



SPREBOX TRANSFORMER

AUTOMATION PACKAGE FOR TRANSFORMERS



Mains and power transformers act as key components for power transmission and distribution. Beside highest availability demands, more and more importance is attached to cost-effectiveness, sustainability and environmental compatibility.

New criteria such as power dissipation, revision cycles, switching cycles and many more have to be considered starting at the time of acquisition until disposal.

During a transformer lifecycle several significant tasks arise which are vital to optimal operation:

- Control and monitoring of mains voltage and/or reactive power
- Consideration of additional local information for control and monitoring (i.e. smart grids: decentralised suppliers, line compensation etc.)
- Consideration of additional local information for control and monitoring logics (i.e. active power direction-dependent control, dynamic load-dependent adaption of the tolerance range, number of regulation cycles within certain time periods etc.)
- Guarantee of grid stability (i.e. recognition of continual voltage decrease / reactive power increase)
- Transformer protection with main and backup functionalities
- Transformer monitoring (basic information, application-specific monitoring functions)
- Collection and processing of additional operating alarms and warnings (i.e. for event list), which are not directly produced by the transformer, but relevant to its operation
- Standardised communication and networking of and between all devices within the system plus connection to superior station control or SCADA systems

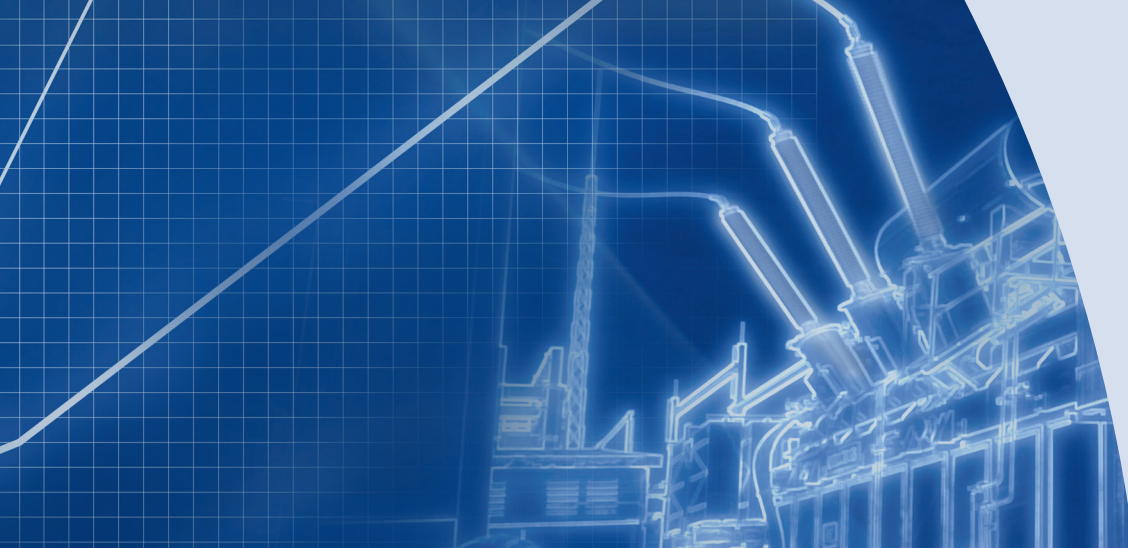
based on standard protocols

- Remote maintenance in consideration of system integrity, user access control and IT security

These requirements can be met with innovative system solutions and carefully selected devices for automation and protection.

With SPREBOX Transformer, Sprecher Automation provides a turnkey automation solution for transformers based on its approved SPRECON-E platform with the following components:

- SPRECON-E-C gateway
 - Communication interface(s) to superior levels such as local station control or SCADA (IEC 61850, IEC 60870-5-101, IEC 60870-5-104, adaption to proprietary protocols)
 - Visualisation of all interfaces (status), equipment, measured-values and transformer conditions
 - Control of fan group and/or oil pumps
 - “Up”/“Down” tap changing commands to voltage regulator as well as “bypass” on voltage regulator failure
 - Regulation-independent monitoring and limitation of voltage range of voltage regulator
 - Capturing and indication of temperature, oil temperature, current, voltage etc. in the transformer
 - Cross-system logics and functionalities (i.e. zero-voltage release)
- SPRECON-E-C AVR (automatic voltage regulator)
 - Status overview of all regulation parameters
 - Up to 5 selectable reference values
 - Tap monitoring (i.e. BCD)
 - Monitoring of motor operation (lamp for “tap changer in operation”)
 - Line drop compensation (LDC), Z-compensation
 - Monitoring function for “creeping grid collapse”

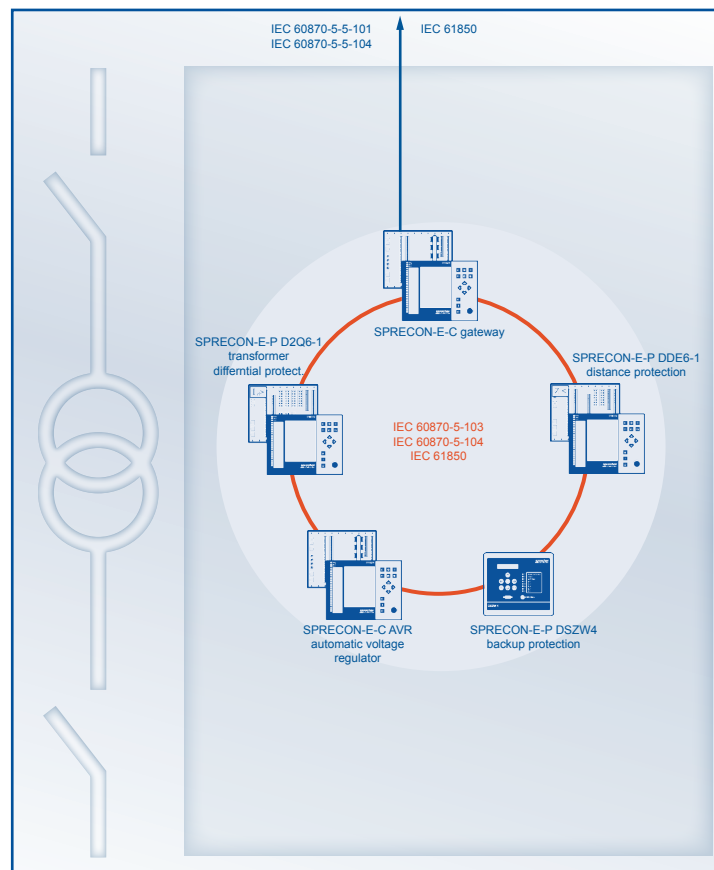


- Parallel running of up to 6 transformers with individual performance data
- SPRECON-E-P DDE6-1 distance protection with disturbance data recording (low voltage side), also available as a combined control and protection device with control functions for medium voltage switching devices
 - On request: double-sided characteristic curve for transformer and grid protection
 - Signal comparison logics (i.e. backward interlocking as busbar protection)
 - External triggering of disturbance data recording (i.e. by Buchholz relay)
- SPRECON-E-P D2Q6-1 differential protection with disturbance data recording
 - Thermal overload protection (exponential simulation from current image)
 - DTOC/IDMT protection for phases and earth faults, adjustable as 3-step-separated per page
 - Circuit breaker failure protection, adjustable as 2-step- separated per page
- SPRECON-E-P DSZW4 overcurrent-time protection (high voltage side) as backup protection, transformer-supplied with triggering capacitor
 - Also without auxiliary power supply
 - Multi-level tripping characteristic curve for current levelling (impedance response of protected object)

Through its modular design and its standardised interface (terminal strip) to the primary systems – the transformer, the transducers and the switching devices – the user faces a clearly structured and factory-tested turn-key solution for transformer automation including protection technology.

The flexible SPREBOX Transformer solution can be easily customised in order to meet particular user specifications by providing a wide range of functional extension capabilities as well as various connection possibilities to systems of other manufacturers.

SPREBOX solutions are distinguished by a high standardisation level which therefore significantly shortens realisation and commissioning times. As a result, SPREBOX solutions not only feature high availability, but also aim at criteria of growing importance such as cost-effectiveness and sustainability.



Standard configuration of SPREBOX Transformer



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