 VCG, 4 Ports 4 Channels) and Gigabit Ethernet interface card options along with Engineering Order Wire is available. The user removable / replaceable STM-1 Optical / Electrical interface option makes it easy to meet various and changing user requirements. Valiant's STM-1, Ethernet and Gigabit Ethernet over SDH Transmission Equipment provides full capability to cross-connect at E1 level between all tributaries. The equipment can be used as Terminal Multiplexer (TM) to build a point-to-point, chain or ring SDH transmission network.

Features

- 1U height, 19-Inch standard rack-mountable chassis
- Service interfaces
 - › 2 x STM-1 optical interfaces, MSA compliant SFP (pluggable) optical module (LC connector) based design, which supports onsite optical port replacement
 - › 2 x STM-1 electrical interfaces, SFP electrical module (Mini BNC connector) Optional
 - › 4 x 10/100BaseT Ethernet (electric) interface
 - › 10/100BaseT (FE) Ethernet Interface Options
 - ✓ 4 Ports, 4 Channels (4 VCG), and
 - ✓ 4 Ports, 1 Channel (1 VCG)
 - › 1 x GigE (Gigabit) Ethernet interface Options
 - ✓ Optical GigE (Gigabit) Ethernet interface,
 - ✓ Electrical 1000BaseT (Gigabit) Ethernet Interface
- Provides complete diagnostics facilities to the user for monitoring optical ports and provide reading of optical transmit power, optical receive power, laser temperature, bias current in voltage alarms etc.
- Performance Monitoring and Alarms - Error counts for B1, B2, B3
- Performance Analysis - Error Seconds (ES), Several Error Seconds (SES), Unavailable seconds UAS, Higher Order Virtual Container - Remote Error Indication (HOVC-REI), Higher Order Virtual Container - Pointer Justification Event (HOVC-PJE)
- Management and Maintenance interfaces
 - › 10/100BaseT Ethernet management interface
 - › RS232 serial management interface
 - › Remote (Telnet) management interface
 - › Windows XP based Graphical User Interface (GUI)
 - › Windows 7 based Graphical User Interface (GUI)
 - › SNMP V2 Monitoring
 - › Engineering Order Wire (EOW) interface (RJ-11)
 - › NMS (Network Management System) for monitoring multiple units from a single / central location.

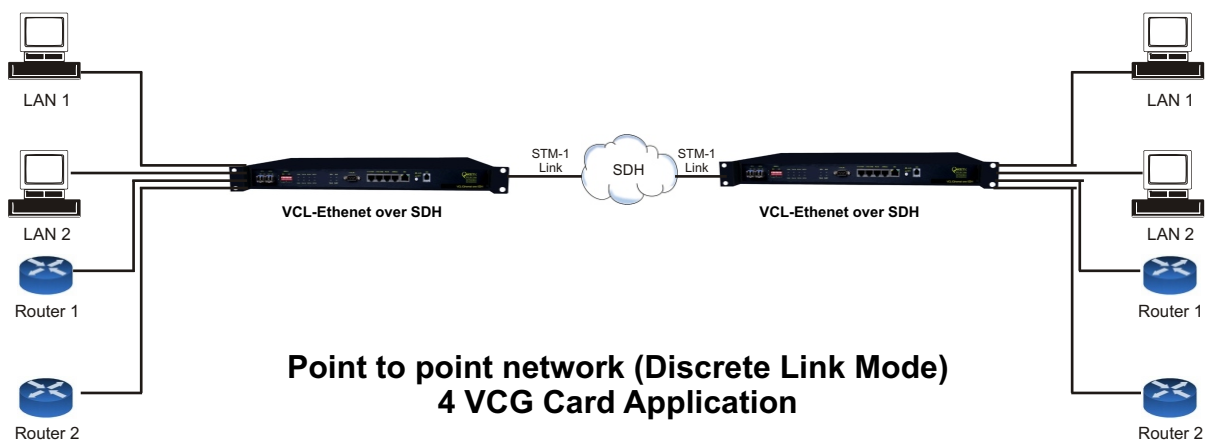
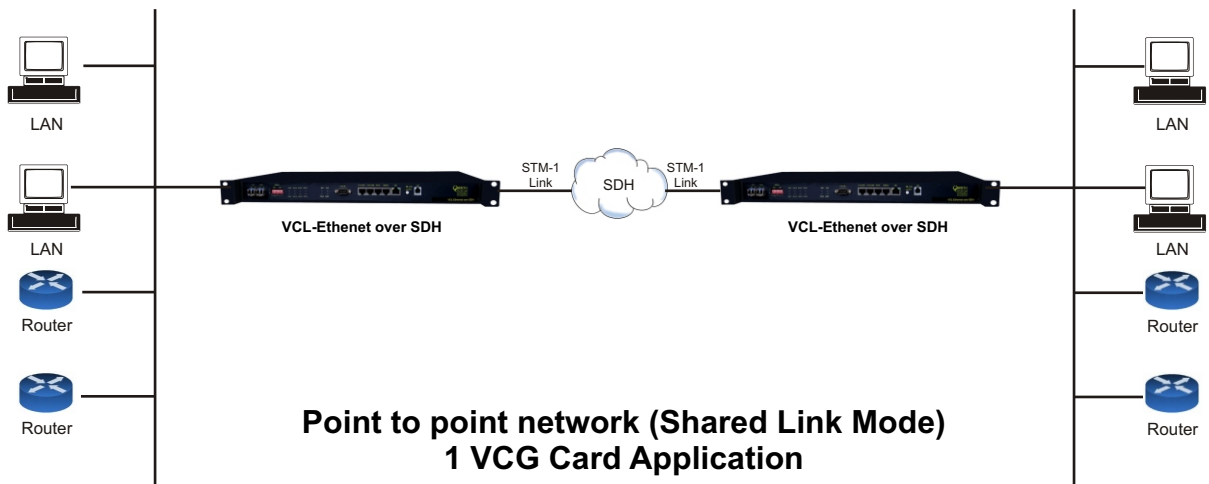
Features

- Timing mode
 - › Synchronization with STM-1 line timing
 - › External timing source option - 120 Ohms 2Mbps (External Bits Clock)
 - › External timing source - 120 Ohms 2MHz (External TTL Clock) - Factory Configurable
 - › Internal Clock - ITU-T G.813 internal oscillator (Stratum 3)
 - › The timing source can be auto-switched according to default or operator programmed settings
- Ethernet Standards Conformity
 - › Generic Framing Procedure GFP-F compliant with ITU-T G.7041
 - › VCAT compliant with ITU-T G.707 and LCAS compliant with ITU-T G.7042
 - › Ethernet flow control on WAN port and LAN port
 - › Large buffer size upto 410,000 bytes
 - › Maximum Frame length (MTU size):1536 bytes with 4 port 1 channel (1 VCG) Ethernet Card
 - › Maximum Frame length (MTU size):2036 bytes with 4 port 4 channel (4 VCG) Ethernet Card
 - › Auto MID/MID-X for Ethernet Interfaces
 - › Support 802.1Q based VLAN tagging (4 ports 1 channel (1 VCG) Ethernet Card only)
 - › Support Port based VLAN tagging (4 ports 1 channel (1 VCG) Ethernet Card only)
 - › Performance Analysis
 - ✓ All Received Packets
 - ✓ All Transmitted Packets
 - ✓ Received Dropped Packets
- Supports 1+1 Line Protection and Automatic Protection Switching (APS) with less than 50ms recovery
- Supports point-to-point, ring and chain topology (4 VCG card only)
- Local management and network-based management via a unified platform
- Supports Remote Power Down Detection and Auto Laser Shutdown
- Supports STM-1 loop-back for troubleshooting
- 850nm multi-Mode, 1310nm Single Mode and 1550nm Single Mode optical interface options offered
- Ethernet mapping adopts GFP/VC-12 virtual concatenated technology; according with MSTP criterion
- Provides Ethernet over SDH mapping through standard GFP and VC-12 virtual concatenation (VCAT)
- Ethernet bandwidth can be adjusted by the user between 2Mbps ~126 Mbps (VC-12 mapping)
- Supports MAC Address list filtration, learning and updating function
- Easy to operate
- Redundant power supply card options AC+DC, DC+DC and AC+AC.
 - › 110V AC - 240V AC (50/60 Hz) power options available
 - › -48VDC power option available
 - › -24VDC power option available
- Power consumption less than 12W.

Alarm and Indicator Monitoring

- Power Indicator
- Current Status (integrity and activity) Indicator
- Urgent Alarm Indicator
- Minor Alarm Indicator
- Optical Signal Loss Alarm Indicator
- Remote Device Power-down Indicator
- Ethernet Card Status Indicator
- General Alarm Indicator for Ethernet Card (including Link-down of Ethernet Port)
- Auto Laser Shutdown (ALS) Indicator
- Engineering Order-Wire (EOW) Indicator
- Ethernet Link Indicator
- Ethernet Speed Indicator
- Dry contact via 9-pin, D-type male connector
- Buzzer Alarm
- SNMP Diagnostic and Monitoring

Network Application



Technical Specifications

Network Topology and Interfaces

| | |
|--------------------|---|
| Network topology | Point to point network, Ring and Chain |
| Service interfaces | STM-1 SDH single optical or double optical ports (1+1 protection) supported - 10/100BaseT Ethernet - 10/100/1000BaseT or 1000Base-FX GigE |

STM-1 Electrical Interface - Technical Specifications

| | |
|-------------------------------|--------------------------------------|
| Data Rate | 155.52 Mbps |
| Standard | ITU-T G.703 Compliant |
| Line Code | CMI |
| Physical Connector | Mini BNC |
| Automatic 1+1 line protection | Less than 50 ms switching / recovery |

STM-1 Optical Interface - Technical Specifications

| | |
|----------------------------------|--|
| Data Rate | 155.52 Mbps |
| Standard | ITU-T G.957 compliant |
| Bit rate | 155.520Mbps |
| Coding | NRZ |
| Connector | LC |
| Light source | Class 1 Laser |
| Wave length | 850nm/1310nm/1550nm (optional) - 1310nm Std. |
| Transmit power | S 1.1, L 1.1, L 1.2 (- 11 dBm to - 2.5 dBm - as may be ordered) |
| Receive sensitivity | S 1.1, L 1.1, L 1.2 (- 28 dBm to - 34 dBm - as may be ordered) |
| Automatic 1+1 Line Protection | Less than 50 ms switching / recovery |
| Automatic Laser Shut Down Option | User selectable options |

STM-1 Monitoring and Performance Analysis

| | |
|-----------------------------------|--|
| Performance Monitoring and Alarms | Error counts for B1, B2, B3 |
| Performance Analysis | Error Seconds (ES), Several Error Seconds (SES), Unavailable Seconds UAS, Higher Order Virtual Container - Remote Error Indication (HOVC-REI), Higher Order Virtual Container - Pointer Justification Event (HOVC-PJE) |

Optical Interfaces

| Type | Wavelength (nm) | Mean launched power (dBm) | Receiver sensitivity (dBm) | Receiver overload (dBm) | Connector | Configuration |
|------------------------------|-----------------|---------------------------|----------------------------|-------------------------|-----------|-----------------|
| Double fibers, Two Direction | 1310 | -8 ~ -12 | -36 | -3 | LC | Standard (S1.1) |
| | 1310 | 0 ~ -5 | -36 | -3 | LC | Optional (L1.1) |
| Single fiber, One Direction | 1310/1550 | -8 ~ -14 | -30 | -3 | LC | Optional |
| | 1310/1550 | 0 ~ -5 | -30 | -3 | LC | Optional |

1 VCG - Ethernet Interface Specification: 10/100BaseT (Electrical)

| | |
|--|------------------|
| Number of Interfaces | 4 |
| Number of VCG/Channel | 1 |
| Interface Types | 10/100BaseT |
| Ethernet Mode | Half/Full |
| MDI/MDI-X Support | Yes |
| VCAT Compliance | ITU-T G.707 |
| LCAS Compliance | ITU-T G.7042 |
| GFP-F | ITU-T G.7041 |
| Frame Size | 1536 bytes |
| Transmission Bit Rate | 10/100 Mbps |
| Connectors | RJ-45 Electrical |
| 802.1Q MAC packet transparent transmission supported | |
| Ethernet data rate can be adjusted from 2M to 100M | |

4 VCG - Ethernet Interface Specification: 10/100BaseT (Electrical)

| | |
|--|------------------|
| Number of Interfaces | 4 |
| Number of VCG/Channels | 4 |
| Interface Types | 10/100BaseT |
| Ethernet Mode | Half/Full |
| MDI/MDI-X Support | Yes |
| VCAT Compliance | ITU-T G.707 |
| LCAS Compliance | ITU-T G.7042 |
| GFP-F | ITU-T G.7041 |
| Frame Size | 2036 bytes |
| Transmission Bit Rate | 10/100 Mbps |
| Connectors | RJ-45 Electrical |
| 802.1Q MAC packet transparent transmission supported | |
| Ethernet data rate can be adjusted from 2M to 126M | |

GigE - Ethernet Interface Specification

| | |
|--|--|
| Number of Interfaces | 2 Electrical (Comply with IEEE 802.3ab) |
| | 1 Optical - Optional (Comply with IEEE 802.3z) |
| Interface Types | 10/100/1000BaseT or 1000Base-FX (LC) |
| MDI/MDI-X Support | Yes (Electrical port) |
| VCAT Compliance | ITU-T G.707 |
| LCAS Compliance | ITU-T G.7042 |
| GFP-F | ITU-T G.7041 |
| Frame Size | 1552 bytes |
| Transmission Bit Rate | 10/100/1000 Mbps |
| Connectors | RJ-45 Electrical / LC - Optical |
| 802.1Q MAC packet transparent transmission supported | |
| Ethernet data rate can be adjusted from 2M to 126M | |

Ethernet port (1 VCG/4 VCG/GigE) Performance Analysis

- All Received Packets
- All Transmitted Packets
- Received Dropped Packets

Clock Synchronization Options

| | |
|-------------------------------|---|
| Clock Synchronization options | Synchronization with STM-1 line timing |
| | External timing source option - 120 Ohms 2Mbps (External Bits Clock) |
| | External timing source - 120 Ohms 2MHz (External TTL Clock) - Factory Configurable |
| | Internal Clock - ITU-T G.813 internal oscillator (Stratum 3) |
| | The timing source can be auto-switched according to default or operator programmed settings |

Engineering Order Wire (EOW)

| | |
|------------------------------|-----------------|
| Engineering Order Wire (EOW) | RJ-11 connector |
|------------------------------|-----------------|

NMS

- Graphical User Interface (GUI) Windows XP / Windows Vista compatible
- SNMP V2 based NMS

Power Supply Options

| | |
|-------------------|---|
| DC Mains Input | - 48VDC (range -36V DC to -75V DC) |
| AC Main Input | 100V AC to 240V AC, 50 / 60 Hz |
| Power Protection | 1+0 (AC, DC), 1+1 (AC+AC, AC+DC, DC+DC) |
| Power Consumption | < 12 Watts |

Operating Conditions

| | |
|---------------------|-----------------------|
| Ambient temperature | -10°C ~ +60°C |
| Relative humidity | <90% (Non condensing) |

Mechanical Specifications

| | |
|---------------|----------------------------|
| Rack Mounting | Standard 19 Inch. DIN Rack |
| Height | 44 mm. |
| Depth | 256 mm. |
| Width | 440 mm. |
| Weight | 3.25 kg |

Ordering Information

| S. No. | Part | Description |
|--------|---------------|--|
| 1 | VCL-ETH-o-SDH | Ethernet over SDH (STM-1) - Optical/Electrical (Without interfaces or power supply). 1U high, 19" Rack Mount Version. |

Specify the following options before ordering:

STM-1 Port Options

| S. No. | Part | Description |
|--------|--------------------|--|
| 1 | OPT-1+0-1310-20KM | 1 x Optical SFP - 1310nm, 20KM S1.1 (LC) |
| 2 | OPT-1+1-1310-20KM | 2 x Optical SFP - 1310nm, 20KM S1.1 (LC) |
| 3 | OPT-1+0-1310-40KM | 1 x Optical SFP - 1310nm, 40KM L1.1 (LC) - Std. |
| 4 | OPT-1+1-1310-40KM | 2 x Optical SFP - 1310nm, 40KM L1.1 (LC) |
| 5 | OPT-1+0-1550-80KM | 1 x Optical SFP - 1550nm, 80KM L1.2 (LC) |
| 6 | OPT-1+1-1550-80KM | 2 x Optical SFP - 1550nm, 80KM L1.2 (LC) |
| 7 | OPT-1+0-1550-120KM | 1 x Optical SFP - 1550nm, 120KM L1.2 (LC) |
| 8 | OPT-1+1-1550-120KM | 2 x Optical SFP - 1550nm, 120KM L1.2 (LC) |
| 9 | ELE-1+0 | 1 x Electrical SFP (mini BNC) |
| 10 | ELE-1+1 | 2 x Electrical SFP (mini BNC) |

Ethernet Options

| S. No. | Part | Description |
|--------|------------|--|
| 1 | 4ETH-1VCG | 1 x 4 Ethernet Card- 1 Channel, 4 Ethernet Ports (RJ-45) |
| 2 | 4ETH-4 VCG | 1 x 4 Ethernet Card- 4 Channel, 4 Ethernet Ports (RJ-45)- Std |
| 3 | GigE-opt | 1 x Gigabit Optical Ethernet Card- (LC) |
| 4 | GigE-elec | 1 x Gigabit Electrical Ethernet Card- (RJ-45) |

Power Supply Options

| S. No. | Part | Description |
|--------|-----------|---|
| 1 | DC-1+0-24 | 1 x DC Input - 24VDC (range 18V to 36V) |
| 2 | DC-1+0-48 | 1 x DC Input - 48VDC (range 36V to 75V) - Std. |
| 3 | DC-1+1-24 | 1+1 (redundant) DC Inputs - 48VDC (range 18V to 36V) |
| 4 | DC-1+1-48 | 1+1 (redundant) DC Inputs - 48VDC (range 36V to 75V) |
| 5 | AC-1+0 | 1 x AC Mains Input 110Volts-240 Volts, 50Hz/60Hz |
| 6 | AC-1+1 | 1+1 (redundant) AC Mains Input 110Volts-240 Volts, 50Hz/60Hz. |

Note: **Std.** denotes Standard configuration

Note: _____

Technical specifications are subject to changes without notice.
Revision 08 - March 20, 2010

INDIA

Valiant Communications Limited

71/1, Shivaji Marg, New Delhi - 110015, India
Phone: +91-11 4105 5601, +91-11 4105 5602,
+91-11 4105 5603, +91-11 2592 8415,
Fax: +91-11 4105 5604, +91-11 2543 4300
E-mail: getinfo@valiantcom.com
Website: http://www.valiantcom.com

U.K.

Valiant Communications (UK) Ltd

1, Acton Hill Mews, 310-328 Uxbridge Road,
London W3 9QN
United Kingdom
E-mail: uk@valiantcom.com
Website: http://www.valiantcom.com

U.S.A.

Valcomm Technologies Inc.

4000 Ponce de Leon, Suite 470
Coral Gables, FL 33146
United States of America
E-mail: fl@valiantcom.com
Website: http://www.valiantcom.com

U.A.E.

Valiant Communications FZE

P.O. Box No. 121523 SAIF Zone,
Sharjah,
U.A.E.
E-mail: uae@valiantcom.com
Website: http://www.valiantcom.com