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SIPROTEC 7UT86

Transformer Differential Protection

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Description

The SIPROTEC 7UT86 transformer differential protection has been designed specifically for the protection of three-winding transformers (3 sides). It is the main protection for the transformer and contains many other protection and monitoring functions. The additional protection functions can also be used as backup protection for subsequent protected objects (such as cables or lines). In this process, you are also supported by the modular expandability of the hardware. The device supports all SIPROTEC 5 system characteristics. It enables upgradeable system solutions with high investment security and low operating costs. With its modular structure, flexibility and the powerful DIGSI 5 engineering tool, SIPROTEC 7UT86 offers future-oriented system solutions with high investment security and low operating costs.

Main function	1 differential protection function (standard) with additional stabilization; up to 3 ground fault differential protection functions For auto transformer applications, two differential protection functions can be processed in an auto transformer function group
Usable measuring points	6 x 3-phase current measuring points, 4 x 1-phase current measuring points, 4 x 3-phase voltage measuring points; expandable to 4 sides
Inputs and outputs	2 predefined standard variants with 12 current transformers, 4 voltage transformers, 11 to 23 binary inputs, 18 to 34 binary outputs
Hardware flexibility	Flexibly adjustable and expandable I/O quantity structure within the scope of the SIPROTEC 5 modular system
Housing width	1/2 × 19" - 2/1 × 19"

SIPROTEC 7UT86 Transformer Differential Protection (1/2 device = standard variant P1)

Applications

Application templates are available in DIGSI 5 for standard applications. They contain basic configurations and default settings. These can be used directly or as a template for applicationrelated adaptation. The available measuring points make varied applications possible. Prior to ordering a device, please configure the application with DIGSI 5. Table "Functions and application templates" shows the functional scope of the device. Use the configurator to determine the necessary function points.

Functions

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

- Transformer differential protection for three-winding transformers with versatile, additional protection functions; expandable to four-winding transformers
- Transformer differential protection for phase-angle regulating transformers of the single core type and special transformers

Modular and flexible

- Universal usability of the permissible measuring points
- Applicable from average up to extra-high voltage
- Protection of standard power transformers, auto transformers and motors
- Typical properties of a transformer differential protection such as flexible adaptation to the transformer vector group, control of inrush and overexcitation processes, safe behavior in case of current-transformer saturation with different degrees of saturation
- Adaptive adaptation of the operate curve to the transformer tap position
- Increased sensitivity with near-neutral-point ground faults through a separate restricted ground-fault protection
- Additional current and voltage inputs can be supplements for standard protection functions, such as overcurrent, voltage frequency, etc.
- Graphical logic editor to create powerful automation functions in the device
- Arc protection
- Voltage controller function ANSI 90V for two-winding transformers, three-winding transformers and grid coupling transformers with parallel control (master/follower, circulating reactive current minimization)
- Up to 4 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, PROFINET IO)
- Reliable data transmission via PRP and HSR redundancy protocols
- Extensive cyber security functionality, such as role-based access control (RBAC), protocolling security-related events or signed firmware
- Simple, quick and secure access to device data via a standard Web browser – without additional software
- Frequency tracked protection functions over a wide frequency range (10 Hz to 80 Hz) and the option to assign the protection functions in a single device to different frequency tracking groups.
- Phasor measurement unit (PMU) for synchrophasor measured values and IEEE C37.118 protocol
- Powerful fault recording (buffer for a max. record time of 80 sec. at 8 kHz or 320 sec. 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
- Data security and transparency over the entire lifecycle of the plant, saving time and money
- Increased reliability and quality of the engineering process
- Highest availability even under extreme environmental conditions by “conformal coating” of electronic boards
- Cyber security in accordance with NERC CIP and BDEW Whitepaper requirements
- Full compatibility between IEC 61850 Editions 1 and 2

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