

PD-TaD 62

BAUR portable PD diagnostics system



Figure: PD-TaD 62 with laptop and Power Box

A new dimension in cable condition evaluation

- Comprehensive 360° cable analysis – with parallel partial discharge and dissipation factor measurement*
- Time-optimised and safe cable condition evaluation
- Lightweight and compact for mobile use on site

The PD-TaD 62 portable PD diagnostics system is used in combination with a BAUR VLF generator for carrying out:

- Partial discharge testing and location
- VLF cable testing with parallel partial discharge testing
- Parallel partial discharge and dissipation factor measurement*
- Full MWT*

With the partial discharge testing and the dissipation factor measurement, two effective and proven methods for evaluating the ageing condition of medium-voltage cables and cable accessories have been combined in a single compact and portable device. The result is a one-step 360° cable analysis with: early detection and localisation of weak points through a PD measurement, in addition to the evaluation of dielectric ageing based on the dissipation factor values.

The ability to perform partial discharge and dissipation factor measurements simultaneously saves a lot of time and leads to increased efficiency during inspection of the entire cable network. The simultaneous monitoring of $\tan \delta$ values and PD activities, also helps detect hidden faults (e.g. moist joints).

Light, robust and portable: PD-TaD is ideal for mobile use in the field. The device and accessories are convenient to transport in robust transport cases.

* Available methods and BAUR equipment required for these, can be found on page 2.

NEW:

- PD testing up to $44 \text{ kV}_{\text{rms}}$ / $62 \text{ kV}_{\text{peak}}$
- Excellent precision thanks to high coupling capacitance (10 nF) and sensitivity ($\leq 1 \text{ pC}$)

Functions

- Location of PD activities in cable insulation, joints and terminations
- Measurement of
 - PD level
 - PD inception and extinction voltages
 - PD frequency
 - PD phase resolving for classification of PD faults (option)
- Parallel partial discharge and dissipation factor measurement*
- Full Monitored Withstand Test*
Full MWT = VLF cable testing with parallel partial discharge and dissipation factor measurement

Features

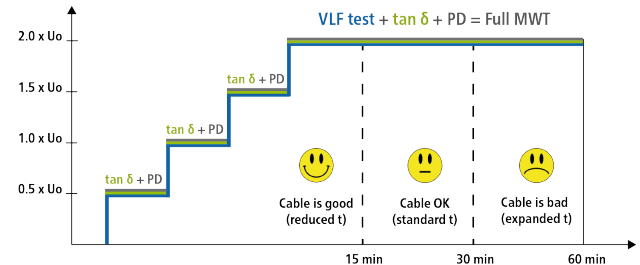
- Partial discharge testing and calibration of the measurement setup according to IEC 60270
- Lightweight and compact at just 17.5 kg
- Excellent precision thanks to high coupling capacitance (10 nF) and sensitivity ($\leq 1 \text{ pC}$)
- Coupling capacitor incl. measurement impedance and PD measuring unit in one device
- Integrated filter for suppressing noise signals
- Stable data transmission and power supply via Power over Ethernet (PoE); no batteries needed
- Excellent noise suppression due to
 - compact structure
 - galvanic isolation between PD measuring unit and laptop
 - central power supply
- Integrated device for detecting leakage currents for dissipation factor measurement
- Easy, menu-driven operation
- Suitable for the integration into cable test vans

Full Monitored Withstand Test

Combination of methods for more significant information

With the BAUR PD-TaD 62, in combination with a BAUR VLF generator with $\tan \delta$ measurement function, dielectric losses can be measured and the cable route can be tested for partial discharges during the VLF cable test. This combination of methods is called **Full MWT** and provides significantly more information than the cable test alone. While the cable test shows whether the cable system can withstand a load over a specified test duration, the dissipation factor measurement enables an evaluation of the condition of the cable insulation.

Moreover, partial discharge testing shows and locates the PD faults precisely. The highlight of MWT is the condition-based test duration: Provided it is permitted, the test duration can be shortened, which in turn lowers costs. This way, the cable is only exposed to the increased test voltage for the required duration.



VLF truesinus® – A voltage shape for all methods and method combinations

VLF truesinus® is the only voltage shape that enables both the reliable voltage tests as well as precise dissipation factor measurement and partial discharge testing. Unlike other voltage shapes, the VLF truesinus® voltage is load-independent, symmetrical and continuous. This is a prerequisite for high precision as well as reproducibility and comparability of measurement results.

Available methods and combinations of methods with PD-TaD 62

Method	Significance and benefits	BAUR mobile equipment*
PD testing	<ul style="list-style-type: none"> ▪ Diagnostics of local weak points ▪ Localisation of faults in the cable insulation 	PD-TaD 62 & frida / viola
VLF cable testing with parallel PD testing	<ul style="list-style-type: none"> ▪ Intelligent withstand voltage test ▪ Diagnostics of local weak points ▪ Localisation of faults in the cable insulation 	PD-TaD 62 & frida / viola
Dissipation factor measurement	<ul style="list-style-type: none"> ▪ Evaluation of the dielectric condition of the insulation ▪ Indication of PD, water trees, humidity in joints, etc. 	PD-TaD 62 & frida TD / viola TD
Simultaneous $\tan \delta$ measurement and PD testing	<ul style="list-style-type: none"> ▪ Combination of statements of a $\tan \delta$ measurement and PD testing ▪ Shorter test duration with simultaneous $\tan \delta$ measurement and PD testing ▪ Better detection of hidden faults (e.g. moist joints) and simultaneous analysis of $\tan \delta$ values and PD activities 	PD-TaD 62 & frida TD / viola TD
Full MWT	<ul style="list-style-type: none"> ▪ Combination of statements of a $\tan \delta$ measurement and PD testing ▪ Shorter test duration with simultaneous $\tan \delta$ measurement and PD testing ▪ Intelligent withstand voltage test with shorter test duration for cables in good condition ▪ Better detection of hidden faults (e.g. moist joints) and simultaneous analysis of $\tan \delta$ values and PD activities 	PD-TaD 62 & frida TD / viola TD

* If you already have a VLF generator, please ask BAUR GmbH or your nearest BAUR representative whether your VLF generator is equipped for all measurement methods with PD-TaD 62.

Technical data

PD-TaD 62

HV coupling unit:	
Input voltage	44 kV _{rms} / 62 kV _{peak}
Capacitance of coupling capacitor	10 nF
PD measuring unit:	
Power supply and data transmission	Via Power Box (Power over Ethernet)
Signal gain	0 – 75 dB
Degree of protection	IP54
Dimensions (W x H x D)	Approx. 410 x 463 x 369 mm
incl. HF filter	Approx. 410 x 668 x 369 mm
Weight	Approx. 17 kg
incl. HF filter	Approx. 17.5 kg

Calibrator

Electrical charge (pulses)	
CAL1B	0.1 / 0.2 / 0.5 / 1 / 2 / 5 / 10 nC
CAL1E	0.5 / 1 / 2 / 5 / 10 / 20 / 50 nC
Power supply	9 V block battery, DIN/IEC 6F22

BAUR system software

Multilingual user interface	in 23 languages
For more details, see the data sheet for BAUR system software (PD testing)	

Partial discharge location

Theoretical measurement range	10 – 12,800 m (at 80 m/μs)
Velocity of propagation	50 – 120 m/μs
Sampling rate	100 MSamples/s (10 ns)
PD measurement range	1 pC – 100 nC
Accuracy	Approx. 1% of cable length
Resolution	0.1 pC / 0.1 m

Dissipation factor measurement & MWT

Automatic detection and compensation of leakage currents	integrated
Measurement control	with BAUR VLF generator frida TD, viola TD
For more details, see the data sheet for the respective VLF generator	

Laptop

Processor	Intel Core i5
Operating system	Windows 7 Ultimate 32-bit (or higher)
Working memory	At least 4 GB
Hard disk	At least 256 GB SSD

Power Box

Input voltage	90 – 264 V, 47 – 63 Hz
Power consumption	max. 3,500 VA
Max. current	16 A
Interface PD-TaD 62	Ethernet (PoE)
Dimensions (W x H x D)	160 x 120 x 240 mm
Weight	Approx. 1.7 kg

General

Ambient temperature (operational)	-10°C to +50°C
Storage temperature	-20°C to +60°C
Rel. humidity	Non-condensing
Safety and EMC	CE compliant in accordance with Low Voltage Directive (2014/35/EU), EMC Directive (2014/30/EU), Environmental testing EN 60068-2-ff

Transport case: Weight and dimensions (W x H x D)

Transport case 1 with PD-TaD 62	approx. 38 kg; 800 x 581 x 482 mm
Transport case 2 with accessories	approx. 22.5 kg; 627 x 497 x 303 mm

Standard delivery

PD-TaD 62 incl.

- | | |
|---|------------------|
| <ul style="list-style-type: none"> ▪ HV coupling unit with integrated PD measuring unit ▪ HF filter, mounting bracket | Transport case 1 |
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| <ul style="list-style-type: none"> ▪ Power Box ▪ CAL1B or CAL1E calibrator ▪ Connection set incl. connection cable and adapter ▪ User manuals | Transport case 2 |
| <hr/> | |
| <ul style="list-style-type: none"> ▪ Laptop incl. carrying bag ▪ BAUR system software 3.x on USB drive ▪ Windows 7 Ultimate for laptop on USB drive | |

On request, integration into cable test vans

Options

- Phase-resolved PD presentation
- CAL1B or CAL1E calibrator

HV sources

(not included in the standard delivery of PD-TaD 62)

- frida BAUR VLF tester
- viola BAUR VLF tester

HV sources incl. tan δ measurement function:

- frida TD BAUR VLF tester and diagnostics device
- viola TD BAUR VLF tester and diagnostics device

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