

AceCom Networks

VCL-MX-TP, Teleprotection Equipment

Product Brochure & Data Sheet

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Product Overview

VCL-TP, Teleprotection Equipment is an extremely reliable and flexible product that offers up to 8, 2-way independent command channels which can be operated selectively or simultaneously over a wide choice and a variety of transmission interfaces.

The VCL-TP, Teleprotection Equipment offers a choice of transmission interfaces which include the IEEE C37.94 compliant optical fiber interface for transmission over Multi-Mode and Single Mode Optical Fiber pairs, as well as G.703 E1, 2.048Mbps and G.703 64Kbps co-directional digital data interface options.

VCL-TP, Teleprotection Equipment may be used independently, in a standalone point-to-point application, or as an integrated part of the VCL-MX Version 6, E1 Voice and Data Multiplexer solution over SDH or PDH data networks.

Applications Diagrams

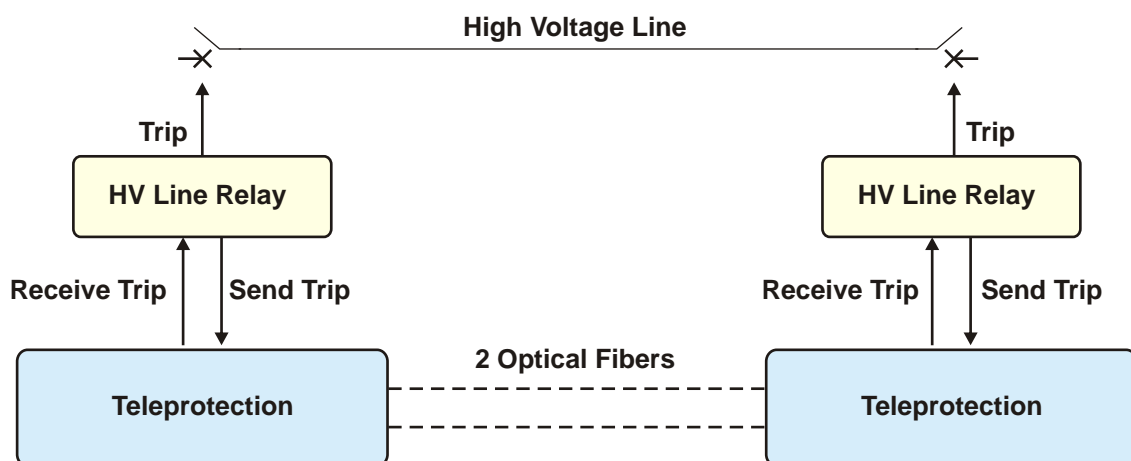


Figure #1 - Typical Point-To-Point Application

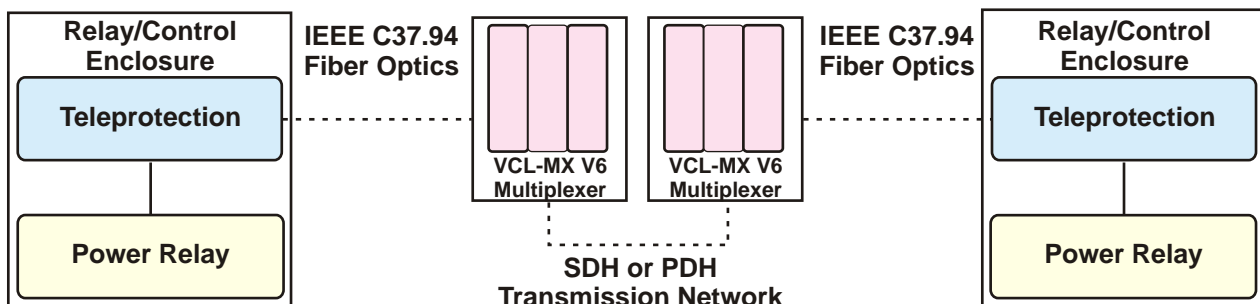


Figure #2 Typical Application over a IEEE C37.94 compliant optical link, as an integrated part of the VCL-MX V6 E1 voice and data multiplexer solution over an SDH or PDH data network.

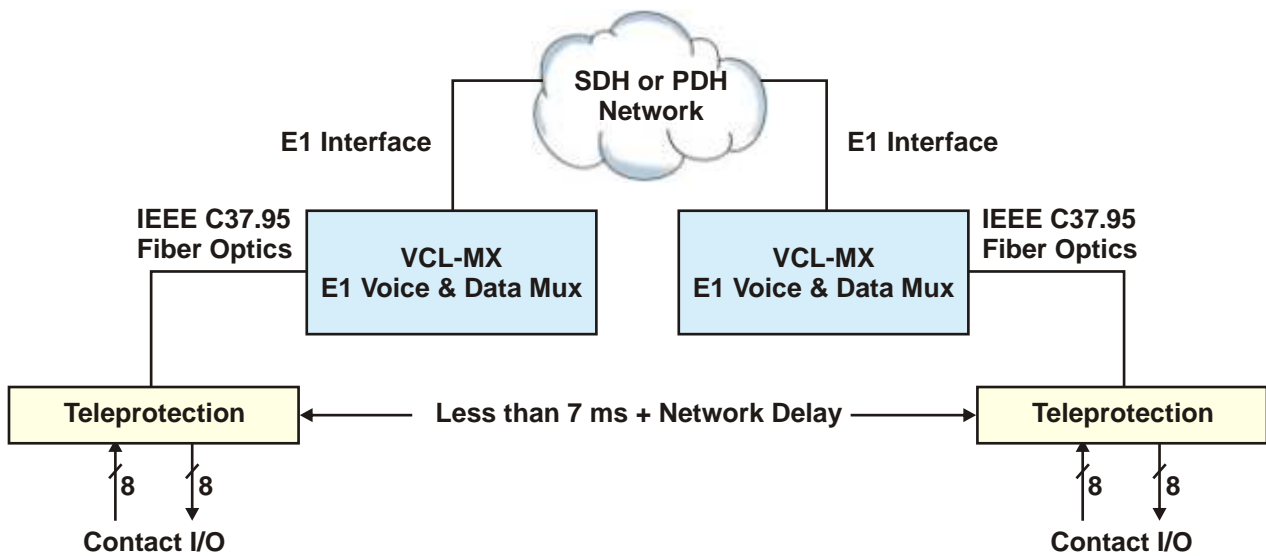


Figure # 3 - Typical Application over a IEEE C37.94 Optical Channel, or E1 interface, or as an integrated part of the VCL-MX V6 E1 Voice and Data Multiplexer solution over an SDH or PDH data network.

Features and Benefits

- Unrivaled Speed, Security and Reliability
- Use in a Standalone, Point-To-Point Application
- Use as an integrated part of the VCL-MX V6 E1 Voice and Data Multiplexer solution over an SDH or PDH data network
- 1+1 Route / Path Protection when used as an integrated part of the VCL-MX V6 E1 Voice and Data Multiplexer solution over an SDH or PDH data network
- Compact, standard 19-Inch Rack-mountable, 2U high chassis
- Bi-directional Transmission of 8 command Inputs and 8 command outputs
- Full Duplex Operation
- Automatic loop test facility
- User programmable for Direct Tripping, Permissive Tripping and Blocking Protection Schemes
- Compliant with IEC 60834-1 standards
- IEEE C37.94 compliant Multi-Mode optical link interface option for short reach optical links
- IEEE C37.94 compliant (modulation only) Single Mode optical link interface option for long reach optical links (= 40 KM, = 80 KM, = 120 KM)
- 64Kbps, G.703 co-directional interface option for transmission over 4-wire electrical links
- 2.048Mbps, G.703 interface option for transmission over 4-wire electrical links
- Available in 24V DC, 48V DC, 110V DC, 220V DC and 250V DC configurations.

Flexibility and User Programmability

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Event and Alarm Logging

Time-Stamped Alarm Logging
 Time-Stamped Event Logging

Management and Monitoring

RS232 serial, USB serial interfaces for local terminal access
 10/100BaseT Ethernet Interface for remote access over an IP network
 Encrypted Password Protection
 Telnet - Remote access over IP links
 SSH - Secured remote access using Secure Shell Protocol over IP links
 SNMP Traps and NMS for real time remote monitoring and management over an IP network
 Automatic Link Test feature link testing at user programmable periodical intervals
 Visual I/O status LED Display.

Reliability

Advanced Communication Protocols to ensure reliable transmission of commands
 Power Supply Immunity to withstand impulse surges and transients of upto 10,000 Volts
 High Quality Relays withstands voltage 10 kV between coil and contacts (1.2 ? 50 μ?s)
 Maximum Switching Voltage: 400 V AC or 300 V DC
 Optoisolated Command Inputs
 Optoisolated Relay Outputs
 Relays - Mechanical: 10,000,000 operations min. (at 18,000 operations/hour).

Error Detection and Coding

Line Code Violation Detection
 LOS Detection
 Block Command Encoding as per C.37.94.

Technical Specifications

64Kbps, G.703, 4-wire Data Interface:

Number of Interfaces	1
Conformity (Electrical)	G.703 (E0)
Nominal Impedance	120 Ohms balanced
Bit Rate	64 Kbps
Type	Co-directional, Synchronous
Connector	RJ45

2.048Mbps, G.703 E1 Interface:

Number of Interfaces	1
Conformity (Electrical)	G.703 (E0)
Frame Structure	As per ITU (CCITT)
PCM Sampling	8000 Samples/sec
Bit Rate	2048 Kbps ± 50 ppm
Code	HDB3
Nominal Impedance	120 Ohms balanced
Peak Voltage of a mark For 120 Ohms Balanced interface 75 Ohms Unbalanced interface	3.0 V ± 0.3 V 2.37 V ± 0.237 V
Nominal Pulse Width	As per ITU (CCITT) Rec. G.703
Output Jitter	< 0.05 UI (in the frequency range of 20Hz to 100KHz)
Permissible Attenuation	6 dB at 1 Mhz
Return Loss at: 51.2 KHz to 102.4 KHz 102.4 KHz to 2048 KHz 2048 KHz to 3072 KHz	> 12dB > 18dB > 14dB
Jitter Tolerance	As per ITU (CCITT) G.823
Loss and recovery of frame alignment	As per clause 3 of ITU (CCITT) G.732
Connector	Rj45

Optical Fiber Interface - Option 1:

Optical ModuleType	Connector	Fiber	Distance	Type	IEEE C37.94
1x9	FC	Multimode	= 2 Km	LED	Fully Compliant
	FC	Single-mode 1310 nm	= 20 Km	Laser	Modulation Only

Optical Fiber Interface - Option 2:

Optical ModuleType	Connector	Fiber	Distance	Type	IEEE C37.94
SFP	LC	Single-mode 1310 nm, 1550 nm	= 40 Km = 80 Km, = 120 Km	Laser	Modulation Only

Command Voltage Options

24V DC	48V DC	110V DC	220V DC	250V DC
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Teleprotection Inputs Commands

<10mA input current

Command	Sense On	Sense Off
24 V DC	15-30 V DC	<10 V DC
48 V DC	41-72V DC	<25 V DC
110 V DC	90-140 V DC	<60 V DC
250 V DC	210-270 V DC	<140 V DC

Command Transfer Time

Less than 2ms command transfer time

Relay Operating Time

Less than 5ms relay operating time

Back to Back Switching Time (including command transfer and relay operating time)

Less than 7ms back-to-back operating time (including relay operating time) in IEEE C37.94 optical mode

Less than 7ms back-to-back operating time (including relay operating time) in G.703 E1, 2.048Mbps electrical mode

Less than 11ms back-to-back operating time (including relay operating time) in G.703 E0, 64kbps, co-directional 4 wire data interface mode

Time Clock

Built-in real time clock (RTC) with 10 year battery backup.

Operations and Maintenance Interfaces

RS232 serial interface for local terminal access

USB serial interfaces for local terminal access

10/100BaseT Ethernet Interface for remote access over an IP network.

Configuration and Access Command Language

Command Line Interface (English text commands).

Transmission Standards and Compliances

Electrical: ITU-T, G.703 for 64Kbps co-directional 4-wire data interface

Optical: IEEE 37.94 compliant Multi-Mode optical interface

Optical: IEEE 37.94 compliant (modulation only) 1310nm Single-Mode optical interface

Laser: Class I (for Single-Mode Optical Interface) - Eye-safe as per EN 60825-1 specifications.

Teleprotection Standards and Compliances

IEC 60834-1 (Teleprotection Command Systems)

Power Supply Options

24V DC
 48V DC
 110V DC/ 125VDC
 220V DC / 250V DC
 Voltage Withstand: Meets and exceeds IEC 834-1 and IEC 255 requirements.

Power Consumption

< 15 Watts.

Environmental

Operating Temperature	-20°C to +60°C
Maximum Operating Humidity	95% R.H., Non-Condensing
Maximum Operating Altitude	Up to 3000 meters above sea level
Operation	Complies with ETS 300 019 Class 3.2
Storage Temperature	-20°C to +70°C
Storage	Complies with ETS 300 019 Class 1.2
Maximum Storage Humidity	98% R.H., Non-Condensing
Maximum Storage Altitude	Up to 3000 meters above sea level
Transportation	Complies with ETS 300 019 Class 2.3

Electromagnetic Standards Compliance

EN 50081-2
 EN 50082-2
 IEC 61000-6-2 (immunity)
 IEC 61000-6-4 (emission)

Compliance / Regulatory

Meets CE requirements
 Complies to IEEE and IEC standards
 Complies with FCC Part 68 and EMC FCC Part 15 and CISPR 22 Class B
 Operation ETS 300 019 Class 3.2
 Storage ETS 300 019 Class 1.2
 Transportation ETS 300 019 Class 2.3

Dimensions

Rack mounting	Standard 19-Inch. DIN Rack
Height	90.00 mm. – standard 2U high
Depth	260.00 mm.
Width	477.00 mm.
Weight	4.00 kg

Ordering Information

Base Unit

Part #	Description
VCL-TP-1531	<p>VCL-Teleprotection Terminal Equipment</p> <p>19-Inch, 2U High Rack mountable Version [Core Equipment]</p> <ul style="list-style-type: none"> - Supports upto 8, 2-way independent-simultaneous command channels which may be configured to operate selectively or Simultaneously over - C37.94 protocol optical fiber interface, or - C37.94 modulation compliant protocol optical fiber interface (SFP based), or - G.703 @ 64Kbps PCM Co-directional digital data Interface, or - 2.048Mbps E1 digital data interface [select any one] - OAM Card [10/100BaseT Ethernet - RJ45 (SNMP, Telnet and SSH) and Serial Port (USB and DB-9 COM Port)] - System Core Cables, Installation Accessories, Documentation, System User Manual etc (Set) - Graphical User Interface (GUI) and Network Management Software (NMS) - Command Voltages: 48V DC, 120V DC, 220V DC or 250V DC (factory set option, order any one) - Switching Voltages: 48V DC, 125V DC, 220V DC or 250V DC

Network Interfaces

Part #	Description
1532	G.703 @ 64Kbps Co-Directional interface [1 (max) per system]
1599	2.048Mbps E1 digital data interface [1 (max) per system]
1533-SM	Optical - 2M, Duplex FC, 20Km, 0850nm OR 1310nm, Single-Mode (SM) [1 (max) per system]
1533-MM	Optical - 2M, Duplex FC, 2Km, 1310nm, Multi-Mode (MM) [1 (max) per system]
1566-SM-WLWL-DKM	Optical - SFP based, Duplex LC, Single-Mode (SM) [WLWL = SFP Wavelength in nm, 1310 or 1550, DKM = SFP Distance in Km, 040, 080, 120] [SFP to be ordered separately] [1 (max) per system]

PSU Options

Part #	Description
DC048	1 x -48V DC Power Supply Input [18V-75V DC]
DC110	1 x 110/125V DC Power Supply Input [60-160V DC]
DC048R	2 x -48V DC Power Supply Input [18V-75V DC] [Redundant - 1+1]
DC110R	2 x 110/125V DC Power Supply Input [60-160V DC][Redundant - 1+1]
DC250R	2 x 220/250 DC Power Supply Input [160-270V DC] [Redundant - 1+1]

Ordering Options

VCL-TP-1531 + Network Interface Option + PSU Option

Technical Specifications are subject to changes without notice.
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