

PD-Smart



TOGETHER WE POWER THE WORLD®

PARTIAL DISCHARGE ANALYZER

The Doble Lemke PD-Smart is a versatile, multi-application partial discharge (PD) analyzer especially designed for day to day field use. With its easy-to-use software interface and capability to conduct both on-line and off-line measurements, there really is very few places you can't use a PD-Smart. It is well established that partial discharge activity is one of the leading indications of insulation health and should be measured as part of an asset management program.

The PD-Smart can easily be paired with a M4000 insulation analyzer to conduct a wide variety of off-line PD measurements.



Multi-Application PD Measurements

Features

Rugged and Reliable

The unit is self-contained in a rugged polyurethane case. Complete electrical isolation between the PD-Smart and PC provides superior safety in high voltage test setups.

True Phase Resolved Analysis

The PD-Smart measures both the PD and the actual applied voltage under test. This way, users can ascertain the effect of the voltage applied as well as the PD produced. Phase resolved analysis provides keen insight into the characteristic and source of the PD.

Analysis Tools

Using internationally recognized algorithms approved IEEE and IEC, the best possible diagnosis for fault conditions can be realized. These tools include Phi-Q-N, Phi-Q and Phi-n displays.

Interference Rejection

Nothing is more problematic than the interference caused by on-site noise. The PD-Smart has a variety of interference rejection techniques to include windowing, gating and frequency band shifting. Adjustable internal digital filter improve the rejection of interference and broadcasting frequencies.

State of the Art

With advanced noise rejection, pulse sequence recording and frequency domain signal conditioning, the unit can be used to make critical decision with data you can trust.

Multiple Applications

The PD-Smart has a wide variety of application to include cable, transformer, rotating machine and switchgear testing. It's also possible to use the PD-Smart for both off-line and on-line testing.

Specialized Cable Fault Location

Using time domain reflectometry, the PD-Smart can locate cable faults.



Why use the Doble PD-Smart Analyzer?

Partial Discharge is one of the leading causes of HV apparatus failure. Discharge pulses travel through the HV structures via the inductive, capacitive and resistive impedance network. The sources of partial discharge are varied and can be due to voids, protrusions, surface leakage and floating objects. The end results of these defects are damage to the insulating dielectric.

PD analysis can help, by ascertaining the level of partial discharge and then characterize the source by using advanced analysis algorithms such as phase resolved analysis and apparent charge. Modern signal processing also allows pulse phase resolution and this is invaluable in identifying the type or source of the partial discharges. This makes decisions much easier.



Example Sources of Partial Discharge

Multiple Applications

The PD-Smart is a general purpose, but highly advanced PD measuring instrument. As a result, you can use it for a variety of PD measuring applications to include both online and offline!

Analyze rotating machines, transformers and insulating busbars while in service or off-line using an external source such as the Doble M4000.

Cable Terminations & Cable Faults location can be detected on site or as a quality check during manufacturing. Using time domain reflectometry, the PD-Smart can locate faults and PD in cables. An exact position, independent of the real PD pulse magnitude, is automatically calculated for all PD pulses.



Fault Location Analysis in Action



Busbars



Motors



Undetected PD in a Cable Termination Results in Flashover

Technical Specifications

Voltage supply:

- 8.4 V DC with battery
- External power supply (100 - 240 V, 50 - 60 Hz)

Outputs:

- 1 x LWL-Output with E/O converter as Ethernet

Inputs:

- 2 x TNC (HF PD signal, LF voltage signal)
- 1 x TTL signal for gating

Input voltage:

- Voltage: 50 V rms (max)
- PD signal: 10 V rms (max)

Input impedance:

- Voltage: 1 MOhm
- PD signal: 50 Ohm

Input frequency range:

- Voltage: DC to 10 kHz
- PD signal: DC to 20 MHz

Integration in time and frequency range

- Time range: 100 ns ... 10 μ s
- Frequency range: centre frequency: 0 Hz ... 20 MHz
- Bandwidth: 9 kHz, 30 kHz, 100 kHz, 300 kHz, 1 MHz, 3 MHz

Dynamic range:

- Voltage: 16 bit, 80 dB
- PD signal: 16 bit, 100 dB

PD input protection:

- Input protection against over-voltage and short-circuit

PD input coupling:

- DC, AC

Single pulse detection: < 3 ns

Max. double pulse resolution: < 200 ns (time range, super position error < 1%)

Max. pulse frequency: 2 MHz

Temperature range:

- 0° C to 40° C (operation)
- 0° C to 60° C (storage)

For more information, contact

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or visit

www.doble.com

Specifications are subject to change without notice.

Doble is certified ISO 9001:2000
Doble is an ESCO Technologies Company

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