Line distance protection REL670
Relion® 670 series Ver. 2.0

Features
- Fully IEC 61850 compliant, Edition 1 and Edition 2
- Extensive I/O capability
- Protection, monitoring and control integrated in one IED
- Extensive self-supervision including analog channels
- Six independent parameter setting groups
- Ethernet interface for fast and easy communication with PC
- Large HMI for visualization of single line diagrams
- Cyber security support for compliance to NERC CIP and IEC 62351-8
- Protection of several primary objects with a single IED

Pre-configured solutions
- Pre-configured and type-tested solutions for:
  - Single breaker with single phase tripping
  - Single breaker with three-phase tripping
  - Multi-breaker with single phase tripping
  - Multi-breaker with three-phase tripping
  - Single breaker for high impedance earthed systems

Most important protection functions
- 6 zone full-scheme high-speed line distance protection
  - Quadrilateral characteristic
  - Mho characteristic
  - Series compensated lines
  - Scheme communication logic
  - Load encroachment discrimination
  - Selective phase selection and automatic switch on to fault logic
  - Current reversal and weak end infeed logic
  - Power swing detection and blocking
  - Phase preference logic
  - Pole slip protection
- 3-phase high impedance differential protection for tee-feeders
- Current
  - Instantaneous phase overcurrent protection
  - Instantaneous residual overcurrent protection
  - Four step phase overcurrent protection with definite and inverse time characteristics
  - Four step residual directional overcurrent protection with definite and inverse time characteristics
  - Four step directional negative sequence overcurrent protection
  - Directional residual overcurrent protection with scheme communication logic
  - Sensitive directional earth-fault protection
- Broken conductor check
- Thermal overload protection
- Breaker failure protection
- Stub protection
- Pole discordance protection

Power functions
- Directional under- and overpower protection

Voltage
- Two step phase- and residual overvoltage protection with definite and inverse time characteristics
- Two step undervoltage protection with definite and inverse time characteristics
- Radial feeder protection
- Overexcitation
- Loss of voltage check

Power system supervision
- Loss of voltage check configured based on undervoltage protection
- Dead line detection included in fuse failure supervision and switch on to fault logic

Secondary system supervision
- Fuse failure supervision
- Fuse supervision based on voltage differential principle
- Current circuit supervision

Frequency functions
- Under- and overfrequency protection
- Rate-of-change frequency protection
- Multi-purpose function
  - Multi-purpose filter with possibility to detect, alarm, and trip for special operating conditions, e.g. SSR
  - General current and voltage protection
  - Voltage controlled/restraint overcurrent protection

Logic
- Tripping logic
- Trip matrix logic
- Extensive logic block library for application customization

Monitoring
- Adjustable breaker monitoring with capability to handle multiple breaker types
- Disturbance recorder
  - 100 disturbances
  - 40 analog channels (30 physical and 10 derived)
  - 96 binary channels
- Event list for 1000 events
- Disturbance report
- Event and trip value recorders
- Fault locator
- Event counters
- Supervision of AC and mA input quantities
- Large HMI with virtual keyboard, function push buttons, and three color LED indications with alarm descriptions

Measurements
- U, I, P, Q, S, f and cos ϕ
- Frequency measurement with accuracy of ± 2 mHz
- Inputs for mA measuring

Metering
- Energy metering function for energy statistics
- Pulse counting support for energy metering

Control functions
- Autorecloser for single or multiple breakers
- Synchronizing, synchrocheck and energizing check
- Control and interlocking for up to 15 switching devices
- Selectable operator place allocation
- Several alternatives for reservation functionality
- Software based multiple position selector switches

Communication
- IEC 61850-8-1 including GOOSE messaging
- IEC 62439-3 parallel redundancy protocol (PRP)
- IEC 61850-9-2 LE Process bus
- IEC 60870-5-103 serial communication
- DNP 3.0, SPA, LON protocols
- Remote communication for transfer of up to 192 binary signals in each direction

Hardware
- 1/1 x 19", 3/4 x 19" or 1/2 x 19", 6U height case selected according to the number of required I/O modules
- Power supply modules from 24 to 250 V DC ± 20%
- TRM input module with 12 analog inputs and optional measurement transformers
- Up to 14 I/O modules in 1/1 x 19" case
- Binary input module with 16 inputs
- Binary output module with 24 outputs
- Static binary output module with 6 static and 6 change-over outputs
- Binary input/output module with 8 inputs and 12 outputs
- mA input module with 6 transducer channels
- Connector types: compression type or ring-lug type
- Accurate time-synchronization through GPS time module, SNTP, DNP 3.0, IEC 60870-5-103, or IRIG-B-module
- Remote end data communication modules for C37.94, direct fiber up to 130 km or via multiplexer
- Supports highest EMC requirements
- Independent laboratory certified

Accessories
- COMBITEST test system
- COMBIFLEX auxiliary relays
- Mounting kits

Documentation
- Role based documentation for high efficiency in engineering, commissioning, operations and maintenance

Technical details are available in the REL670 Product Guide.

For more information please contact:

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