Features

- Fully compliant with IEEE C37.118-2011, including the amendment C37.118.1a-2014
- Single-phase phasor data streaming in addition to positive, negative and zero sequence components
- Multiple synchrophasor data streaming from one device that duplicates the reporting capability
- Redundant time synchronization capability using both built-in GPS and IRIG-B modules
- Support for several and simultaneous TCP/IP and UDP/IP clients
- Fully IEC 61850 compliant, Edition 1 and Edition 2
- Extensive I/O capability
- Extensive self-supervision including analog channels
- Six independent parameter setting groups
- Ethernet interface for fast communication with PC and Phasor Data Concentrator (PDC)
- Large HMI for visualization of single line diagrams
- Cyber security support for compliance to NERC CIP and IEC 62351-8

Most important protection functions

- Impedance
  - Power swing detection
  - Out of step protection
- Voltage
  - Two step overvoltage protection
  - Two step undervoltage protection
- Current
  - Four step phase overcurrent protection
  - Four step residual overcurrent protection
  - Four step directional negative phase sequence overcurrent protection
  - Sensitive directional residual overcurrent and power protection
  - Thermal overload protection, one time constant, Celsius
  - Thermal overload protection, one time constant, Fahrenheit
- Power functions
  - Directional under- and overpower protection
- Secondary system supervision
  - Fuse failure supervision
  - Current circuit supervision
- Frequency functions
  - Under- and overfrequency protection
  - Rate-of-change frequency protection
  - Frequency time accumulation 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

Control functions

- Apparatus control
-Selectable operator place allocation
-Software based multiple position selector switches

Logic

- Tripping logic
- Trip matrix logic
- Extensive logic block library for application customization
- Logic gates with quality and time
Monitoring
- Adjustable breaker monitoring with capability to handle multiple breaker types
- Disturbance recorder
  - 100 disturbances
  - 40 analog channels (30 physical and 10 derived)
  - 352 binary channels
- Event list for 1000 events
- Disturbance report
- Event and trip value recorders
- Event counters
- Supervision of AC and mA input quantities
- Gas medium supervision
- Liquid medium supervision
- Large HMI with virtual keyboard, function push buttons, and 45 three color LED indications with alarm descriptions

Measurements
- U, I, P, Q, S, f and \(\cos \phi\)
- Frequency measurement with accuracy of \(\pm 2\) mHz
- Inputs for mA measuring

Metering
- Energy calculation and demand handling
- Pulse counting support for energy metering

Communication
- Protocol reporting via IEEE 1344 and C37.118
- 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 via RS484
- DNP 3.0 protocols

Engineering, testing, commissioning, and maintenance
- Protection and control IED manager PCM600
- Forcing of binary outputs for faster and easier test and commissioning

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 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 or IRIG-B-module
- 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 RES670 Product Guide.

For more information please contact:

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