Product Overview

VCL-RX, C37.94 Optical Repeater is an extremely reliable and flexible C37.94 transmission product that re-generates and re-times the C37.94 optical signals and removes any residual jitter and wander, thereby making it suitable for extending C37.94 signals over long optical fiber links.

The VCL-RX, C37.94 is available with 1+1 Optical Link Redundancy (C37.94), 1+1 Redundant Power Supply options.

Transmission Interface options include:

- IEEE C37.94 compliant 850nm (50/125 um and 62.5/125um) Multi-Mode optical fiber interface for connecting to C37.94 Distance Protection Relays.
- IEEE C37.94 compliant 1310nm / 1550nm (9/125 um) Single-Mode optical fiber interface for transmission over long-reach, single-mode optical fiber links to extend Teleprotection Signals over long optical fiber links (<40 KM, <80 KM, <120 KM, ≤ 150 KM and ≤ 180 KM).
- Option of 1+1 redundant optical path protection / route protection.
- Laser: Class I (for Single-Mode Optical Interface) - Eye-safe as per EN 60825-1 specifications.

Applications, Features and Benefits

- May be used as a C37.94 Signal Converter - to convert an optical signal from IEEE C37.94 compliant 850nm Multi-Mode C37.94 Distance Protection Relay and transmit it up to a distance of 180 KM on Single Mode optical fiber.
- Compatible with C37.94 Distance Protection Relays from all major manufacturers.
- May be used as a C37.94 Optical Repeater to extend the reach of the VCL-TP, Teleprotection Equipment beyond the distance of 180 KM. The combined reach of the VCL-TP, Teleprotection Equipment with one mid-span VCL-RX, C37.94 Optical Repeater may be up to 360 KM.
- Option of 1+1 Route / Path Protection for C37.94 Optical interface with less than 5ms link switching / link recovery time in the event of the working optical link failure.
- IRIG-B Synchronization for time-stamped alarms.
- Immunity to Voltage Dips, Short Power Supply Interruptions and Voltage Variations as per IEC 61000-4-11 specifications.

Performance

- Less than signal 1ms transfer time over a 180 KM optical span.

Error Detection and Coding

- Line Code Violation Detection
- LOS Detection
- Signal Re-timing, Re-generation and Block Command Encoding as per IEEE C37.94 for reliable transmission.

Standards and Compliances

- Compliant with IEC 60834-1 and IEC 834-1 specifications and standards.

Event and Alarm Logging

- Time-Stamped Alarm Logging
- Built-In (RTC) Real Time Clock
- IRIG-B Time Synchronization option to synchronize the RTC time-stamps with GPS.

Management Interface

- RS232 serial, USB serial interfaces for local terminal access.
- 10/100BaseT Ethernet Interface for remote access over an IP network.
Access and Monitoring
- Command Line Interface (English text commands).
- Telnet
- SSH
- SNMPv2 Traps.
- Encrypted Password Protection
- Maintains an access log of over 10,000 most recent entries for security audit.

Power Consumption
- < 15 Watts.

Other Regulatory Compliances:
- Meets CE requirements

Power Supply Options
- 24V DC
- 48V DC
- 110V DC / 125V DC
- 220V DC / 250V DC
- 1+1 Redundant Power Supply.

EMI, EMC, Surge Withstand and other Compliances

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- ESD, Voltage and Surge Withstand: Meets and exceeds IEC 61000-4-2, IEC 61000-4-4, IEC 61000-4-5, Level 4 specifications.
- Immunity to Voltage Dips, Short Power Supply Interruptions and Voltage Variations meets and exceeds IEC 61000-4-11, Level 1 specifications.

Application Diagrams

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