6RTV *Automatic Voltage Regulator Terminal*

IEC 61850

Transformer automatic voltage regulation and control

Regulation Functions

- Voltage reference. Set point value control.
- Insensitivity degree to minimize the tap changer operations.
- Adjustable Time Delay.
- Low voltage blocking: to avoid the tap changing operations under network collapse conditions, protecting the motor of the tap changer.
- Over voltage supervision: to protect the consumers near the transformer for excessive overvoltage conditions, due to the “line drop compensation” feature under very high load conditions.
- Over current blocking: to protect the contacts of the tap changer during over current periods.
- Line drop compensation: to control the voltage in locations close to the transformer by two different methods:
  - R/X compensation.
  - Z compensation.
- Detection and operation in reverse power conditions.
- Parallel transformer regulation by one of the following methods:
  - Master/Slave
  - Reactive Compensation.
- The management of the parallel operation is done by communications between the devices by using Virtual I/O or IEC61850 Gooses.
- Taps monitoring:
  - Digital Inputs.
  - BCD Code.
  - Analog inputs with transducers.
- VT/CT Phase difference settings: to allow total flexibility when connecting the CTs and VTs (different polarities and different phases).

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Control Functions

· Local and Remote commands:

- Raise and lower tap.
- Raise and lower setting points.
- Manual/ Auto.
- Local/Remote.

Additional Functions

· Bandwith register and operations.
· Historical metering data logging.
· Demand Register: Voltage, Current, power factor and power.
· Time synchronization (IRIG-B and SNTP).
· Configurable LEDs.
· Configurable digital inputs.
· Configurable digital outputs.
· Communication program ZIVercomplus®.

Metering Functions

· Voltage load.
· Source voltage.
· Compensated load voltage.
· Load current.
· Power factor
· Apparent, Active and Reactive power.
· Frequency.
· Active, Direct and Inverse Energy.
· Inductive and Capacitive reactive Energy.

Communications

The device includes, as standard, three communication protocols:

PROCOME, MODBUS & DNP3.0. Selectable models include 100FX (Fiber Optic Ethernet) or RJ45 ports for IEC61850 communications standard. This allows the intercommunication of all kinds of information between the device and other levels in the substation, as well as between devices in the same level. It is based in open accepted standards (Ethernet) and allows auto-description.

Ports

· Front Port (COM 1): For local communications.
· Rear port P1, P2, P3 for remote communications.
· Rear ports LAN1 and LAN2 for remote communications.

Protocols

PROCOME, MODBUS, DNP3.0, IEC61850

Physical Interface

RS232, USB, FO Glass, FO plastic, RS232 Full Model, RS232-RS485, 100TX (RJ45, ST).

Redundancy Options

No Redundancy, Bonding Redundancy, PRP redundancy.

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ten year product warranty 10

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