

# PDTD60-2

## PARTIAL DISCHARGE AND TAN DELTA DIAGNOSTICS SYSTEM



simultaneous  
measurement  
of PD and TD



Software incl.  
Database



portable

The b2 electronic GmbH PDTD60-2 Partial Discharge (PD) and Tan Delta (TD) diagnostics system for diagnosis of medium voltage cables, rotating machinery and transformers.



### PARTIAL DISCHARGE DIAGNOSTICS (PD)

The Partial Discharge diagnostics on medium and high voltage cable offers the possibility of early detection of vulnerabilities through a precise localization of PD faults in cables and their connections (joints and terminations), often caused by mechanical damage or a faulty installation process.



### TAN DELTA DIAGNOSTICS (TD)

The Tan Delta diagnostics (TD) allows a statement about the overall dielectric condition of cables. A deterioration or damage by so-called water trees in XLPE/PE/XLPE cables can be easily detected. Water Trees cannot be identified or measured with a sole partial discharge measurement.



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## Features

- Compact, light and portable devices
- Simultaneous Partial Discharge and Tan Delta measurement
- b2 Suite® - comprehensive diagnostic software and database
- Display of cable route on OpenStreetMap®
- Very simple and clear measurement process
- Manual and automatic diagnostic mode
- Exact PD localization (PD mapping)
- Phase-resolved PD display (PD Pattern)
- PD Magnitude
- PD inception and extinction voltage
- PD rate
- High noise suppression by filtering
- Very high accuracy for Tan Delta measurement
- Extensive reporting
- Test setup according to IEC 60270 and calibration
- Monitored Withstand Test (MWT) according IEEE400.2-2013
- PD and TD measurement unit in one device
- PD and TD measurement unit in battery operation

## PDTD60-2

### PARTIAL DISCHARGE & TAN DELTA DIAGNOSTICS SYSTEM



HVA68-2



PDTD60-2



PDC

## PDTD60-2 DIAGNOSTICS WITH VLF

The diagnostic system PDTD60-2 (in combination with a VLF generator<sup>1</sup>) enables comprehensive diagnosis with sinusoidal output voltage with constant frequency, which is a prerequisite for the comparison of PD and TD measurement results of cables with different lengths. Load-dependent and therefore constantly changing measurement frequencies offer no basis for this. The sine wave output voltage is the only described VLF voltage form in IEEE400.2-2013 for partial discharge and tan delta measurements and provides clear procedures and quality control procedures.

The comprehensive monitoring and diagnostics software b2 Suite<sup>®</sup> makes the process easier and leads you through the diagnostics process. The database solution of b2 Suite<sup>®</sup> allows to process the data quickly and can be retrieved at any time.



### Compact, lightweight and portable solutions

From small portable unit for on-site use (e.g. off-shore) to built-in solutions for test van versions.

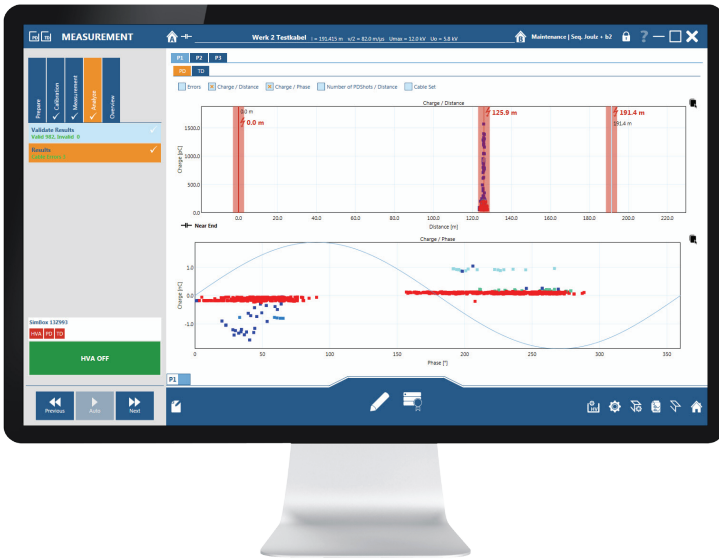


### Algorithms for detection of PD activities

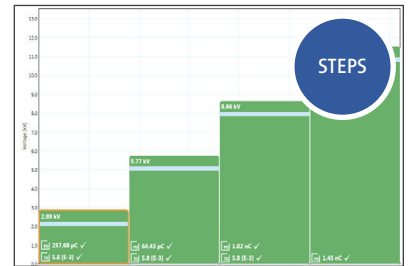
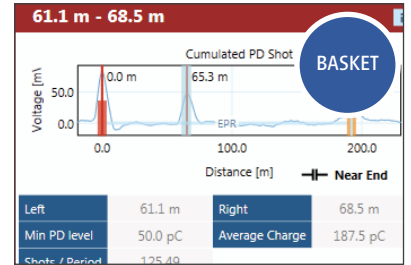
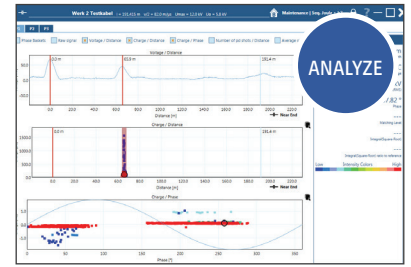
The b2 Suite<sup>®</sup> distinguishes between valid and invalid PD signals, and then separates them. This facilitates the easy interpretation of results for the user.

<sup>1</sup> VLF (0.1 Hz) high voltage generator (required) is not included in the scope of delivery.

# b2 SUITE® SOFTWARE



b2 Suite® - Software



## FEATURES

- Automatic or manual modes for testing and PD diagnostics
- Precise location of PD events on cable insulation, terminations and joints
- Presentation of PD events over total cable length
- Phase-resolved presentation (pattern) of PD
- PD inception- and extinction voltage
- Guided Diagnostics Process - leads the operator through diagnostics step by step
- Automatic & manual gain and trigger setting
- Sets or recommends measuring parameters
- Recommended by Standards (CENELEC & IEEE), with guidance for interpretation in literature
- Analog and digital frequency filters
- Direct Mapping of cable trace in OpenStreetMap®
- PD mapping
- Display of parasitic frequencies (bandpass and bandstop for parasitic frequencies)



### Database

The comprehensive b2 Suite® database enables easy analysis and evaluation of the PD measurement. A fast search function for measurements and easy reproducibility of a measurement are among the key features.



### Reporting

Reporting - be it simple or comprehensive - takes one click. Individual design for reporting and easy integration of data and files. Measurement in as little as 15 min incl. reporting.

# PDTD60-2

## TECHNICAL DATA

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### PARTIAL DISCHARGE DIAGNOSTICS SYSTEM (PD)

Article number	SH5031	
Input supply voltage	110/240 VAC, 50/60 Hz	
Operating voltage	sinusoidal	44 kV rms, 60 kV peak
	frequency	0.01-0.1 Hz in steps of 0.01 Hz default: 0.1 Hz (auto frequency)
HV coupling capacitor	capacitance	~ 1 nF
	dimensions, weight	L 330 x W 280 x H 730 mm, 20.7 kg
HV filter	capacitance	~ 1 nF
	dimensions, weight	L 300 x W 280 x H 720 mm, 19.9 kg
Filter	analog & digital	
Velocity range (v/2)	10-150 m/μs	
Measuring range	100 km	
PD background level	< 10 pC	
PD localization	accuracy	1%
PD resolution	0.1 pC, 0.1 m	
Sample rate	200 MS/s	
Bandwidth	100 MHz, analog filter	
Signal amplification	0-52 dB (1 channel) , 0-72 dB (2 channel)	
Environment	temperature: storage -20°C to + 65°C, operating -5°C to + 45°C	

### TAN DELTA DIAGNOSTICS SYSTEM (TD)

Output Voltage	sinusoidal	44 kV rms, 60 kV peak
	frequency	0.1 Hz, 0.01 to 0.1 Hz <sup>1</sup>
Measuring range	0.1 x 10 <sup>-3</sup> -999 x 10 <sup>-3</sup>	
Voltage measurement	resolution	0.1 kV rms
	accuracy	0.5 % of reading
Current measurement	resolution	1 μA rms
	accuracy	0.5 % of reading
Tan Delta measurement	resolution	1 x 10 <sup>-5</sup>
	accuracy	± 1 x 10 <sup>-4</sup>
Load range	standard	500 pF to 10 μF
Weight and dimensions	incorporated in the PD coupling capacitor	

### CONTROL AND DIAGNOSTICS SOFTWARE b2 SUITE®

Features	<ul style="list-style-type: none"> <li>• 0.1 Hz PD and TD diagnostics at the same time!</li> <li>• Automatic or manual modes for PD diagnostics</li> <li>• Guided diagnostics process</li> <li>• Comprehensive data base</li> </ul>
Control	b2 VLF generator control <sup>3</sup> , and b2 Suite® Software
Measurement	Cable length with PD activities, PD location, PD mapping, background noise, PD magnitude, sine wave imposed display, PDIV and PDEV, etc
System requirements	Windows 8 and 10, 64 Bit operating system

### ACCESSORIES

Scope of delivery	Unit (two parts), PDC calibrator incl. accessories, HV cable, PD connection cable (2), power and earthing cable, corona shields, transport boxes (2), b2 Suite® V1.8 software <sup>2</sup> (2 licences), database, operating manual
NOT in Scope of delivery	Computer/PC, VLF (0.1 Hz) generator <sup>3</sup> (voltage source), b2 Suite V2 (optional)

<sup>1</sup> Calibration Certificate for variable frequencies optional, <sup>2</sup> b2 Suite V2 optional,

<sup>3</sup> Please note: A VLF (0.1 high voltage generator (required) is not included in the scope of delivery.