Diagnostics module

For instrument transformers and bushings

PDM

Condition assessment of
appliances and their
high voltage environment

PFIFFNER-GROUP

Current and voltage – our passion

General description

The diagnostics module system is designed to record and assess condition data such as the voltage, temperature and pressure of the equipment to be monitored, as well as the occurrence of abnormal events such as lightening impulses, switching operations and harmonics. Depending on the measurement interval, the input signals are stored for a period of up to ten years. There is a USB interface for parameter setting, real-time signal interpretation and reading out stored data. The measurement system also has galvani-cally isolated relay contacts that can be used to give warning of abnormal operating conditions.

Typically, the PFIFFNER diagnostics module system is used to monitor transformer bush-ings or instrument transformers. In each case, the primary voltage is measured via a capac-itive tap on the mother unit. The measure-ment system can likewise be used on equip-ment that is already in operation. In this case, the condition data is derived from the vol-ume of available sensor signals.

The diagnostics module system is especially suited to measuring voltage loading over a long period of time, as information about both the low-frequency voltage course and high-frequency events are stored in a long-term memory.

Primary parameters	Derived values	Storage rate	Length of storage	Channels	Remarks
Primary voltage sampling rate 2 kHz		2 kHz	1 hour	4	Cyclic
	RMS maximum	1 value per min.	10 years	4	Max. within one min.
	RMS minimum	1 value per min.	10 years	4	Min. within one min.
	harmonic content	1 data set per 5 min.	10 years	4	Up to 25. Harmonic
	Vectors in the three-phase	1 data set per min.	10 years	n.a.	For the detection of partial breakdown in bushings
Primary voltage sampling rate 20 kHz "Slope events"		Max. 1-3 events per day	10 years	3	Event lasting max. 2 secs, triggered by high voltage gradient
	Characteristic values*	Max. 200 events per day	10 years		
Primary voltage sampling rate 500 kHz "overvoltage event"		Max. 10 events per day	10 years	31	Events lasting max. 2 ms, triggered by overvoltage
	Characteristic values*	Max. 200 events per day	10 years		
Temperature sampling rate 10 Hz		10 Hz	1 hour	4 ext., 1 int.	Cyclic
	Average value	1/minute	10 years	4 ext., 1 int.	
Pressure sampling rate 10 Hz		10 Hz	1 hour	1	Cyclic
	Average value	1/minute	10 years	1	

*) Characteristic values of the events: Peak value (positive or negative value) / Minimum-maximum value after the first peak /Number of positive peaks

Data access

- Via USB interface
  - Real-time viewer
  - Read-out of stored data

- From SD card
  - By removal of the SD card

All data readings are stored in csv format and can then be further processed in Excel®, for example, or viewed using the signal display and evaluation program.

Software package

The software package supplied provides the following functions:
- Parameter setting

- Reading of data

- Real-time viewer

- Signal display and evaluation

## Signal generation functions

- Generation of a signal on reaching threshold values of the primary or derived measurement sizes

- The relay function can be set using the parameters, to ensure a warning is given when various events occur (or overlap). For example, partial breakdown in a bushing can be detected by the evaluation of the voltage values and phase angle, and generation of a signal via the relay output.
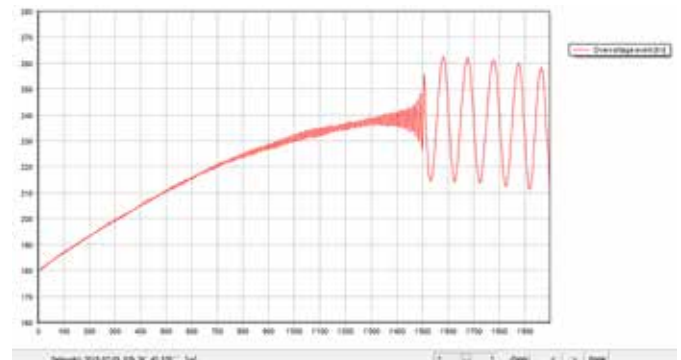
Power supply

Power supply can be from an external 5 V DC source, from a 40-230 V AC source (e.g. voltage transformer secondary winding). In the event of an interruption to the power supply, the equipment remains fully functional for 20 seconds. The equipment then goes into sleep mode, during which only the internal clock continues to run. The power requirement for the whole measuring system is no greater than 240 mW.
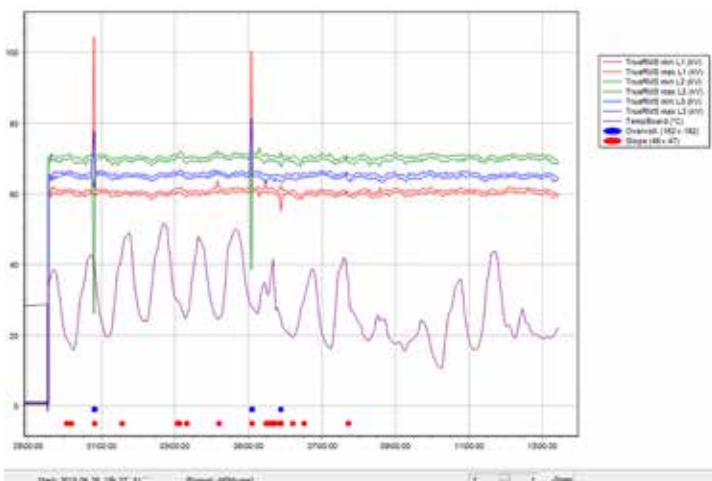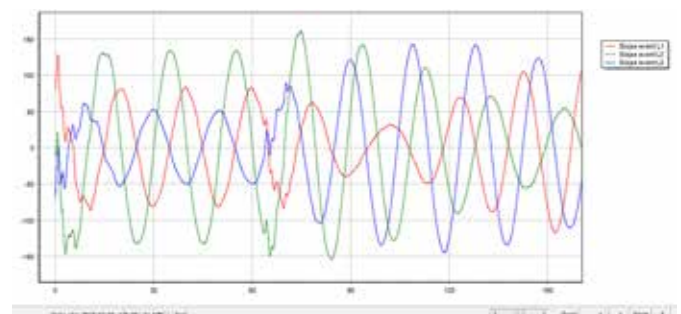

Monitoring of the voltage curve, events and temperature over two weeks in a 110 kV network
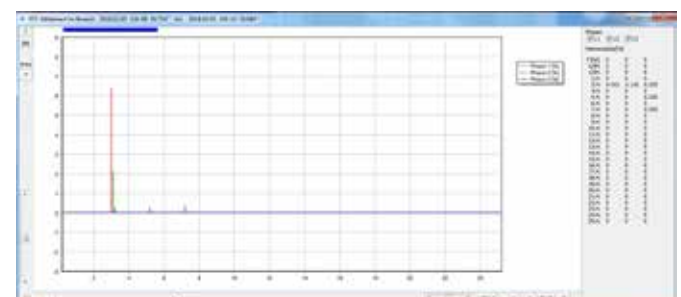

Overvoltage event
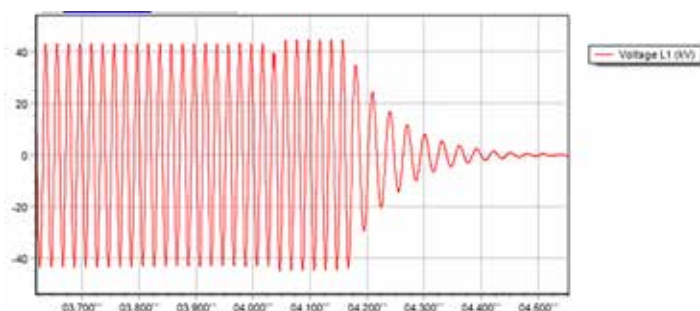
Peripheral event

Switch-off after a RMS threshold value is reached

Harmonic content averaged over a defined period of time

Global presence

PFIFFNER Messwandler AG
5042 Hirschthal
Switzerland

☎   +41 (0)62 7392828
✉   sales@pmw.ch
💻   www.pfiffner-group.com/pch

PFIFFNER Technologie AG
5042 Hirschthal
Switzerland

☎   +41 (0)62 7392828
✉   technologie@pmw.ch
💻   www.pfiffner-group.com/pte

PFIFFNER Systems AG
4303 Kaiseraugst
Switzerland

☎   +41 (0)61 4676111
✉   info@pfiffner-systems.com
💻   www.pfiffner-systems.com

PFIFFNER Deutschland GmbH
25524 Itzehoe
Germany

☎   +49 (0)48 21408270
✉   sales@pfiffner-messwandler.de
💻   www.pfiffner-group.com/pde

PFIFFNER Transformatör A.S.
06750 Akyurt/Ankara
Turkey

☎   +90 (0)31 28475521
✉   info@pfiffner.com.tr
💻   www.pfiffner-group.com/ptr

PFIFFNER do Brasil Ltda
88307-740 Itajaí
Brazil

☎   +55 (0)47 33481700
✉   pfiffner@pfiffner.com.br
💻   www.pfiffner-group.com/pbr

MGC Moser-Glaser AG
4303 Kaiseraugst
Switzerland

☎   +41 (0)61 4676111
✉   info@mgc.ch
💻   www.mgc.ch

ALPHA Elektrotechnik AG
2560 Nidau
Switzerland

☎   +41 (0)32 3328700
✉   mail@alpha-et.ch
💻   www.alpha-et.ch

PFIFFNER
Current and voltage – our passion

HV   HIGH VOLTAGE

MV   MEDIUM VOLTAGE

LV   LOW VOLTAGE