Features
- Synchrophasor reporting, monitoring, protection and control integrated in one IED
- IEC 61850 compliant
- Extensive self-supervision including analog channels
- Six independent parameter setting groups
- Large HMI (with up to 12 pages) for visualization of single line diagrams as well as measurements
- Ethernet interface for fast and easy communication with PC and Phasor Data Concentrator (PDC)
- Signal matrix for easy configuration of binary and analog signals
- User management and authority handling

Available solutions
- Customized solutions
- Pre-configured and type-tested station solutions for
  - 3 feeders, single bus (4 phasors)
  - 6 feeders, double bus (8 phasors)

Synchrophasor measurements and reporting
- Synchrophasor data streaming per IEEE C37.118 and IEEE 1344 standards
- Up to eight three-phase phasors (positive, negative or zero sequence)
- Frequency, frequency error, and rate of change of frequency
- Up to 12 configurable binary signals
- Settable reporting rates up to 200/240 frames per second for 50/60Hz
- Configurable phasor formats (polar or rectangular)
- Configurable data format (integer or floating point)
- Configurable anti-aliasing filters optimized for each reporting rate
- Internal GPS receiver for time synchronization
- IRIG-B time synchronization (electrical or optical)
- Synchrophasor data streaming to up to eight independent clients over TCP and/or UDP multicast, simultaneously

Protection functions
- Current
  - Four step phase directional overcurrent protection with definite and inverse time characteristics
- Four step residual overcurrent protection, zero sequence and negative sequence direction, with definite and inverse time characteristics
- Four step directional negative sequence overcurrent protection with definite and inverse time characteristics
- Sensitive directional residual overcurrent and power protection
- Thermal overload protection
- Voltage
  - Two step overvoltage protection with definite and inverse time characteristics
  - Two step undervoltage protection with definite and inverse time characteristics
- Frequency protection
  - Under- and overfrequency protection
  - Rate-of-change frequency protection
- Multipurpose protection
  - General current and voltage protection
- Secondary system supervision
  - Current circuit supervision
  - Fuse failure supervision

Power and productivity for a better world™
Logic
- Tripping logic
- Trip matrix logic
- Configurable logic blocks
- Fixed signal function block

Monitoring
- U, I, P, Q, S, f, and power factor measurements
- AC input quantities as accurate as 0.2% for a wide range
- Supervision of mA input signals
- 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
- Event counters

Metering
- Function for energy calculation and demand handing
- Pulse counters
- Pulse counter logic

Control functions
- Logic rotating switch for function selection and LHMI presentation (Selector Switch Function Block)
- Mini selector switch
- IEC 61850 generic communication I/O functions
- Single point generic control 8 signals
- Command function for DNP3.0 (AutomationBits)
- Single command function for 16 signals

Station communication
- IEEE C37.118 and IEEE 1344 wide area communication standards
- IEC 61850-8-1 station bus communication
- DNP3.0 communication protocol
- Multiple command and transmit
- IEC 62439-3 Parallel Redundancy Protocol

Basic IED functions
- Reporting time-tagged synchrophasor data over IEEE C37.118 and IEEE 1344 standards
- Accurate time synchronization via GPS or IRIG-B

Human Machine Interface
- Status and Alarm indication LEDs
- Large liquid crystal display (LCD)
- Keypad with push buttons
- Isolated RJ45 communication port
- Setting, configuration and disturbance handling
- Protection and Control IED Manager PCM600

Hardware
- 1/1 x 19” 6U height case
- Power supply modules from 24 to 250 V DC ± 20%
- Factory calibrated transformer input modules (TRM)
  - Up to 24 analogue inputs
- Analog to digital conversion module (ADM)
- Up to 14 I/O modules (BIM, BOM, SOM, MIM)
  - Binary input module (BIM) with enhanced pulse counting capabilities (16 inputs)
  - Binary output module (BOM) with 24 outputs
  - Static binary output module (SOM) with 6 fast static and 6 change-over outputs
  - mA input module (MIM) with 6 transducer channels
- Accurate time synchronization module (GTM) with GPS receiver
- IRIG-B time synchronization module (electrical and optical connection)
- Dual optical ethernet module (OEM)
- Galvanic RS485 serial communication module

Technical details are available in the RES670 Product Guide.

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