Line distance protection REL650
Relion® 650 series Ver. 2.1

Product features
• Distance protection with autoreclose functionality
• Synchrocheck
• Current and voltage back-up protection
• Control for 1 circuit breaker
• Extensive self-supervision including analog channels
• Six independent parameter setting groups

Communication features
• Fully IEC 61850 compliant, Edition 1 and Edition 2
• IEC 61850-5 Edition 2 GOOSE performance class P1 (3 ms)
• IEC 62439-3 parallel redundancy protocol (PRP)
• Ethernet interface for fast and easy communication with a PC and substation automation system (SAS)

A configured and type-tested solution
• A ready-made application for a single breaker with single or three phase tripping, with 2 or 3 line ends.

Most important protection functions
• Distance protection
  – Full-scheme distance protection with quadrilateral, or mho characteristics for up to six zones
  – Load encroachment
  – Switch onto fault detection
  – Current reversal and weak-end infeed logic
  – Scheme communication logic
• Current
  – Instantaneous phase overcurrent protection
  – Four-step positive (phase) and zero (residual) sequence overcurrent protection with definite and inverse time characteristics
  – Breaker failure protection
  – Pole discordance protection
• Voltage
  – Two step undervoltage protection with definite and inverse time characteristics

• Secondary system supervision
  – Fuse failure supervision
  – Current circuit supervision
  – Open CT detection
• Multipurpose function
  – General current and voltage protection

Monitoring
• Disturbance recorder and disturbance report
  – 100 disturbances
  – 40 analog channels
  – 128 binary channels
• Event list with 1000 events
• Event and trip value recorders
• Fault locator
• Event counters
• Circuit breaker monitoring
• Gas / liquid medium supervision
• Running hour meter
• Large HMI with virtual keyboard, function push buttons, and three color LED indications with alarm descriptions
Logic
• Tripping logic
• Trip matrix logic
• Extensive logic block library for application customization

Control functions
• Synchrocheck, energizing check and synchronizing
• Autorecloser
• Control for 1 circuit breaker, including IEC 61850 data model
• Control for up to 20 additional switching devices through software based multiple position selector switches
• Selectable operator place allocation

Measurements
• U, I, P, Q, S, f and cos ϕ
• Frequency measurement with accuracy of ± 2 mHz

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

Communication
• IEC 61850-8-1 including GOOSE messaging
• IEC 62439-3 parallel redundancy protocol (PRP)
• IEC 60870-5-103 serial communication
• DNP 3.0, SPA, LON protocols

Engineering, testing, commissioning, and maintenance
• Protection and control IED manager PCM600 for configuration, parameterization, online debugging and disturbance handling
• Forcing of binary inputs and outputs for faster and easier test and commissioning
• Flexible product naming by mapping utility IEC 61850 model to that of 650 series model

Hardware
• 1/2 x 19", 6U height case
• Power supply module from 24-60 or 90-250 V DC ± 20 %
• TRM input module with 12 analog inputs
• Up to three I/O modules
  – Binary input module with 16 inputs
  – Binary output module with 24 outputs
  – Binary input/output module with 8 inputs and 12 outputs
• Compression or ring-lug connector types for analog inputs
• Accurate time-synchronization through SNTP, DNP 3.0, IEC 60870-5-103, or IRIG-B
• 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 REL650 Product Guide.

For more information please contact:

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