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SIPROTEC 7SK85

Motor Protection

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Description

The SIPROTEC 7SK85 motor protection device is designed for the protection of motors of all sizes. With its modular structure, flexibility and the high-performance DIGSI 5 engineering tool, SIPROTEC 7SK85 offers future-oriented solutions for protection, control, automation, monitoring, and Power Quality – Basic.
For motors in explosive environments, the SIPROTEC 7SK85 is also available with EN 60079-14 or VDE 0165, Part 1, ATEX (Verband der Elektrotechnik, Elektronik und Informationstechnik) certification.

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. 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

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.

SIPROTEC 5 Device with Expansion Module

- Detection and recording of power-quality data in the medium-voltage and subordinate low-voltage power system

Functions

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

- Motor protection functions: Starting time supervision, thermal overload protection for stator and rotor, restart inhibit, unbalanced-load protection, load-jam protection
- Stator and storage-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 (non-directional, directional) to detect stator ground faults
- Directional and non-directional overcurrent protection (shortcircuit protection) with additional functions
- Ground-fault detection using the pulse-detection method
- Overvoltage and undervoltage protection

Modular and efficient

- Detection of ground faults of any type in compensated or isolated electrical power systems using the following functions: 3I0>, V0>, transient ground fault, cos ϕ, sin ϕ, harmonic, dir. detection of intermittent ground faults and admittance
- Arc protection
- Power protection, configurable as active or reactive-power protection
- Detection of current and voltage signals up to the 50th harmonic with high accuracy for selected protection functions (such as thermal overload protection) and operational measured values
- PQ – Basic: Voltage unbalance; voltage changes: overvoltage, dip, open circuit; TDD, THD, and harmonics
- Control, synchrocheck, and switchgear interlocking protection
- Graphical logic editor to create high-performance automation functions in the device
- Fixed integrated electrical Ethernet RJ45 interface for DIGSI 5 and IEC 61850 (reporting and GOOSE)
- Up to 4 pluggable communication modules, usable for different and redundant protocols (IEC 61850-8-1, IEC 61850-9-2 Client, IEC 60870-5-103, IEC 60870-5-104, Modbus TCP, DNP3 serial and TCP, PROFINET IO, PROFINET IO S2 redundancy)
- Virtual network partitioning (IEEE 802.1Q - VLAN)
- Reliable data transmission via PRP and HSR redundancy protocols
- Certification for use in environments at risk of explosion (EN 60079-14 or VDE 0165, Part 1, ATEX)
- 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
- Secure serial protection communication, also over great distances and all available physical media (optical fiber, twowire connections, and communication networks)
- Detecting operational measured variables and protectionfunction measured values to evaluate the systems, to support commissioning, and to analyze faults
- Synchrophasor measured values with the IEEE C37.118 protocol integrated (PMU)
- High-performance fault recording (buffer for a max. record time of 80 s at 8 kHz or 320 s at 2 kHz)
- Auxiliary functions for simple tests and commissioning
- Flexibly adjustable I/O quantity structure within the scope of the SIPROTEC 5 modular system

Benefits

- Safety due to powerful protection functions
- Purposeful and easy handling of devices and software thanks to a user-friendly design
- Cybersecurity in accordance with NERC CIP and BDEW Whitepaper requirements
- 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

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