Bay control REC670
Relion® 670 series Ver. 2.1

Features
- Fully IEC 61850 compliant, Edition 1 and Edition 2
- Extensive I/O capability
- Protection, monitoring and control integrated in one IED
- Extensive self-supervision including analog channels
- Six independent parameter setting groups
- Ethernet interface for fast and easy communication with PC and Substation Automation System
- Large HMI for visualization of single line diagrams
- Settings via IEC 61850 for some protections
- Cyber security support for compliance to NERC CIP and IEC 62351-8 with Centralized Account Management
- Protection of several primary objects with a single IED

Pre-configured solutions
- Pre-configured and type-tested solutions including default settings for:
  - Single breaker
  - Double breaker
  - Bus coupler for double busbar
  - ½ breaker for complete diameter
- Fuse supervision based on voltage differential principle
- Current circuit supervision

Most important protection functions
- Voltage
  - Two step phase- and residual overvoltage protection with definite and inverse time characteristics
  - Two step undervoltage protection with definite and inverse time characteristics
  - Voltage three-phase differential for capacitor banks
  - Loss of voltage check
  - Instantaneous phase- and residual overcurrent protection
  - Four step phase- and residual overcurrent protection
  - Four step directional negative sequence overcurrent protection
  - Sensitive directional earth-fault protection
  - Broken conductor check
  - Thermal overload protection
  - Breaker failure protection
  - Stub protection
  - Pole discordance protection
  - Capacitor bank protection
  - Voltage controlled/restraint overcurrent protection
- Frequency functions
  - Under- and overfrequency protection
  - Rate-of-change frequency 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
  - Voltage controlled/restraint overcurrent protection

Control functions
- Function instances included to cover a complete diameter with one REC670
- Automatic voltage control for a single transformer
- Automatic voltage control for up to 8 parallel transformers based on the minimum circulating current principle or master-follower principle
- Setpoint voltage can be controlled via IEC 61850
- Tap position reading via mA or BCD code
- Control and interlocking for up to 30 switching devices
- Ready to use interlocking for different switchgear arrangements
- Several alternatives for reservation functionality
- Autorecloser for single or multiple breakers
- Synchronizing, synchrocheck and energizing check
- Selectable operator place allocation
- Software based multiple position selector switches
Logic
- Tripping logic
- Trip matrix logic
- Extensive logic block library for application customization

Monitoring
- Adjustable breaker monitoring with capability to handle multiple breaker types
- Disturbance recorder with disturbance report
  - 100 disturbances
  - 40 analog channels (30 physical and 10 derived)
  - 352 binary channels
- Event list for 1000 events
- Event and trip value recorders
- Fault locator
- Event counters
- Running hour meter
- Supervision of AC and mA input quantities
- Large HMI with virtual keyboard, function push buttons, and three color LED indications with alarm descriptions

Measurements
- U, I, P, Q, S, f and cos φ
- Frequency measurement with accuracy of ± 2 mHz
- Inputs for mA measuring

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

Communications
- 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
- DNP 3.0, SPA, LON protocols
- Remote end communication for transfer of up to 192 binary signals in each direction

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 670 series model

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 8 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, SNTP, DNP 3.0, IEC 60870-5-103, or IRIG-B
- Remote end data communication modules for C37.94, direct fiber up to 130 km or via multiplexer
- 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

For more information please contact:

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Technical details are available in the REC670 Product Guide.