

# SIEMENS

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## SIPROTEC 7SJ82

Feeder and overcurrent protection

[www.siemens.com/siprotec](http://www.siemens.com/siprotec)

### Description

The SIPROTEC 7SJ82 overcurrent protection has specifically been designed for a cost-effective and compact protection of feeders and lines in medium-voltage and high-voltage systems. With its flexibility and the powerful DIGSI 5 engineering tool, the SIPROTEC 7SJ82 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	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

### 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
- Protection and monitoring of simple capacitor banks
- Phasor Measurement Unit (PMU)



SIPROTEC 7SJ82

- Reverse-power protection
- Load shedding applications
- Automatic switchover
- Regulation or control of power transformers (two-winding transformers)

### Functions

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

- Directional and non-directional overcurrent protection with additional functions
- 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>, fleeting contact,  $\cos \phi$ ,  $\sin \phi$ , harmonic, dir
- Detection of intermittent ground faults and admittance

# Compact and flexible

- Ground fault detection using the pulse detection method
- Arc protection
- Overvoltage and undervoltage protection
- Frequency protection and frequency change protection for load shedding applications
- 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
- Protection functions for capacitor banks, such as overcurrent, overload, current unbalance, peak overvoltage, or differential protection
- Directional reactive power undervoltage protection (QU protection)
- Control, synchrocheck and switchgear interlocking protection, circuit-breaker failure protection
- Circuit-Breaker Failure Protection
- Circuit breaker reignition monitoring
- Graphical logic editor to create powerful automation functions in the device
- Detection of current and voltage signals up to the 50th harmonic with high accuracy for selected protection functions (such as peak overvoltage protection for capacitors) and operational measured values
- 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 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 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
- Whitepaper Phasor Measurement Unit (PMU) for synchrophasor measured values and IEEE C37.118 protocol
- Time synchronization using IEEE 1588
- Control of Power Transformers
- 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

## 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
- Increased reliability and quality of the engineering process
- Highest availability even under extreme environmental conditions by "conformal coating" of electronic boards
- Full compatibility between IEC 61850 Editions 1 and 2



## Siemens AG

Energy Management Division  
Freyeslebenstraße 1  
91058 Erlangen, Germany

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E-Mail: [support.energy@siemens.com](mailto:support.energy@siemens.com)  
Tel: +49 180 524 70 00

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