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SIPROTEC 7SJ81

Feeder and overcurrent protection

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Description

The SIPROTEC 7SJ81 overcurrent protection has specifically been designed for a cost-effective and compact protection of feeders and lines in medium-voltage systems. With its flexibility and the powerful DIGSI 5 engineering tool, the SIPROTEC 5-device offers future-oriented system solutions with high investment security and low operating costs.

Main function	Feeder and overcurrent protection
Inputs and outputs	4 current transformers, 11 binary inputs, 9 binary outputs 4 current transformers, 18 binary inputs, 14 binary outputs 4 current transformers, 4 voltage transformers, 11 binary inputs, 9 binary outputs 4 current transformers, 4 voltage transformers, 16 binary inputs, 11 binary outputs
Hardware flexibility	Different hardware quantity structures for binary inputs and outputs are available in the 1/3 base module. 1 plug-in module position, available with large or small display
Housing width	1/3 × 19 inches

Applications

- Detection and selective 3-pole tripping of short circuits in electrical equipment of star networks, lines with infeed at one or two ends, parallel lines and open-circuited or closed ring systems of all voltage levels
- Detection of ground faults in isolated or arc-suppression-coilground power systems in star, ring, or meshed arrangement
- Backup protection for differential protection devices of all kind for lines, transformers, generators, motors, and busbars
- Universal line protection
- Simple load shedding applications



SIPROTEC 7SJ81

Functions

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

- Directional and non-directional overcurrent protection with additional functions
- Detection of ground faults of any type in compensated or isolated electrical power systems using the following functions: 3I0>, V0>, fleeting contact, $\cos \varphi$, $\sin \varphi$, dir. detection of intermittent ground faults and admittance
- Arc protection (note the resulting communication restrictions)
- Overvoltage and undervoltage protection
- Frequency protection and frequency change protection for load shedding applications
- Power protection, configurable as active or reactive power protection
- Directional reactive power undervoltage protection (QU protection)

Compact and flexible

- Control with switchgear interlocking protection
- Synchrocheck
- Circuit-breaker failure protection
- Detection of current and voltage signals up to the 50th harmonic with high accuracy for selected protection functions and operational measured values
- 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)
- 1 optional, plug-in module for a) communication protocols or b) for arc protection
- Redundant and simple communication protocols according to IEC 61850, IEC 60870-5-103, IEC 60870-5-104, Modbus TCP, DNP3 serial and TCP, PROFINET IO
- Reliable data transmission via PRP and HSR redundancy protocols
- Extensive cyber security functionality, such as role-based access control (RBAC), protocolling security-related events or signed firmware
- Simple, quick and secure access to device data via a standard Web browser - without additional software
- Time synchronization using IEEE 1588
- Standard fault recording (buffer for a max. record time of approx. 40 sec. at 2 kHz)
- Auxiliary functions for simple tests and commissioning

Benefits

- Compact and low-cost overcurrent protection
- Safety due to powerful protection functions
- Data security and transparency over the entire lifecycle of the plant, saving time and money
- Purposeful and easy handling of devices and software thanks to a user-friendly design
- Increased reliability and quality of the engineering process
- Cyber security according to NERC CIP and BDEW Whitepaper requirements (for example, logging security-related events and alarms)
- Highest availability even under extreme environmental conditions by "conformal coating" of electronic boards
- High-performance communication components warrant safe and effective solutions
- Full compatibility between IEC 61850 Editions 1 and 2
- High investment security and low operating costs due to future-oriented system solutions



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For all products using security features of OpenSSL, the following shall apply:

This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (www.openssl.org), cryptographic software written by Eric Young (eay@cryptsoft.com) and software developed by Bodo Moeller.