

DOBLE IN-SERVICE TESTING & ASSESSMENT

PD-Smart

Partial Discharge Analyzer

IN-DEPTH PARTIAL DISCHARGE TESTING IN THE FIELD

The Doble PD-Smart is a versatile, partial discharge analyzer used to detect PD in all types of in-service equipment including transformers, rotating machines, cables and switchgear. The PD-Smart works with Doble couplers or your existing, pre-installed couplers.



FEATURES

- High measurement accuracy and sample rate
- Complies with IEC 60270 and various VDE, ANSI and IEEE standards
- Advanced noise suppression tools include windowing, gating, frequency band shifting and an adjustable internal digital filter
- Uses well-known and advanced Lemke Noise Gating Technology where the elimination of external noises happens via an external antenna
- Measures both the PD and the actual applied voltage under test
- User interface features a customizable dashboard layout to make PD testing easier and more intuitive
- UHF mode for detection of radiated and conducted high frequency activity from partial discharge

BENEFITS

- Use for in-house and on-site applications of all types of HV apparatus
- Combines state-of-the-art technology with 40 years of Lemke's Partial Discharge knowledge within one smart solution
- Noise suppression techniques make it possible to perform tests in rough and noisy environments
- A simple way to add partial discharge analysis to your condition-based maintenance testing program
- Versatile test instrument for both directly coupled sensors and indirectly coupled sensors, such as UHF antennae and high frequency current transformers

PD-SMART TECHNICAL SPECIFICATIONS

MEASUREMENT PARAMETERS	
INPUT FREQUENCY RANGE	
Test voltage	20 Hz - 1.2 kHz
PD signal	35 kHz - 20 MHz
INPUT VOLTAGE	
Test voltage	50V rms (max)
PD signal	70V rms (max)
INTEGRATION IN TIME AND FREQUENCY RANGE	
Time range	140 ns...8µs
Frequency range	0 Hz...20 MHz
Filter bandwidths	Freely adjustable
DYNAMIC RANGE	
Test voltage	16 bit, 80 dB
PD signal	16 bit, 100 dB
ADDITIONAL MEASUREMENT PARAMETERS	
Selectable input attenuation	64 dB / 8 dB - 16 dB
Single pulse resolution capability	> 100 kHz repetition rate (deviation < 10 %)
Single pulse detection	< 3 ns
Max. double pulse resolution	< 200 ns (time range, super position error < 1%)
Max. pulse frequency	> 2 MHz
Synchronization between units	< 800 ps
Minimum detectable apparent charge	0.2 pC
Maximum input pulse amplitude	100 V, max. 100 nC
I/O	
Outputs	1 x FOL-output with E/O converter as Ethernet 1 x FOL-output Downlink 1 x FOL-output Uplink 1 x TNC Trigger output 1 x FOL Trigger output
Inputs	1 x TNC HF PD-signal 1 x TNC LF voltage signal 1 x TNC HF gating signal
PD input coupling	DC, AC
PD input protection	Input protection against over-voltage and short-circuit
INPUT IMPEDANCE	
Test voltage	1 MΩ
PD signal	50 Ω
UHF MODULE	
UHF Spectrum analyzer	Integrated zero span function
UHF Sensor pre-amplifier	Optional 38 dB amplification for frequencies 110 – 850 MHz over-voltage protection
UHF Processing unit	TNC type signal input attenuation unit: 62 dB software controlled in 2-dB steps Band stop filter 7 MHz Software controlled adjustment 110-850 MHz
IF Mixer Unit	Internal IF signal (peak detected) as output signal for the digital input unit, with bandwidth 110-850 MHz at 7 MHz (IF)

SYSTEM PARAMETERS	
Power Supply	14.4 V DC with battery
External power supply	100-240 V, 50-60 Hz
Warming-up period	15 Minutes (only required with UHF unit when in calibration mode)
Power consumption	50 VA
TEMPERATURE RANGE	
Operation	0°C to 45°C, 32°F to 113°F
Storage	-10°C to 60°C, 14°F to 114°F
Humidity	5% ... 95%, non-condensing
OPTIONAL ACCESSORIES	
Calibrators	Calibrators for external calibration of the PD measuring circuit
LDC-7/UHF	Function tester, UHF pulse signal injector
ROTATING MACHINES	
Couplers and connections	Range of Doble PD Couplers with integrated measuring impedance According to IEC EN 60270 Including splitting box and connection box
BC Matching Unit	To adapt conventional PD measuring methods to maximum 4 low-capacitance line couplers
MV/HV CABLES	
HFCT-300 Sensor	For highly sensitive PD measurements with superposed line currents or high reactive currents (50/60 Hz) which can reach up to 300 A. Also available in potted version.
LDWS-T	Cable sealing end UHF sensor
HV TRANSFORMERS AND SWITCHGEAR	
TEV Sensor	Detection PD signals behind metal surfaces, i.e. metalclad switchgear and transformers
HFCT-300 Sensor	(as above)
HV TRANSFORMERS	
DN-50/80	Drain Valve UHF PD-probe
UHF PD Plate Sensor	Integrated UHF sensor
HFCT-Mini	For use with bushing PD detection
MEASURING IMPEDANCE AT MV/HV CABLES & HV TRANSFORMERS	
LDM-5/U5	Measuring impedance for signal and test voltage decoupling
Coupling Capacitor	Range of coupling capacitors to be used with LDM-5/U5
LDF-6/FU - Filter Unit	Filter for suppression of radio interferences to be used with LDM-5/U5

Specifications are subject to change without notice.

Doble is ISO certified.

Doble is an ESCO Technologies Company.

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