

# HV DAC-300

## Test and diagnosis system for high voltage cables



- **Designed for testing and diagnostics on cables rated up to 230 kV**
- **Multifunctional: cable withstand testing & PD Diagnosis in a single system**
- **Allows a monitored commissioning test acc. to IEC 62067 and IEEE 400.4**
- **Highly adaptable thanks to the portable design**

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### DESCRIPTION

The HV DAC-300 is a DAC (Damped AC Voltage) test set with a peak voltage of 300 kV. The test set can be used for acceptance testing on cables rated up to 230 kV according to the IEC 62067 and IEEE 400.4 standard. Moreover, the unit can also be used for condition analysis of aged cable circuits.

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

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

Partial discharges are regarded as the main breakdown cause for HV cables.

Performing offline PD measurements on HV cables using a DAC voltage helps support the asset management process so that reliable decisions can be made for maintenance or replacement activities.

The system consists of a notebook as a control unit and an HV part. The HV part contains of an HV source, an electronic switch and a resonance inductor to generate a damped AC test voltage. The HV divider and the coupling capacitor for PD detection and localization are integrated in a separate unit.

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

- Integrated cable data base
- Fully automatic calibration
- "Live" PD mapping; evaluation and display of results during the actual measurement
- Reporting by mouse click

The individual units are stored in tough transport cases which also allow for air-transport.

## TECHNICAL DATA\*

### HV DAC-300

#### Output voltage

**DAC** 18 ... 212 kV<sub>RMS</sub> / 25 ... 300 kV<sub>peak</sub>

**Precision** ± 1 %

**Resolution** 0.1 kV

**Frequency range** 20 Hz ... 300 Hz

**Capacity range** 0.035 µF ... 8 µF at 300 kV<sub>peak</sub>

**Charging current** 12,5 mA

**PD sensitivity range** 2 pC ... 100 nC (acc. to IEC60270)

**Resolution** ± 1 pC

**System noise level** < 2 pC

**PD impulse repetition** 100 kHz

**rate**

#### PD localisation

**Measuring range** 0 ... 16,000 m / V/2 = 80 m/µs

**Propagation** 5 ... 120 m/µs

**velocity** 125 MHz (8 ns)

**Sampling rate** 3/25 MHz (switchable)

**Bandwidth** 1 % of the cable length

**Precision** ± 1 pC / ± 0.1 m

**Resolution**

**Filter** Analog and digital

**Input voltage** 400 V ± 10%, 3 pH, 50/60 Hz, 4 kVA

#### Temperature

**Operation** -20 °C ... 55 °C

**Storage** -20 °C ... 70 °C

**Relative humidity** 93 % at 30 °C (non-condensing)

**IP rating** IP00

**Weight** app. 1100 kg (incl. flight cases)

#### Components

**Unit 1** HV source

**Unit 2** HV switch

**Unit 3** HV coil (4 modules)

**Unit 4** HV divider / PD analyzer

**Unit 5** Accessory box 1

**Unit 6** Accessory box 2

## FEATURES AND BENEFITS

- High testable capacity
- Transportable and compact
- Short set-up times allowing to respond quickly on changing weather conditions
- Automatic PD measurement with live evaluation
- Low space requirements allowing to set-up even in small substations
- Low power consumption

## SCOPE OF DELIVERY

- HV DAC-300 incl. flight cases
- Laptop and software license
- PD Calibrator
- HV connection tube 5 m (DN 150)
- Mains cable, grounding cables and control cables
- Operating manual

## ORDERING INFORMATION

Product	Order no.
HV DAC-300	138315400-5
<b>Options:</b>	
HV connection tube DN 150 5 m	2005455
HV connection tube DN 150 7,5 m	2006458
HV connection tube DN 150 10 m	2006459
Accessory box 3 (for additional HV connection tubes up to 7.5 m (DN 150))	90014144
Accessory box 4 (for additional HV connection tubes up to 10 m (DN 150))	xxxx

\* We reserve the right to make technical changes.

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