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SIPROTEC 7SD82

Line differential protection relay

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Description

The SIPROTEC 7SD82 line differential protection has been designed particularly for the cost-optimized and compact protection of lines in medium-voltage and high-voltage systems. With its flexibility and the powerful DIGSI 5 engineering tool, SIPROTEC 7SD82 offers future-oriented system solutions with high investment security and low operating costs.

Main function	Differential protection for medium-voltage and high voltage applications
Tripping	3-pole, minimum tripping time: 19 ms
Inputs and outputs	4 current transformers, 4 voltage transformers (optional), 11 or 23 binary inputs, 9 or 16 binary outputs
Hardware flexibility	Two different quantity structures for binary inputs and outputs are available in the 1/3 base module. Adding 1/6 expansion modules is not possible; housing width available with large or small display
Housing width	1/3 × 19"

Applications

- Line protection for all voltage levels with 3-pole tripping
- Phase-selective protection of overhead lines and cables with single-ended and multi-ended infeed of all lengths with up to 6 line ends
- Transformers and compensating coils in the protection zone
- Detection of ground faults in isolated or arc-suppression-coilground power systems in star, ring, or meshed arrangement

Line differential protection relay SIPROTEC 7SD82

- Serial protection data communication over different distances and media, such as optical fiber, two-wire connections, and communication networks
- Phasor measurement unit (PMU)

Functionality

DIGSI 5 permits all functions to be configured and combined as required.

- Minimum tripping time: 19 ms
- Main protection function is differential protection with adaptive algorithm for maximum sensitivity and stability even with the most different transformer errors, current-transformer saturation and capacitive charging currents
- Directional backup protection and various additional functions
- Recognition of static, intermittent and transient ground faults (fleeting contact function) in arc-suppression-coil-ground and isolated power systems

Compact and communicative

- Detection of current-transformer saturation
- Arc protection
- Power protection, configurable as active or reactive power protection
- Reactive power-undervoltage protection (QU protection)
- Detection of current and voltage signals up to the 50th harmonic with high accuracy for selected protection functions (such as thermal overload protection) and operational measured values
- Control, synchrocheck and switchgear interlocking protection
- Graphical logic editor to create powerful automation functions in the device
- Single line representation in small or large display
- Integrated electrical Ethernet RJ45 for DIGSI 5 and IEC 61850 (reporting and GOOSE)
- Two optional pluggable communication modules, usable for different and redundant protocols (IEC 61850, IEC 60870-5-103, IEC 60870-5-104, Modbus TCP, DNP3 serial and TCP, PROFINET IO)
- Serial protection data communication via optical fibers, two-wire connections and communication networks (IEEE C37.94, and others), including automatic switchover between ring and chain topology
- Redundancy protocols PRP and HSR
- Cyber security in accordance with NERC CIP and BDWE Whitepaper requirements
- Phasor measurement unit (PMU) for synchrophasor measured values and IEEE C37.118 protocol
- Time synchronization using IEEE 1588
- Powerful fault recording (buffer for a max. record time of 80 s at 8 kHz or 320 s at 2 kHz)
- Auxiliary functions for easy tests and commissioning

Benefits

- Compact and low-cost line differential protection
- Safety due to powerful protection functions
- Data security and transparency over the entire lifecycle of the plant save time and money
- Purposeful and simple operation of the devices and software thanks to user-friendly design
- Increased reliability and quality of the engineering process
- Consistent implementation of high safety and security mechanisms
- Powerful communication components ensure safe and effective solutions
- Full compatibility between IEC 61850 Editions 1 and 2
- High investment security and low operating

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