SIPROTEC 7KE85

Fault Recorder

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Description

Powerful Fault Recorder with integrated measurement of synchrophasors (PMU) in accordance with IEEE C37.118 and power-quality measurement in accordance with IEC 61000-4-30. Due to the great flexibility of trigger functions, the SIPROTEC 7KE85 is ideally suited for monitoring the entire energy value added chain, from generation to distribution. The high-performance automation and flexible configuration with DIGSI 5 complements the range of functions.

SIPROTEC 7KE85 Device with Expansion Module

Main function	Fault Recorder
Inputs and outputs	4 predefined standard variants with up to 40 analog channels, 43 binary inputs, 33 binary outputs
Hardware flexibility	Flexibly adjustable and expandable I/O quantity structure within the scope of the SIPROTEC 5 modular system
Housing with	1/3 to 1/1 x 19"

Applications

The fault recorder is for use in medium-voltage systems, highvoltage systems, and systems for very high voltage and in power plants with comprehensive trigger and recording functions. With the SIPROTEC 7KE85 fault recorder, you receive a clearly organized and event-related evaluation and documentation of your power-system processes. You are thereby able to analyze failures in a targeted manner and optimize your power system. Typical processes to be monitored and documented:

- System incidents, such as critical load cases or short circuits

- Failures of the supply quality

- Dynamic behavior of generators

- Closing and breaking operations of transformers (saturation response)

- Power fluctuations and power-swing cycles

- Test runs during commissioning

Functions

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

- Up to 40 analog channels

- Fast-scan recorder

- Up to 2 slow-scan recorders

- Up to 5 continuous recorders and 2 trend recorders

- Power Quality recordings in accordance with IEC 61000-4-30

- Sequence-of-events recorder for continuous recording of binary status changes and IEC 61850 GOOSE messages

- Usable as Phasor Measurement Unit (PMU) in accordance with IEEE C37.118 protocol

- Transmission of the records and triggering via IEC 61850 GOOSE messages

- Variable sampling frequencies parameterizable between 1 kHz and 16 kHz

- Distribution of the mass storage of 16 GB to the various recorders by the user as desired

- Intelligent monitoring routines of the storage medium ensure a high level of availability and completeness for the archived data

- Data compression without loss

Efficient and modular

- Time synchronization via the Precision Time Protocol (PTP) IEEE 1588, IRIG-B, DCF77, and SNTP
- Routing of the measured values to the individual recorders as desired
- Combination of the measuring groups for the power calculation as desired Quality attributes for representing the instantaneous signal quality in the time-signal view
- The Trigger functions of a function block are fundamental component value, RMS value, zero-sequence system power, positive-sequence system power, negative-sequence system power, frequency power, Σ active power, Σ reactive power and Σ apparent power
- Level trigger and gradient trigger for every trigger function
- Flexible cross trigger and system trigger, manual trigger
- Creation of independent trigger functions with the graphic automation editor CFC (continuous function chart)
- Trigger functions via a combination of single-point indications, double-point indications, analog values, binary signals, Boolean signals, and GOOSE messages, including for triggering on individual harmonics or the THD
- Consistent monitoring concept
- Auxiliary functions for simple tests and commissioning
- Special test mode for commissioning
- Fixed integrated electrical Ethernet RJ45 interface for DIGSI 5 and IEC 61850 (reporting and GOOSE)
- Data transmission via IEC 61850 of fault recordings in accordance with COMTRADE 2013, 1999 standard and continuous recording in accordance with IEEE Std 1159.3-2003
- Reliable data transmission via PRP and HSR redundancy protocols

- 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
- 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)
- Intelligent terminal technology enables prewiring and an easy device replacement

Benefits

- Clearly organized documentation and focused analysis of power system processes and failures
- Purposeful and easy handling of devices and software thanks to a user-friendly design
- Increased reliability and quality of the engineering process
- Full compatibility between IEC 61850 Editions 1, 2.0, and 2.1
- Cybersecurity in accordance with NERC CIP and BDEW Whitepaper requirements
- Siemens supports the interface in accordance with IEC 61850-9-2 for process-bus solutions
- Highest availability even under extreme environmental conditions by standard coating of the modules