

PD90-2 & PDTD90-2 VLF diagnostics system

Datasheet



Diagnostics of medium and high voltage cables provides the opportunity for early detection of potential issues, enabling preventive maintenance to be carried out before the cable fails in service. The PD90-2 and PDTD90-2 systems offer a portable solution for the diagnostics of all kinds of medium voltage cables. The PDTD90-2 device includes partial discharge (PD) and Tan Delta (TD) diagnostics units, while the PD90-2 has integrated PD and can be extended with the TD one. Both systems are specially designed for use with the HVA very low frequency (VLF) test sets.

Complete system: In combination with an HVA test set you get a full-featured and full-value cable test and diagnostics system for up to 90 kV.

Application: PD and TD* diagnostics of all kinds of medium voltage cables with length up to 100 km with a portable diagnostics system.

Comprehensive diagnostics: Measurement of cables with different lengths at constant frequency, being a prerequisite for the comparison of PD as well as TD* results within the grid.

PD localization: Precise & sensitive real time localization of PD faults in cables with 1% accuracy and resolution of 0.1 pC and 0.1 m.

Powerful software: The b2 Suite guides throughout the entire cable testing and diagnostics process. It includes automated PD algorithms and test standard sequences with associated limits.

Compliance: Test setup and calibration according to IEC 60270. Additionally, TD* testing according to IEEE 400.2.



Operating voltage (sine wave)	max. 90 kV _{peak} , 64 kV _{rms}
Capacitance	
- HV coupling capacitor	~ 1 nF
- HV filter	~ 1 nF
Sample rate	up to 250 MS/s
TD resolution/accuracy*	1 x 10 ⁻⁵ / ± 1 x 10 ⁻⁴

YOUR BENEFITS



COMPACT & PORTABLE

Our PD and TD systems are designed for maximum portability and on-site use. This makes them utilizable for versatile applications, e.g. off-shore.



TRUE MODULARITY

All our HVA test sets can be easily extended to a complete diagnostics system by adding our PD, TD or PDTD series products at a later point of time. This keeps the initial investment low.



AUTOMATIC MODE

b2 Suite software provides manual and incremental modes with self-explanatory menus, and a fully automatic measurement mode reducing operation efforts.



SIMULTANEOUS PD & TD MEASUREMENT for PDTD90-2 (b2 Suite v2 or higher)

Parallel PD & TD diagnostics significantly saves time and prevents pre-conditioning of the cable.

*applies to PDTD system only

- Quick and easy measurement setup
- High noise suppression by filtering
- Phase-resolved presentation of PD & comprehensive reporting
- Real-time data assessment of the measured data

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TECHNICAL DATA

Characteristics		
Operating voltage	1 ... 90 kV _{peak} 1 ... 64 kV _{rms}	
Operating voltage waveform	sine wave	
Operating frequency range	0.01 Hz ... 0.1 Hz in steps of 0.01 Hz default: 0.1 Hz (auto frequency)	
High voltage tests		
Test types	Simultaneous PD and TD test (PDTD system only)	
	Partial Discharge test	
	Tangent Delta test (PDTD system only)	
PD localization		
Propagation velocity range (v/2)	10 ... 150 m/μs 32.8 ... 492 ft/μs	
Measurement range	0.1 m ... 100 km 3.94 in ... 62.13 mi.	
PD background level	< 10 pC	
PD localization accuracy	1% of the cable length	
PD resolution	0.1 pC and 0.1 m 0.33 ft	
PD measurement range	0.1 pC ... 100 nC	
Sample rate	up to 250 MS/s	
Bandwidth	100 MHz	
Filtering	analog: 100 MHz	
	digital: definable in the software	
	additional low pass filter available	
Tan Delta metering (applies to PDTD system only)		
Voltage measurement	AC	
	Maximum value	112 kV _{peak} 78 kV _{rms}
	Resolution	0.1 kV _{rms}
	Accuracy	± 0.5% of reading OR resolution
Current measurement	AC	
	Maximum value	100 mA _{peak} 70 mA _{rms}
	Resolution	1 / 10 / 100 μA _{rms}
	Accuracy	± 0.5% of reading OR resolution
Tan Delta	Load 10 nF ... 10 μF	
	TD range	0.1 ... 999 E-3
	Resolution	single: 0.1 E-3 / mean: 0.01 E-3
	Accuracy	± 0.1 E-3
	Load 0.5 nF ... 10 nF	
	TD range	0.1 ... 999 E-3
	Resolution	single: 0.1 E-3 / mean: 0.01 E-3
	Accuracy	± 0.3 E-3

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Tan Delta metering (continued)		
Resistance	Range	0.1 MΩ ... 5 GΩ
	Resolution	0.1 / 1 / 10 / 100 MΩ
	Accuracy	typ. 10%
Capacitance	Range	0 ... 20 μF
	Resolution	0.01 / 0.1 / 1 nF and 0.01 / 0.1 μF
	Accuracy	typ. 20%

Further characteristics		
AC supply		110 ... 240 V 50/60 Hz power consumption max. 240 VA
Battery operation	PD	built-in; 6 V, 42 Wh performance at full load: 4 h
	TD	exchangeable battery size D performance at full load: 2 test weeks
Data transfer		USB type B
Measurement control		b2 Suite v1.8 (included) or b2 Suite v2 (optional)
Environmental conditions	Operating temp. range	-5 ... +45 °C 23 ... 113 °F
	Storage temp. range	-20 ... +65 °C -4 ... 149 °F
Dimensions L x W x H	Coupling capacitor	330 mm x 280 mm x 870 mm 13 in x 11 in x 34.25 in
	HV filter	300 mm x 280 mm x 720 mm 11.8 in x 11 in x 28.3 in
Weight	Coupling capacitor	24.7 kg 54.45 lbs
	HV filter	30.0 kg 66.1 lbs

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SCOPE OF SUPPLY

			Art. No.
PD90-2 Partial Discharge Diagnostics System			SH5032
PDTD90-2 Partial Discharge Diagnostics System			SH5033
Included accessories	PD90-2	PDTD90-2	Art. No.
PD90-2 coupling capacitor 90 kV	1	-	GH5721
PDTD90-2 coupling capacitor 90 kV	-	1	GH5722
PD90-2 filter 90 kV	1	1	GH5720
PDC1 calibrator 10 pC - 10 nC	1	1	GH5728
PDTD HV test lead DUT PD 100 kV 0.85 m MC14	2	2	GH0550
PDTD HV test lead DUT PD 100 kV 1.6 m MC14	1	1	GH0551
Corona sphere 2-part, min. clearance distance = 10 mm	2	2	KMD0081
Clamp 600 A MC14, red	1	1	GH0580
MC socket 45° ring terminal B14AR-N	1	1	KES0105
MC socket straight ring terminal B14AR-N	1	1	KES0209
G-clamp 6-16 mm² with M8 wing screw - Dehn	1	1	KES0274
Grounding cable 16 mm² 0.5 m flat MC14/MC14	1	1	GH0830
Grounding cable 16 mm² 2 m flat MC14/M8	1	1	GH0690
Grounding cable 16 mm² 5 m flat M6/clamp	1	1	GH1009
Grounding cable 16 mm² 5 m flat MC14/clamp	1	1	GH1010
PD Impedance 3.9 kOhm MC14 (male - female)	1	1	GH0581
PD CC USB cable 10 m	1	1	GH0586
USB fiber optic converter USB-FOC-RS232 3 m	1	1	GH0624
Bluetooth USB adapter 50 m	-	1	KDG0013
Charger for rechargeable batteries, country-specific	-	1	**
Rechargeable NiMH battery size D 1.2 V/10 Ah 2 pcs	-	1	KEB0006
Battery size D 1.5 V/18.600 mAh	-	2	M0022
b2 Suite v1.8 & corresponding PDTD documentation on a USB drive	1	1	GZD5004
b2 Safety instructions for the PD TD series multi language	1	1	DHV1441
b2 Suite v1.8 license complete (Basic & PD & TD Diagnostics)	2	2	GS0003
Transport case for CC with wheels 1.178 x 718 x 427 mm	1	1	VKR0035
Transport case for filter with wheels 860 x 550 x 435 mm	1	1	VKR0031
Power cord country-specific with C13 connector	1	1	XKEK0001

**The charger is available under different article numbers, depending on the specified country