



## ENERGY AUTOMATION PRODUCTS

# Universal Protection Relay

## SIPROTEC 7SX85

[siemens.com/7SX85](https://www.siemens.com/7SX85)

The SIPROTEC 7SX85 is a comprehensive relay designed for universal protection, control, and automation across all voltage levels. This versatile protection device smoothly integrates into the operating processes within the power supply chain, catering to utilities, industry, and infrastructure. By adopting this device, users can fully harness the capabilities of the entire SIPROTEC 5 system platform, thus enhancing performance and reliability.



### Benefits

- Optimization of investment and operating costs: Time and cost savings during project planning as well as significant reduction of logistics and spare part costs
- Full flexibility until shortly before commissioning, easy function adjustment via the function point manager
- Migration of existing device specific application templates and parameterizations (7SA86, etc.)
- Optimally suited for retrofit applications

### Highlights



Cybersecurity in accordance with NERC CIP and BDEW Whitepaper requirement



Full compliance with IEC 61850 Editions 1, 2.0, and 2.1



PQ-Basic: voltage unbalance, voltage changes, overvoltage, dip, interruption, TDD, THD and Harmonics

## Protection Functions

- Distance protection with a wide variety of pickup methods
- Differential protection of overhead lines and cables of all lengths with up to 6 line ends fed from one or more sides
- Protection of motors and generators against thermal overload of the stator and the rotor due to overcurrent, cooling problems or restarts
- Monitoring the thermal state and the bearing temperatures with temperature measurement
- Detection of idling drives of e. g. pumps and compressors
- Reverse power protection
- Protection of capacitance banks, such as overcurrent, overload, current unbalance, peak overvoltage, or differential protection
- Directional reactive power undervoltage protection (QU protection)
- Protection against instability due to undervoltage
- Serial protection communication over different distances and physical media, such as optical fiber, two-wire connections, and communication networks
- Busbar protection up 8 bays and 1 zone
- Process bus functionalities: Merging Unit or PB Client

## Select & customize your device from 4 hardware variants and feature catalog

- 4 predefined standard variants with
  - 4/4 I/U converter and 11/9 BI/BO or
  - 4/4 I/U converter and 7/14 BI/BO or
  - 8/0 I/U converter and 7/7 BI/BO or
  - 0/0 I/U converter and 19/11 BI/BO or
  - configure optional SIPROTEC 7SX85 from the modular hardware catalog to suit your needs
- Max. 443 binary inputs, 225 binary outputs and 64 analog inputs
- Load the required functions from the extensive SIPROTEC 5 function library into the device configuration simply by dragging and dropping them with the powerful DIGSI 5 configuration tool
- The range of functions that can be used in the device is determined by the specified Function Point Class
- If required, simply extend the Function Point Class in a few minutes via the new SIPROTEC Function Point Manager application

For grid operators: easy adaptation when network conditions change after commissioning, e. g. use as line differential protection instead of distance protection

For industrial applications: simple addition of necessary motor or frequency protection functions to the feeder protection

For energy producers: Easy adaptation of device functions when connecting regenerative feeders

## Applications

- Protection and control of feeders, lines, transformers, motors, generators, and capacitance banks
- Detection and selective 1-pole and 3-pole tripping of short-circuits
- Detection of ground faults of any type in compensated or isolated electrical power systems using the following functions: 3I0>, V0>, transient ground fault,  $\cos \varphi$ ,  $\sin \varphi$ , dir. detection of intermittent ground faults, harmonic detection, and admittance measurement
- Arc-suppression Coil (ASC) Control
- Centralized Protection and Control Solutions (up 12 bays)


## Automation, control, and monitoring

- Automatic frequency unloading for load shedding in case of underfrequency, considering changed feed-in conditions due to decentralized power generation
- Synchronization of generators (power plant units) with the power grid or synchronization of 2 power grids for up to 4 synchronization points
- Automatics, controls, synchrocheck and protection against switching faults
- Voltage controller function for two-winding transformers, three-winding transformers and grid coupling transformers
- Phasor Measurement Unit (PMU)


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 PRO Tips - SIPROTEC 5

 SIPROTEC 5 Configurator

 Online Shop - Industry Mall

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