

PDTD120-2

PARTIAL DISCHARGE AND TAN DELTA DIAGNOSTICS SYSTEM



simultaneous
measurement
of PD and TD



Software incl.
Database



portable

The b2 electronic GmbH PDTD120-2 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.



www.b2hv.com | info@b2hv.com

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

PDTD120-2

PARTIAL DISCHARGE & TAN DELTA DIAGNOSTICS SYSTEM



HVA120¹



PDTD120-2



PDC

PDTD120-2 DIAGNOSTICS WITH VLF

The diagnostic system PDTD120-2 (in combination with a VLF generator¹) 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[®] makes the process easier and leads you through the diagnostics process. The database solution of b2 Suite[®] 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.

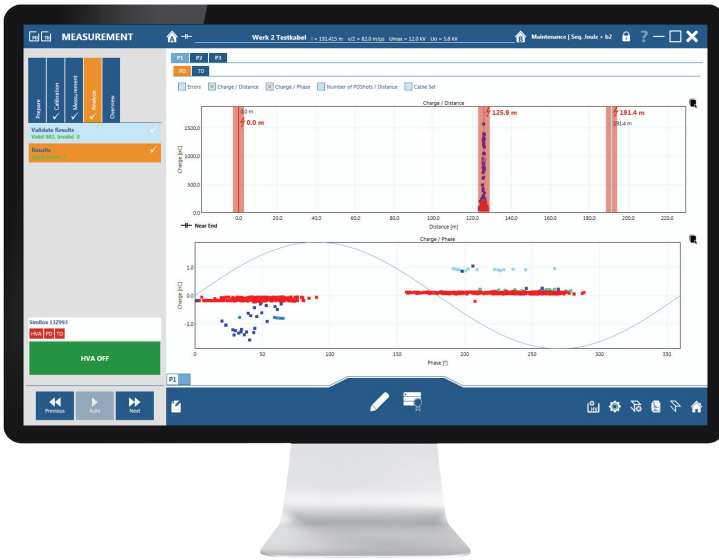


Algorithms for detection of PD activities

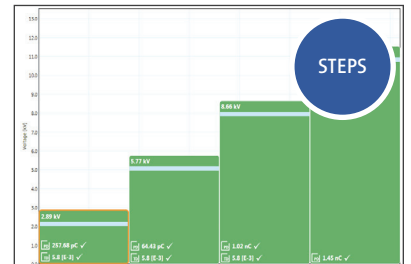
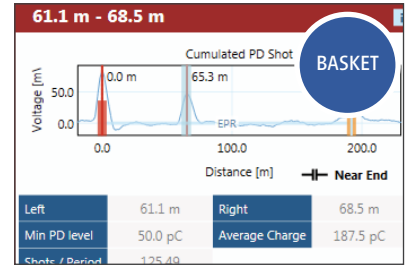
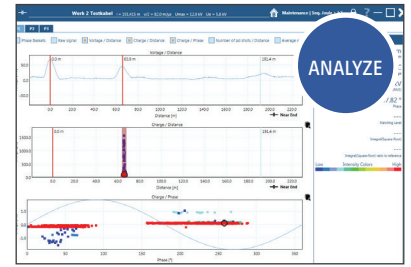
The b2 Suite[®] distinguishes between valid and invalid PD signals, and then separates them. This facilitates the easy interpretation of results for the user.

¹ 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.

PDTD120-2

TECHNICAL DATA

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PARTIAL DISCHARGE DIAGNOSTICS SYSTEM (PD)

| | | |
|-----------------------|--|---|
| Article number | SH5035 | |
| Input supply voltage | 110/240 VAC, 50/60 Hz | |
| Operating voltage | sinusoidal | 85 kV rms, 120 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 870 mm, 24.7 kg |
| HV filter | capacitance | ~ 1 nF |
| | dimensions, weight | L 300 x W 280 x H 820 mm, 34.9 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 | 85 kV rms, 120 kV peak |
| | frequency | 0.1 Hz, 0.01 to 0.1 Hz ¹ |
| Measuring range | 0.1 x 10 ⁻³ -999 x 10 ⁻³ | |
| 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 ⁻⁵ |
| | accuracy | ± 1 x 10 ⁻⁴ |
| 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"> • 0.1 Hz PD and TD diagnostics at the same time! • Automatic or manual modes for PD diagnostics • Guided diagnostics process • Comprehensive data base |
| Control | b2 VLF generator control ³ , 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 ² (2 licences), database, operating manual |
| NOT in Scope of delivery | Computer/PC, VLF (0.1 Hz) generator ³ (voltage source), b2 Suite V2 (optional) |

¹ Calibration Certificate for variable frequencies optional, ² b2 Suite V2 optional,

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