Transformer protection RET650
Relion® 650 series Ver. 2.1

Product features
• Two or three winding transformer differential protection with current back-up protection functions
• Control for up to 3 circuit breakers
• 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
• For a transformer differential protection for a two or three winding transformer in single breaker arrangements

Most important protection functions
• Transformer differential protection
  – Two or three winding
  – Automatic CT ratio matching and vector group compensation
  – Waveform and second harmonic restraint for transformer inrush
  – Fifth harmonic restraint for over excitation
  – High sensitivity for interturn faults
• Restricted earth-fault protection
  – Low impedance based
• Current
  – Instantaneous phase- and residual overcurrent protection
  – Four-step positive (phase) and zero (residual) sequence overcurrent protection with definite and inverse time characteristics
  – Thermal overload protection
  – Breaker failure protection

• Secondary system supervision
  – Fuse failure supervision
• Multi-purpose 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
• 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
• Control for up to three circuit breakers, including IEC 61850 data model
• Control for up to 20 additional switching devices through software based multiple position selector switches
• Selectable operator place allocation

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 RET650 Product Guide.

For more information please contact:

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