Breaker protection REQ650
Relion® 650 series Ver. 1.3

Features
• Fully IEC 61850 compliant
• Parallel Redundancy Protocol (PRP) according to IEC 62439-3 Ed.2
• Protection, control and monitoring integrated in one IED
• Extensive self-supervision including analog channels
• Four independent parameter setting groups
• Large HMI for visualization of single line diagrams and on-line measurements
• Accurate time synchronization via SNTP, DNP 3.0, IEC 60870-5-103 and IRIG-B serial interface
• Ethernet interface for fast and easy communication with PC
• Signal matrix for easy configuration of binary and analog signals
• User management and authority handling
• Activity logging
• Available in customized and configured solutions

Configured solutions
• Breaker bay with back-up protection functions, three-phase tripping
• Breaker bay with back-up protection functions, single-phase tripping, single busbar section
• Breaker bay with back-up protection functions, single-phase tripping, two busbar sections

Most important protection functions
• Current
  – Instantaneous phase overcurrent protection
  – Instantaneous residual overcurrent protection
  – Four step directional phase overcurrent protection with definite and inverse time characteristics with 2nd harmonic blocking
  – Four step residual non-directional/directional overcurrent protection with definite and inverse time characteristics and with voltage, current or dual polarization, based on zero sequence or negative sequence quantities with 2nd harmonic blocking
  – Sensitive directional earth-fault protection
  – Thermal overload protection
  – Breaker failure protection
  – Stub protection
  – Pole discordance protection
  – Broken conductor check
  – Two step negative sequence based overcurrent 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
  – Loss of voltage check

• Frequency protection
  – Under- and overfrequency protection
  – Rate-of-change frequency protection

• Secondary system supervision
  – Current circuit supervision
  – Fuse failure supervision
  – Breaker close/trip circuit monitoring

Control functions
• Selective single-phase and three-phase autorecloser
• Synchronizing, synchrocheck and energizing check
• Selectable operator place allocation
• Control of circuit breaker from local/remote
• Versatile switch with two positions
• Selector switch with up to 32 positions
Logic
• Tripping logic
• Trip matrix logic
• Configurable logic blocks
• Configurable logic blocks with quality and time

Monitoring
• Disturbance recorder
  – 100 disturbances
  – 40 analog channels (30 physical and 10 derived)
  – 96 binary channels
• Event list for 1000 events
• User activity logging for 2048 entries
• Disturbance report
• Event and trip value recorders
• Event counters
• Supervision of AC input quantities
• Insulation gas monitoring function
• Insulation liquid monitoring function
• Circuit breaker condition monitoring
• Station battery supervision
• Indication of up to 135 binary signals via 15 three-color-state indication LEDs

Measurements
• U, I, P, Q, S, f and \( \cos \varphi \)
• AC input quantities with accuracy better than 0.5%

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

Communication
• IEC 61850-8-1 including GOOSE messaging
• DNP 3.0 slave protocol
• IEC 60870-5-103 serial communication
• Parallel Redundancy Protocol (PRP) according to IEC 62439-3 Ed.2

Setting, configuration and disturbance handling
• Protection and control IED manager PCM600

Hardware
• 1/1 x 19” width, 3U height case
• 10 analog inputs (5 CT and 5 VT inputs) in configured solutions
• Universal 1A/5A CT inputs
• Choice of communication and processor module with
  – 12 binary inputs, TCP/IP optical, IRIG-B, galvanic RS485 and optical serial communication ports
  – TCP/IP optical with PRP redundancy, IRIG-B, galvanic RS485 and optical serial communication ports
• Binary input/output modules with 9 inputs and 9 outputs
• Possibility to add up to two optional binary input/output modules depending on the selected configured solution
• I/Os customizable to
  – 10 analog inputs (selected combinations of CT/VT inputs) and up to four binary input/output modules
  – 20 analog inputs (selected combinations of CT/VT inputs) and up to two binary input/output modules
• Power supply modules from 24 to 30 V DC, 48 to 250 V DC or 100 to 240 V AC with 9 outputs, 3 of which with trip circuit supervision
• Connector types: compression type or ring-lug type

Technical details are available in the REQ650 Product Guide.

For more information please contact:

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