



ENERGY AUTOMATION PRODUCTS

Feeder and Overcurrent Protection **SIPROTEC 7SJ82**

[siemens.com/7SJ82](https://www.siemens.com/7SJ82)

The SIPROTEC 7SJ82 overcurrent protection has been designed specifically for a cost-effective and compact protection of feeders and lines in medium-voltage and high-voltage systems. With its flexibility and the high-performance DIGSI 5 engineering tool, the SIPROTEC SJ82 device offers future-oriented solutions for protection, control, automation, monitoring, and Power Quality – Basic.



Benefits

- Compact and low-cost overcurrent protection
- Safety due to powerful protection functions
- Purposeful and easy handling of devices and software thanks to a user-friendly design
- Cybersecurity according to NERC CIP and BDEW Whitepaper requirements (for example, logging security-related events and alarms)
- Highest availability even under extreme environmental conditions by standard coating of the modules
- Full compatibility between IEC 61850 Editions 1, 2.0, and 2.1

Highlights



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



Graphical logic editor to create powerful automation functions in the device



Automatic frequency relief for underfrequency load shedding, taking changed infeed conditions due to decentralized power generation into consideration

Protection Functions

- Directional and non-directional overcurrent protection
- Optimized tripping times due to directional comparison and protection data communication
- Detection of ground faults of any type in compensated or isolated electrical power systems using the following functions: 3I0>, V0>, transient ground-fault function, $\cos \varphi$, $\sin \varphi$, dir. detection of intermittent ground faults, harmonic detection, and admittance measurement
- Ground-fault detection using the pulse-detection method
- Detection of intermittent ground faults with automatic blocking of statically measuring functions to avoid message flooding
- Fault locator plus for accurate fault location with inhomogenous line sections and targeted automatic overhead-line section reclosing (AREC)
- Arc protection
- Overvoltage and undervoltage protection
- Frequency protection and frequency change protection for load shedding applications
- Power protection, configurable as active or reactive
- Protection functions for capacitor banks, such as overcurrent, overload, current unbalance, peak overvoltage, or differential protection
- QU protection
- Control, synchrocheck and switchgear interlocking protection, circuit-breaker failure protection
- Circuit-Breaker Failure Protection
- Circuit breaker reignition monitoring
- Powerful fault recording (buffer for a max. record time of 80 sec. at 8 kHz or 320 sec. at 2 kHz)

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-coil-ground power systems
- Backup protection for differential protection devices of all kind for lines, transformers, generators, motors, and busbars
- Protection and monitoring of simple capacitor banks
- Phasor Measurement Unit (PMU)
- Load shedding applications
- Automatic switchover
- Detection and recording of power-quality data

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Main function	Feeder and overcurrent protection for all voltage levels
Inputs and outputs	4 current transformers, 4 voltage transformers (optional), 11 or 23 binary inputs, 9 or 16 binary outputs, or 8 current transformers, 7 binary inputs, 7 binary outputs
Hardware flexibility	Different hardware quantity structures for binary inputs and outputs are available in the 1/3 base module. Adding 1/6 expansion modules is not possible; available with large or small display
Housing width	1/3 × 19 inches

Communication and Cybersecurity Functions

- PQ – Basic: Voltage unbalance; voltage changes: over-voltage, dip, interruption; TDD, THD, and harmonics
- 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 61850-8-1, 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
- Reliable data transmission via PRP and HSR redundancy protocols
- Extensive cybersecurity functionality, such as role-based access control (RBAC), logging of 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 Whitepaper
- Phasor Measurement Unit (PMU) for synchrophasor measured values and IEEE C37.118 protocol

 [SIPROTEC 5 Webinars](#)

 [Online Shop - Industry Mall](#)

 [SIPROTEC 5 - Catalog](#)

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