SIEMENS

ENERGY AUTOMATION PRODUCTS

Line differential protection relay

SIPROTEC 7SD82

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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 high-performance DIGSI 5 engineering tool, the SIPROTEC 7SD82 device offers future-oriented solutions for protection, control, automation, monitoring, and Power Quality – Basic.

Benefits

- Compact and low-cost line differential protection
- Safety due to powerful protection functions
- Purposeful and easy handling of devices and software thanks to a user-friendly design
- Cybersecurity in accordance with NERC CIP and BDEW Whitepaper requirements
- Highest availability even under extreme environmental conditions by standard coating of the modules

Highlights

Full compatibility between IEC 61850 Editions 1, 2.0 and 2.1

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

PQ – Basic: Voltage unbalance; voltage changes: overvoltage, dip, interruption; TDD, THD, and harmonics

Protection Functions

- 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
- Detection of current-transformer saturation
- Fault locator plus for accurate fault location with inhomogenous line sections and targeted automatic overhead-line section reclosing (AREC)
- Arc protection
- Automatic frequency relief for underfrequency load shedding, taking changed infeed conditions due to decentralized power generation into consideration
- Power protection, configurable as active or reactive power 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
- Graphical logic editor to create powerful automation functions in the device
- Single-line representation in small or large display
- Time synchronization using IEEE 1588
- Powerful fault recording (buffer for a max. record time of 80 sec. at 8 kHz or 320 sec. at 2 kHz)
- Auxiliary functions for simple tests and commissioning

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

Main function	Differential protection for medium-voltage and high voltage applications Interoperability of SIPROTEC 5 and SIPROTEC 4 line protection devices
Tripping	3-pole, minimum tripping time: 19 ms
Inputs and outputs	4 current transformers, 4 voltage transformers, 11 or 23 binary inputs, 9 or 16 binary outputs
Hardware flexibility	2 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 inches

Communication and cybersecurity features

- Integrated electrical Ethernet RJ45 for DIGSI 5 and IEC 61850 (reporting and GOOSE)
- 2 optional pluggable communication modules, usable for different and redundant protocols
- Serial protection data communication via optical fibers, two-wire connections and communication networks (SDH networks, MPLS electrical power systems, for example using IEEE C37.94, and others), including automatic switchover between ring and chain topology.
- Reliable data transmission via PRP and HSR redundancy protocols
- Extensive cybersecurity functionality, such as role based access control (RBAC), logging security-related events, signed firmware or authenticated IEEE 802.1X network access.
- Simple, fast and secure access to the device via a standard Web browser to display all information and diagnostic data, vector diagrams, single-line and device display pages
- Serial protection communication with SIPROTEC 5 and SIPROTEC 4 devices over different distances and physical media, such as optical fiber, two-wire connections, and communication networks

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PRO Tips - SIPROTEC 5

SIPROTEC 5 Configurator

Online Shop - Industry Mall