MV DAC-30

Test and diagnosis system for medium voltage cables

- **Safe operation thanks to enclosed metallic casing, integrated voltage source and PD detector**
- **Uses well proven DAC excitation voltage for PD measurements (acc. IEC 60270)**
- **Live evaluation and display of results**
- **Two part design for easy transportation**

DESCRIPTION

The MV DAC-30 is a DAC (Damped AC Voltage) test set with a peak voltage of 30 kV. The test set can be used for quality control on newly installed cables, in accordance with the IEEE 400.4 standard. In addition, to prevent unplanned outages, the unit can also be used for condition-monitoring purposes on aged cable circuits.

The main use of the DAC test set is to identify, evaluate and locate partial discharge (PD) faults in the insulation and accessories of all types of medium voltage power cables. PD activity is an indication of incipient insulation faults and is therefore widely regarded as one of the best 'early warning' indicators of deteriorating medium and high voltage insulation.

Partial discharges are regarded as the main breakdown cause for MV and HV cables. Performing offline PD measurements on MV and HV cables using a DAC voltage test set helps support the asset management process so that the correct decisions are made for future maintenance and replacement activities.

Since the DAC frequency of the test voltage is close to nominal AC service conditions, all measured PD activities can be accurately evaluated and compared with the power frequency. The PD inception voltage (PDIV) and PD extinction voltage (PDEV) can be easily determined due to the decaying amplitude of the test voltage.

The system consists of two parts: the control unit (including laptop), and the HV unit. The HV unit divides in two, making transport and set-up much easier. One of the unique features of the MV DAC-30 is that the HV unit consists of a voltage source with an internal PD detector. Unlike with other PD measurement systems, the cable under test is the only accessible live component when testing with the MV DAC-30, making it much safer.

The operating software guides the user through the entire process. Some key features are:

- Integrated cable database
- Fully automatic calibration
- Live PD mapping: evaluation and display of results during the actual measurement
- Reporting by mouse click

TECHNICAL DATA*

MV DAC-30

Output voltage	
DAC	3 … 30 kV_{peak}
Precision	± 1 %
Resolution	0.1 kV
Frequency range	20 ... 500 Hz
Capacity range	1 nF ... 10 µF at 20 kV_{peak} 1 nF ... 4,25 µF at 30 kV_{peak}
PD sensitivity range	2 pc … 100 nC (acc. to IEC60270)
Resolution	± 1 pC
System noise level	< 20 pC at 30 kV_{peak}
PD impulse repetition rate	100 kHz
PD localisation	
Measuring range	0 … 16,000 m / V/2 = 80 m/µs
Propagation velocity	5 … 120 m/µs
Sampling rate	125 MHz (8 ns)
Bandwidth	3/25 MHz (switchable)
Precision	1 % of the cable length
Resolution	± 1 pC / ± 0.1 m
Filter	Analog and digital
Input voltage	110/230 V, 50/60 Hz, 500 VA
Temperature	
Operation	- 20 °C … 55 °C
Storage	- 30 °C … 70 °C
Relative humidity	93 % at 30 °C (non-condensing)
IP rating	IP 20
Weight	
HV module	30 kg
Control module	25 kg
Dimensions (W x D x H)	56 x 42 x 100 cm

FEATURES

- Safe-to-touch, enclosed metallic casing
- Internal PD Detector
- "Live" evaluation and display of results
- Two part design for easy transportation
- Conforms to VDE safety standards
- High test capacity

ORDERING INFORMATION

Product	Order no.
MV DAC-30 MV DAC-30 control and HV unit, laptop, calibrator, SW license, set of cables (incl. 5 m HV-connection cable)	**1006132-S**
Options:	
HV-connection cable 5 m	**2006817**
HV-connection cable 10 m	**2008839**
HV-connection cable 15 m	**2008840**
Rugged flight case for control unit	**90017826**
Rugged flight case for HV unit	**90017827**

* We reserve the right to make technical changes.

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