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# SIPROTEC 7SK85

## Motor Protection

www.siemens.com/siprotec

### Description

The SIPROTEC 7SK85 motor protection device is designed for the protection of motors of all sizes. With its modular structure, flexibility and the powerful DIGSI 5 engineering tool, SIPROTEC 7SK85 offers future-oriented system solutions with high investment security and low operating costs.

| | |
|---|---|
| Main function | Motor protection for motors of all sizes |
| Inputs and outputs | 3 predefined standard variants with 4 current transformers, 4 voltage transformers, 11 to 27 binary inputs, 9 to 17 binary outputs |
| Hardware flexibility | Flexibly adjustable and expandable I/O quantity structure within the scope of the modular SIPROTEC 5 system.<br>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 × 19 inch |

### Benefits

- Safety due to powerful protection functions
- Data security and transparency over the entire lifecycle of the plant save time and money
- Purposeful and simple operation of the devices and software thanks to user-friendly design
- Increased reliability and quality of the engineering process
- High safety due to a consistent implementation of safety and security
- Powerful communication components ensure safe and effective solutions
- Full compatibility between IEC 61850 Editions 1 and 2

SIPROTEC 7SK85

- High investment security and low operating costs due to future-oriented system solution

### Functions

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

- Motor protection functions: Startup time monitoring, thermal overload protection for stator and rotor, restart inhibit, unbalanced-load protection, load-jam protection
- Stator and bearing temperature monitoring via temperature sensors with external RTD unit
- Differential motor protection as fast short-circuit protection for motors of high power
- Sensitive ground-fault protection (directional, non-directional) to detect stator ground faults
- Directional and non-directional overcurrent protection (short-circuit protection) with additional functions

# Modular and efficient

- Detection of ground faults of any type in isolated or arc-suppression-coil-ground power 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
- Overvoltage and undervoltage protection
- Arc protection
- Power protection, configurable as active or reactive power protection
- Detection of current and voltage signals up to the 50$^{th}$ harmonic with high accuracy for selected protection functions (such as thermal overload protection) and operational measured values
- Control, synchrocheck and switchgear interlocking protection
- Graphical logic editor to create powerful automation functions in the device
- Integrated electrical Ethernet RJ45 for DIGSI 5 and IEC 61850 (reporting and GOOSE)
- Up to 4 pluggable communication modules, usable for different and redundant protocols (IEC 61850, IEC 60870-5-103, IEC 60870-5-104, DNP3 serial and TCP, Modbus TCP, PROFINET IO)
- Redundancy protocols PRP and HSR
- Cyber security to NERC CIP and BDWE Whitepaper requirements
- Secure serial protection data communication, even over great distances and all available physical media (optical fiber cable, 2-wire connections and communication networks)
- Capturing operational measured variables and protection function measured values to evaluate the plant state, to support commissioning, and to analyze faults
- Synchrophasor measured values with the IEEE C37.118 protocol integrated (PMU)
- 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
- Flexibly adjustable I/O quantity structure within the scope of the SIPROTEC 5 modular system

**Applications**

- Protection against thermal overload of the stator from overcurrent, cooling problems or pollution
- Protection against thermal overload of the rotor during startup due to: Frequent startups, excessively long startups or blocked rotor
- Monitoring for voltage unbalance or phase outage
- Monitoring the thermal state and the bearing temperatures with temperature measurement
- Detection of idling drives of pumps and compressors, for example
- Detection of ground faults in the motor
- Protection against motor short circuits
- Protection against instability due to undervoltage

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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.