

8IDV

Differential Protection Control & Metering IED



**IEC 61850
Compatible**

A complete and innovative solution for transformer bays and other machines

Protection Functions

- 87** Three-phase differential with percentage and harmonic restraint.
- 87/50** Instantaneous three-phase differential without restraint.
- 50** Instantaneous phase overcurrent per winding (3 units/winding).
- 50Q** Instantaneous negative sequence overcurrent per winding (2 units/winding).
- 50N** Calculated (3I0) instantaneous ground overcurrent per winding (2 units/winding).
- 50G** Instantaneous ground overcurrent with independent input (ground) (2 units per ground channel).
- 51** Time delay phase overcurrent (inverse/definite) per winding (2 units/winding).
- 51Q** Time delay negative sequence overcurrent (inverse/definite) per winding (2 units/winding).
- 51N** Calculated (3I0) time delay neutral overcurrent (inverse/definite) per winding (2 units/winding).
- 51G** Time delay ground overcurrent (inverse/definite) with independent input (ground) (2 units per ground channel).
- 67N** Directional ground overcurrent polarized by current.
- 49** Thermal unit (to protect against aging of the insulation) (1 unit/winding).
- 50BF** Breaker failure (1 unit/winding).
- 87N** Restricted earth fault (2 units per ground channel).
- 24** Overexcitation unit, also known as V/Hz or 59/81 (1 unit).
- 27** Undervoltage (2 units) (selectable input Ph-Ph or Ph-N).
- 59** Overvoltage (2 units) (selectable input Ph-Ph or Ph-N).
- 64** Ground overvoltage element for open delta connection (2 units)
- 81M** Overfrequency (4 units).
- 81m** Underfrequency (4 units).
- 81D** Frequency rate of change (4 units).
- 50FA** 3rd winding overcurrent (1 instantaneous unit and 1 harmonic restraint unit).





Control Functions

- Automatic Voltage Control.
- Reset 86 (lockout) through dedicated pushbutton.
- Additional (6) programmable pushbuttons.
- Full Configurable Control Logic.
- Local and Remote Control Commands.
- Connection capabilities to higher level (RTU, SCADA, etc.).

Metering

- Calculated (3I0) phase and ground currents per winding .
- Ground currents.
- Differential currents per phase.
- Restraint currents per phase.
- Current harmonics per winding.
- Differential ground current on each ground channel.
- Phase and ground voltage.
- Direct, inverse and zero sequence currents per winding.
- Active, reactive and apparent power.
- Power factor ($\cos \varphi$).
- Frequency.
- Thermal image.
- Energy.

Additional Functions

- Cold load pickup.
- Frequency load shedding.
- Sequence of events recorder with programmable metering recording.
- Fault reports.
- Oscillography (32 samples/cycle).
- Metering log.
- Integrated simulator.
- Zero-sequence filter.
- Time synchronization (IRIG-B, DNP, PROCOME).
- Phase shift and tap compensation.
- Configurable REF protection for autotransformers application.
- General lockout (86).
- Alphanumeric display and keypad.
- 4 selectable setting groups.
- IEC, IEEE (ANSI) and US selectable curves.
- 5 to 17 programmable LED targets.
- Programmable digital inputs and auxiliary outputs.
- 4/6 Trip contact outputs.
- Analog contact inputs for tap changer, converters and RTD connection.
- Up to 3 command circuits supervision.
- Breakers monitoring (kA^2 and number of trips).
- Standard DNP, MODBUS, and PROCOME.
- New **vercompus**® software package.



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