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Properties and Functional Structure

SIPROTEC 5 Application

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1 Properties and Functional Structure

The SIPROTEC 5 devices at the bay level are compact and can be installed directly in medium- and high-voltage switchgears. They are characterized by comprehensive integration of protection and control functions.

1.1 General Properties

- Powerful multiprocessor
- Fully digital measured value processing and control, from sampling and digitizing of measurands to closing and tripping decisions for the circuit breaker
- Complete galvanic and interference-free isolation of the internal processing switches from the system measuring, control, and supply circuits through instrument transformers, binary input and output modules, and DC and AC voltage converters
- Easy operation using an integrated operator and display panel, or using a connected personal computer with user interface
- Continuous display of measured and metered values at the front
- Storage of min/max measured values (slave pointer function) and storage of long-term mean values
- Storage of fault indications for system incidents (faults in system) with real-time assignment and instantaneous values for fault recording
- Continuous monitoring of the measurands as well as of the device hardware and software
- Communication with central control and storage devices possible via the device interface
- Battery-buffered, synchronizable clock

1.2 Modular Concept

The SIPROTEC 5 modular concept ensures the consistency and integrity of all functionalities across the entire device series. Significant features here include:

- Modular system design in hardware, software, and communication
- Functional integration of various applications, such as protection, control, and fault recorder
- The same expansion and communication modules for all devices in the family
- Innovative terminal technology with easy assembly and interchangeability and the highest possible degree of safety
- The same functions can be configured individually across the entire family of devices
- Ability to upgrade with innovations possible at all times through libraries
- Open, scalable architecture for IT integration and new functions
- Multi-layered security mechanisms in all links of the security chain
- Self-monitoring routines for reliable localization and indication of device faults
- Automatic logging of access attempts and safety-critical operations on the devices and systems

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1.3 Redundant Communication

SIPROTEC 5 devices maintain complete communication redundancy:

- Multiple redundant communication interfaces
- Redundant and independent protocols to control centers possible (such as IEC 60870-5-103 and IEC 61850, either single or redundant)
- Redundant time synchronization (such as IRIG-B and SNTP)

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