

Product Overview:

VCL-TP Teleprotection - IEC-61850 GOOSE equipment is a 2U high, 19-inch rack mountable equipment that is designed transport IEC-61850 GOOSE* (*Generic Object Oriented Substation Event) messages over IP/MPLS and MPLS-TP networks. The equipment also provides 8 Binary Inputs / Outputs and performs GOOSE to Binary / Binary to GOOSE conversion functions, thereby allowing the users to install VCL-TP Teleprotection - IEC-61850 GOOSE over IP/MPLS equipment between sub-stations where one sub-station (protection relay) is using GOOSE messages and the other complementing sub-station (protection relay) is using binary commands.



The VCL-TP Teleprotection - GOOSE over IP/MPLS and MPLS-TP Equipment and incorporates the same level of “reliability” and “dependability” that the users have come to expect of the IEEE C37.94 based Teleprotection Equipment. Additionally, the VCL-TP Teleprotection - GOOSE over IP/MPLS and MPLS-TP Equipment provides un-paralleled security, speed as well as the advantages and enhanced levels of monitoring and control which IEC-61850 GOOSE based systems offer when operating in a “digital sub-station” environment.

The VCL-TP Teleprotection - GOOSE over IP/MPLS and MPLS-TP Equipment is extremely fast and reliable “Distance Protection” device that offers up to 8, 2-way independent command channels, each of which can be operated independently over an IP / MPLS / Ethernet network with an extremely high degree of reliability and security.

Features and Highlights:

- Unrivalled Speed, Security and Reliability of IEC-60834-1 Protection Systems
- 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
- IEC-61850 GOOSE (RJ45 Electrical) Interface for implementing PSCH.1 and PSCH.2 Protection Scheme as per IEC-61850 GOOSE protocol.
- Available with 48V DC, 110V DC, 220V DC, 250V DC, 110V AC and 220V AC and 1+1 Redundant Power Supply options.

Network Interfaces:

- IP; or MPLS/IP; or MPLS-TP
- 1x 10/100BaseT Electrical Ethernet Port [RJ45 (F)]
- 1x 100BaseFX Optical Ethernet Port [without SFP]

Substation Interfaces:

- IEC-61850 GOOSE:
 - 1x 10/100BaseT Electrical Ethernet Port [RJ45 (F)]
- BINARY
 - 8, 2-way independent binary commands

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 with “disable” option for added security.
- SSH - Secured remote access using Secure Shell Protocol over IP links for secure link communication.
- IEC-61850 Compliant NMS, or SNMP Traps for real time remote monitoring over an Ethernet/ IP network
- Visual I/O status – LED Display.
- Dry contact external alarm relay to connect an external alarm on an annunciator panel, which can be wired up for either NO or NC condition.

Performance:

- Command Transfer Time – GOOSE to GOOSE: Less than 2ms.
- Command Transfer Time – GOOSE to Binary: Less than 4ms.
- Command Transfer Time – Binary to GOOSE: Less than 4ms.

Maintenance:

- **Manual Loop Test:** This feature initiates a “Manual Loop-Test” of the transmission link that interconnects the “Local” unit and the “Remote” unit
- **Automatic Loop Test:** The Automatic Link Test feature automatically initiates “Periodic Loop Tests” at user programmed intervals of the transmission link that interconnects the “Local” unit and the “Remote” unit.

Event and Alarm Logging:

- Time-Stamped Alarm Logging
- Time-Stamped Event Logging.

Reliability and Security:

- Advanced Communication Protocol to ensure reliable transmission of commands
- Encrypted Transmission – User selectable option

Error Detection and Coding:

- Line Code Violation Detection
- Check-sum Verification – To determine integrity of all commands
- LOS Detection

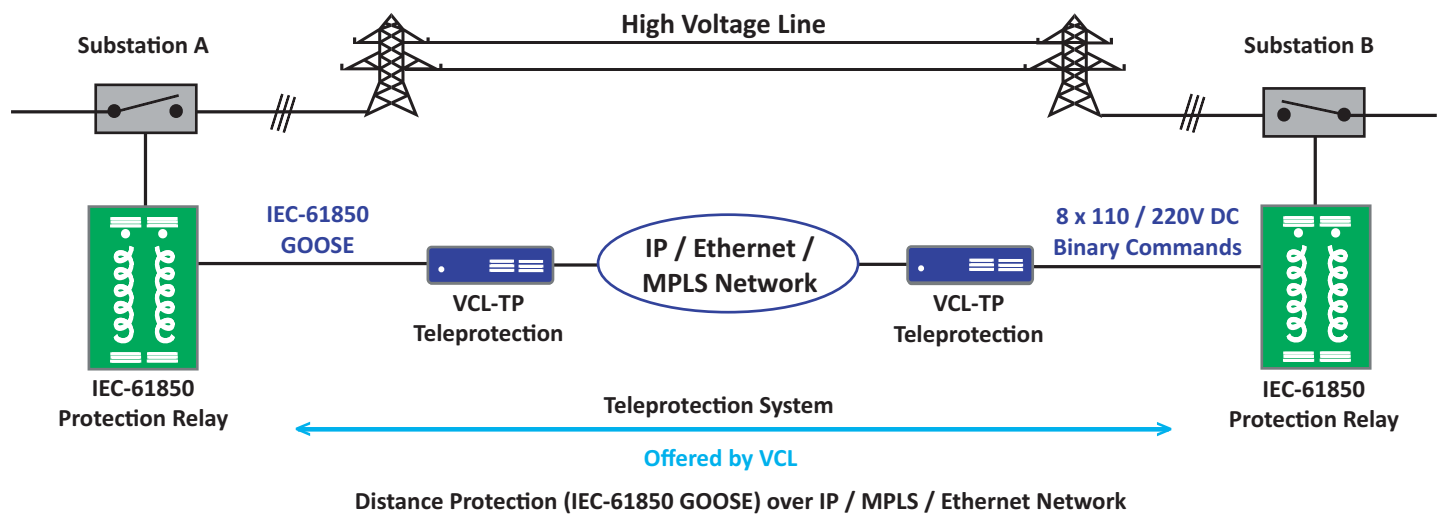
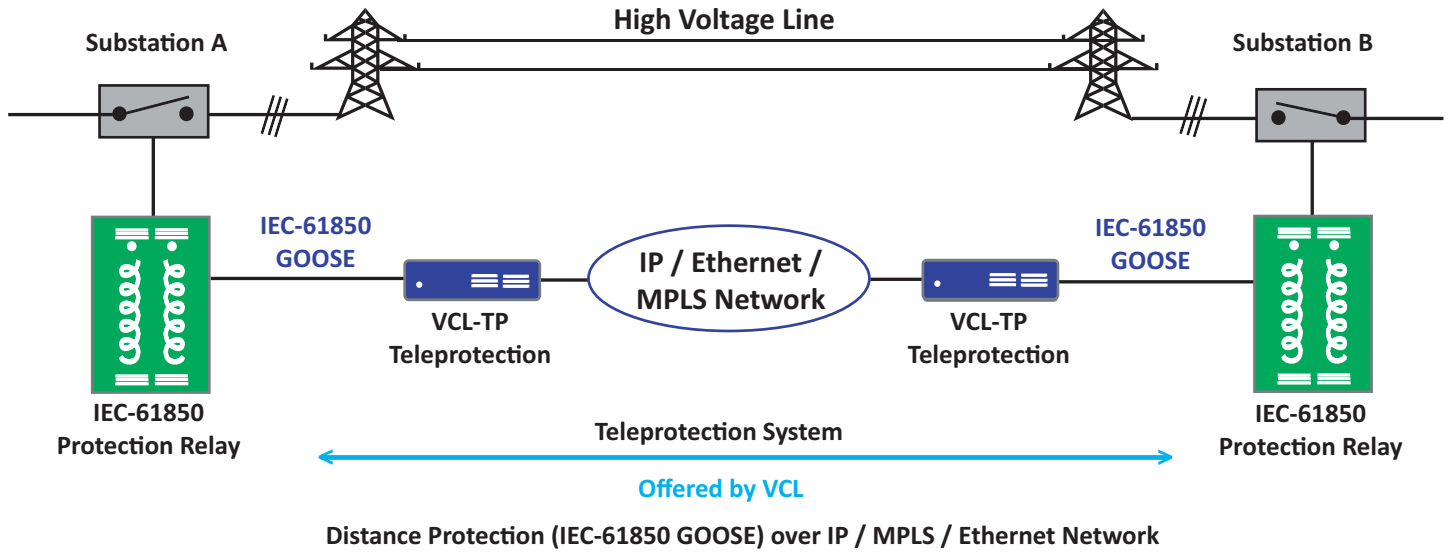
Time Clock and Time Synchronization:

- Built-in real time clock (RTC).
- NTP Time synchronization.
- IEEE-1588v2 PTP Time synchronization.

Configuration and Access Command Language:

- Command Line Interface (English text commands).
- Graphical User Interface.

Application Diagrams



Electromagnetic Standards Compliance:

- EN 50081-2
- EN 50082-2
- IEC 61000-6-2 (Immunity)
- IEC 61000-6-4 (Emission)

Compliance / Regulatory:

- CE
- RoHS
- 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

MTBF:

- > 300,000 hours / > 35.25 years

EMI, EMC, Surge Withstand and other Compliances:

EN 50081-2	EN 50082-2	IEC 60068-2-29
IEC 61000-4-6 (Conducted Immunity)	IEC 60068-2-6	IEC 60068-2-2
IEC 60068-2-78	IEC 60068-2-1	IEC 60068-2-14
CISPR 32 / EN55022 Class B (Conducted Emission and Radiated Emission)		
IS 9000 (Part II Sec. 1-4, Part III Sec. 1-5, Part IV, Part 14 Sec. 1-3)		
IEC 60870-2-1	IEC 61000-4-5	IEC 61000-4-12
IEC 61000-4-3 (Radiated Immunity)	IEC 61000-4-8	IEC 61000-4-16
IEC 61000-4-2	IEC 61000-4-10	Telcordia
IEC 61000-4-4	IEC 61000-4-11	GR-1089 Surge and Power Contact

- 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.

Power Supply Options:

- 48V DC, range 36V DC~ 70V DC
- 110V DC / 125V DC, range 80V DC~ 140V DC
- 220V DC / 250V DC, range 80V DC~ 290V DC
- Dual / redundant power supply inputs and power supplies are also offered as an option.
- Short circuit protection
- Reverse power input protection

Power Consumption:

- < 18 Watts.

Physical Dimensions:

Rack mounting	Standard 19-Inch. Rack
Height	89 mm Standard 2RU high
Depth	340 mm.
Width	482 mm.
Weight	4 kg

Environmental:

Operating Temperature	-10°C to +60°C
Maximum Operating Humidity	95% R.H., Non-Condensing
Maximum Operating Altitude	Up to 3,000 meters above sea Level
Operation	Complies with ETS 300 019 Class 3.2
Storage Temperature	-40C to +70C
Storage	Complies with ETS 300 019 Class 1.2
Maximum Storage Humidity	98% R.H., Non-Condensing
Maximum Storage Altitude	Up to 3,000 meters above sea level
Transportation	Complies with ETS 300 019 Class 2.3

Ordering Information:**BASE UNIT without SFP and PSUs:**

Part #	Description
VCL-TP-1531 -2154-2715	<p>VCL-TP Teleprotection - IEC-61850 GOOSE over IP/MPLS Equipment. 19-Inch, 2U High Rack mountable</p> <p>Substation Interfaces: IEC-61850 GOOSE</p> <ul style="list-style-type: none"> – 1 x 10/100BaseT Electrical Ethernet Port [RJ45 (F)] <p>BINARY</p> <ul style="list-style-type: none"> – 8, 2-way independent binary commands <p>Network Interfaces:</p> <ul style="list-style-type: none"> – IP; or MPLS/IP; or MPLS-TP – 1 x 10/100BaseT Electrical Ethernet Port [RJ45 (F)] – 1 x 100BaseFX Optical Ethernet Port [without SFP] – OAM [SNMP, Telnet (RJ45 Port) and Serial Port (USB and DB-9 COM Port)] – Graphical User Interface (GUI) and Management Software, System Core Cables, Installation Accessories, Documentation, System. <p>[# Add Power Supply] [# Add SFP]</p>

Add Power Supply Option:

Part #	Description
AC220	1 x 110~240V AC Power Supply Input
DC048	1 x 48V DC Power Supply Input
DC220	1 x 80~250V DC Power Supply Input
AC220R	2 x 110~240V AC Power Supply Input [Redundant]
DC048R	2 x 48V DC Power Supply Input [Redundant]
DC220R	2 x 80~250V DC Power Supply Input [Redundant]

Select SFP Option (1 SFP per UNIT):

Part #	Description
VCL-EMOD 0469-TP	SFP Transceiver, Duplex LC, 14dB, 820nm, 1 Mile / 2Km, MM (Multi-Mode)
VCL-EMOD 0193-TP	SFP Transceiver, Duplex LC, 13dB, 1310nm, 9 Miles / 15Km, SM (Single-Mode)
VCL-EMOD 0194-TP	SFP Transceiver, Duplex LC, 29dB, 1310nm, 25 Miles / 40Km, SM (Single-Mode)
VCL-EMOD 0217-TP	SFP Transceiver, Duplex LC, 29dB, 1550nm, 49 Miles / 80Km, SM (Single-Mode)
VCL-EMOD 0402-TP	SFP Transceiver, Duplex LC, 37dB, 1550nm, 99 Miles / 160Km, SM (Single-Mode)
VCL-EMOD 0171-TP	SFP Transceiver, Duplex LC, 46dB, 1550nm, 111 Miles / 180Km, SM (Single-Mode)
VCL-EMOD 0244-TP	SFP Transceiver, Duplex LC, 47dB, 1550nm, 124 Miles / 200Km, SM (Single-Mode)
VCL-EMOD 0364-TP	SFP Transceiver, Duplex LC, CWDM, 46dB, 1550nm, 161 Miles / 260Km, SM (Single-Mode)
VCL-EMOD 0490-TP	SFP Transceiver, Duplex LC, CWDM, 50dB, 1550nm, 167 Miles / 270Km, SM (Single-Mode)

Technical specifications are subject to changes without notice.

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