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SIPROTEC 7UM85

Generator protection

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Description

The SIPROTEC 7UM85 generator protection device has been designed specifically for the protection of generators and power plant units. It contains all necessary main protection functions and a large number of other protection and monitoring functions. With its modular structure, flexibility and the powerful DIGSI 5 engineering tool, SIPROTEC 7UM85 offers future-oriented system solutions with high investment security and low operating costs.

Main function	Typical generator protection functions
Inputs and outputs	3 predefined standard variants with up to 8 current transformers and 8 voltage transformers, 7 to 15 binary inputs, 9 to 20 binary outputs 2 additional standard variants with 4 additional measuring transducers are in preparation
Hardware flexibility	I/O quantity structure that can flexibly be adapted and expanded within the scope of the modular SIPROTEC 5 system. 1/6 expansion modules can be added, available with large, small or without display
Housing width	1/3 x 19" to 2 x 19"

Applications

- Protection of generators in busbar connection of different power, with directional stator ground-fault protection
- Protection of generators in unit connection of different power (using the 100% stator ground fault (20 Hz)) with larger generators



Generator protection SIPROTEC 7UM85 (width: 1/3 x 19" to 2 x 19")

- Protection of power plant units with one device per protection group. In the generator transformer version, the 7UM85 implements both generator and transformer protection
- In more complex power plant units (unit connection with generator circuit breaker and several auxiliary transformers), additional SIPROTEC 5 devices are used, such as 7UT8x, 7SJ82 or 7SJ85 and 7SA, SD, SL86, at the upper-voltage side of the generator transformer
- Using motor and generator protection functions (underexcitation protection, for example) to protect synchronous motors

Functions

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

- Stator ground-fault protection (90% non-directional or directional, 100% with 3rd harmonic, real 100% protection with 20-Hz voltage injection)

Efficient and modular

- Rotor ground-fault protection with different measuring methods (ground-current or ground-resistance monitoring)
- High-precision reverse-power protection and universal power protection
- Underexcitation and overexcitation protection
- Unbalanced-Load Protection
- Overload protection and temperature monitoring via external RTD unit (with PT 100, for example)
- Out-of-Step Protection
- Shaft-current protection (in particular with hydropower applications)
- Universal overvoltage and undervoltage protection with different measuring methods
- Overfrequency and underfrequency protection and frequency change protection
- Protection functions for network decoupling (voltage and frequency protection, directional reactive-power undervoltage protection (QU protection))
- Switching protection to detect incorrect activation of the circuit breaker
- Circuit-breaker failure protection
- Circuit-breaker reignition monitoring
- Graphical logic editor to create powerful automation functions in the device
- Integrated electrical Ethernet RJ45 for DIGSI 5 and IEC 61850 (reporting and GOOSE)
- 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))
- Secure serial protection data communication, also over great distances and all available physical media (fiber-optic cable, 2-wire connections and communication networks)
- Redundancy protocols PRP and HSR
- Cyber security in accordance with NERC CIP and BDWE Whitepaper requirements
- Phasor measurement unit (PMU) for synchrophasor measured values and IEEE C37.118 protocol
- Time synchronization using IEEE 1588
- Capturing operational measured variables and protection function measured values to evaluate the plant state, to support commissioning, and to analyze faults
- Powerful 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

- Safe and reliable protection of your plants
- Purposeful and easy handling of devices and software thanks to a user-friendly design
- Consistent implementation of high safety and security mechanisms
- Powerful communication components ensure safe and effective solutions
- High investment security and low operating costs due to future-oriented system solution



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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) and cryptographic software written by Eric Young (eay@cryptsoft.com).