



## OWTS M 60

### Partial discharge Test and Fault Location System

#### Benefits:

- ▶ **PD Measurement by means of DAC similar to nominal net frequency**
- ▶ **Online processing for complex PD-Diagnosis**
- ▶ **Portable test system, compact design and low weight**
- ▶ **Integrated  $\tan \delta$  - measurement**



#### Description

The oscillating wave test system OWTS is used to identify, evaluate and locate partial discharge (PD) faults in a cable insulation and accessories in all types of medium voltage cables.

The system consists of a notebook as a WLAN control unit and a HV unit. The HV unit contains a HV source and a resonance inductor with an integrated electronic switch to generate the AC test voltage. The HV divider and an embedded controller for the digital data acquisition and PD signal processing is integrated. The storage, analysis and evaluation of the PD signals takes place in the notebook and can be done either on site or in the office. The PD fault location is based on the time domain reflection method.

For the PD diagnosis the test object is charged to the pre-selected peak value by a HV source within a couple of seconds and afterwards shorted with an electronic switch via a resonance coil. Thus a sinusoidal oscillating AC voltage with low damping is created (DAC). The frequency is fixed in a range from 50 Hz to several 100 Hz, depending on the capacitance of the test object.

Since the frequency of the test voltage is close to nominal service conditions, all measured PD activities can be effectively evaluated.

The oscillating voltage energizes the test object only for a few 100 ms and therefore cause no long-term influences.

The PD extinction voltage and the  $\tan \delta$ -value can be easily determined due to the decaying amplitude of the test voltage. Critical PD levels responsible for the future status of the cable insulation are an important criteria in the evaluation.

The analysis and evaluation of the typical PD parameter as well as the PD fault location supports the Asset Management for reliable decision criteria for maintenance- or replacement activities.

#### Technical Data

|                                  |                                |
|----------------------------------|--------------------------------|
| Max. DAC output-voltage          | 60 kVpeak / 42 kVrms           |
| DAC frequency range              | 50 Hz ... 800 Hz               |
| Capacitance range                | 0.025 $\mu$ F ... 2 $\mu$ F    |
| HV charging current              | 7 mA                           |
| PD measuring range               | 1 pC ... 100 nC                |
| PD level detection               | acc. to IEC 60270              |
| Bandwidth for PD-localisation    | 150 kHz ... 45 MHz             |
| Dissipation factor $\tan \delta$ | 0.1 % ... 10 %                 |
| Power supply                     | 110 ... 240 V-AC, 50 ... 60 Hz |
| Operating temperature            | -10 °C ... +40 °C              |
| Weight                           | app. 80 kg                     |

#### Components

|        |                      |
|--------|----------------------|
| Unit 1 | Ø: 650 mm, H: 970 mm |
| Unit 2 | Notebook app. 2 kg   |

#### Features

- ▶ PD diagnosis by means of damped AC voltage (DAC)
- ▶ PD level measurement according to IEC 60270
- ▶ Automatic adjustment of the bandwidth of the measurement circuit for optimised signal detection
- ▶ Automatic calibration mode with joint location feature
- ▶ PC with WIN XP and WLAN for system control
- ▶ Statistical PD fault acquisition, online processing
- ▶ Menu-driven unit to operate the test sequence
- ▶ Portable design, low weight, easy set-up on-site

#### Scope of delivery

- ▶ HV unit
- ▶ Notebook with WLAN connection to the HV unit
- ▶ Safety-Box with HV ON/OFF; Emergency push button and key switch
- ▶ Accessory bag
- ▶ Operating manual
- ▶ 5 m HV test lead; power supply- and grounding cable
- ▶ OWTS Explorer package, 2 Dongle CD-ROM
- ▶ Calibrator