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SIPROTEC 7SJ85

Feeder and overcurrent protection

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Description
The SIPROTEC 7SJ85 overcurrent protection has been designed specifically for the protection of feeders and lines. With its modular structure, flexibility and the powerful DIGSI 5 engineering tool, SIPROTEC 7SJ85 device offers future-oriented system solutions with high investment security and low operating costs.

Main function	Feeder and overcurrent protection for all voltage levels
Inputs and outputs	5 predefined standard variants with 4 current transformers, 4 voltage transformers, 11 to 59 binary inputs, 9 to 33 binary outputs
Hardware flexibility	Flexibly adjustable and expandable I/O quantity structure within the scope of the modular SIPROTEC 5 system; 1/6 expansion modules can be added, available with large or small display, or without display
Housing width	1/3 × 19 inch to 2/1 × 19inch

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 or closed ring systems of all voltage levels
- Backup protection for differential protection devices of all kind for lines, transformers, generators, motors, and busbars
- Protection and monitoring of capacitor banks
- Phasor Measurement Unit (PMU)
- Reverse-power protection

Feeder and overcurrent protection SIPROTEC 7SJ85 (housing width 1/3 x 19" to 2/1 x 19")

- Load shedding applications
- Automatic switchover

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

- Directional and non-directional overcurrent protection with additional functions
- Protection of up to 9 feeders with up to 40 analog inputs
- Optimized tripping times due to directional comparison and protection data communication
- Arc protection
- Overvoltage and undervoltage protection

Efficient and modular

- Detection ground faults of any type in isolated or arc-suppression-coil-ground systems using the following functions: 3I0>, V0>, fleeting contact, Cos-/SinPhi, harmonic, dir. detection of intermittent ground faults and admittance
- Ground fault detection using the pulse location method
- Power protection, configurable as active or reactive power protection
- Frequency protection and frequency change protection for load shedding applications
- Automatic frequency relief for load shedding in case of underfrequency, taking account of changed infeed conditions due to decentralized power generation
- Protection functions for capacitor banks, such as over-current, overload, current unbalance, peak overvolt-age, or differential protection
- Reactive power-undervoltage protection (QU protection)
- Recognition of current and voltage signals up to the 50th harmonic with high accuracy for selected protec-tion functions (such as peak overvoltage protection for capacitors) and operational measured values
- Control, synchrocheck and switchgear interlocking protection
- Circuit-breaker failure protection
- Circuit-breaker reignition monitoring
- 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)
- 2 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 fi-bers, two-wire connections and communication networks (IEEE C37.94, and others), including auto-matic switchover between ring and chain topology.
- Redundancy protocols PRP and HSR
- Cyber security to 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 sec. at 8 kHz or 320 sec. at 2 kHz)
- Auxiliary functions for easy tests and commissioning

Benefits

- Compact and cost effective feeder protection device
- High-performance protection features guarantee safety
- Data security and transparency throughout the entire life cycle of the system save time and reduce costs
- Clear and easy-to-use devices and software thanks to user-friendly design
- Increased quality and reliability of the engineering process
- High degree of overall safety and security based on thorough implementation
- High-performance communications components guarantee safe and effective solutions
- Full compatibility with IEC 61850 Edition 1 and 2
- Future proof system solutions provide high invest-ment security and low operation costs

Siemens AG
Energy Management Division
Freyeslebenstraße 1
91058 Erlangen, Germany

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E-Mail: support.energy@siemens.com
Tel: +49 180 524 70 00

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) and cryptographic software written by Eric Young (eay@cryptsoft.com).