



Diagnosis measurement system

for instrument transformers,
busbars and bushings

DT 215

Evaluation of the state of
operating equipment and its
high-voltage environment

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Diagnosis measurement system

General description

The measuring system is designed to record and evaluate status data of the grid and of the equipment to be monitored, as well as to record the course of events when exceptional conditions occur. Data are stored and analysed over a period of up to 10 years. In addition, the measuring system can communicate using two communications interfaces:

Over a USB interface, it is possible to make both an online check as well as to read out data that has been stored. Further, the measuring system has two potential-free relay contacts which can be used for generating alerts when exceptional operating states occur. For connection to the data logger, the high voltage capacity of the device to be monitored has to be tapped off. For devices which are already in operation, the measuring system may be used with reduced functionality.

Relay outputs

The function of the relays can be defined via parameters in order to alarm when various events occur. For example, a partial breakdown on a bushing can be detected by evaluating voltage values and phase angles and be signalled via the relay output.

Power supply

Power supply is provided by the equipment being monitored (capacitive by using a corresponding tap, also possible for a voltage transformer by using a secondary winding), or via USB or over an external 5V DC source. After a supply voltage is applied the measurement system will be ready for operation in 200ms. During a power failure, the device remains fully operative for 20 seconds. Due to an integrated battery the internal clock continues running for at least 10 years. Power requirements are 225 mW max.

Software

The following two software tools are supplied and can be installed on a PC or laptop: The **Control Centre** is used on one hand for parameter-setting (time, calibration factors, functionality of the relay outputs) and, on the other hand, for the reading-out of stored data. The data read out can be stored in .csv format and can afterwards be processed using Excel®, for example. Further, a **Scanner software** is supplied which can search through the data according to various criteria. (The amount of data, depending on the period of operation, can acquire enormous dimensions).

Access to data

- Online via USB
- Output signal evaluation over two potential free relay contacts
- Read-out of stored data via USB

Measurement signals

- Voltage: 4 ports
- Current: 4 ports
- Temperature: 3 ports (2 of them external)
- Pressure: 1 port

Signal analysis

- True RMS
- Phase angle
- FFT
- Overvoltages (BIL/SIL)
- Evaluation of dynamic processes such as disconnector operation

Signal	Sample rate	Storage	Remarks
Primary voltage sampled	2 kHz	min. 1 h	4 ports cyclic
RMS	1 / minute	10 years	min./max. each per min.
Phase angle	1 / minute	10 years	three phase system
Harmonics	1 / 5 minute	10 years	up to 25th harmonic
Impulse voltage	500 kHz	10 years	only affected phase
Disconnector op.	10 kHz	10 years	
Primary current sampled	2 kHz	min. 1 h	4 ports cyclic
RMS	1 / minute	10 years	
Temperature sampled	10 Hz	min. 1 h	3 ports (2 of them ext.) cyclic
average	1 / minute	10 years	
Pressure sampled	10 Hzs	min. 1 h	1 port cyclic
average	1 / minute	10 years	