

PD-TaD 60

BAUR Portable PD and tan δ Diagnostics System



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
- The lightest and most compact PD measuring device up to 60 kV_{peak}
- Developed for portable use on site

The portable PD and tan δ diagnostics system – PD-TaD 60 – is used in combination with a BAUR VLF generator to carry out:

- Partial discharge measurement and location
- Dissipation factor measurement* (simultaneously with the PD measurement)

Thus, 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 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 δ 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 accessories and connection cable are convenient to transport in a robust transport case.

* with VLF generator with tan δ measurement function

NEW

- Parallel dissipation factor and partial discharge measurement
- At 17.5 kg, the lightest and most compact PD measuring device on the market
- Better overview of the cable condition with **Full Monitored Withstand Test** (VLF cable testing with parallel dissipation factor and partial discharge measurement)
See page 2 for other available methods and combinations of methods
- Coupling capacitor incl. measurement impedance and PD measuring unit in one device
- PD phase resolving for classification of PD faults
- Integrated filter for suppressing noise signals
- Stable data transmission and power supply via a PoE cable (PoE = Power-over-Ethernet)
No battery required!

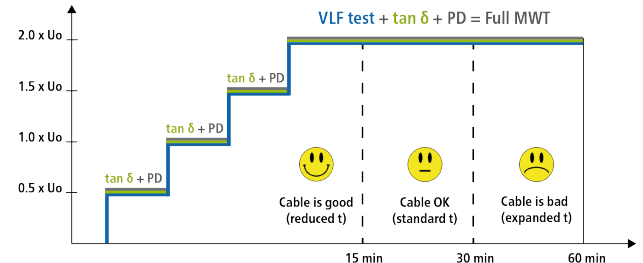
Features

- Partial discharge measurement and calibration of the measurement setup according to IEC 60270
- Detection of PD level, PD inception and extinction voltage as well as PD frequency
- Exact location of PD activities in cable insulation, joints and terminations
- 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

Full Monitored Withstand Test

Combination of methods for more significant information

With the BAUR PD-TaD 60, 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, a partial discharge measurement shows and locates the PD faults precisely. The highlight of MWT is the condition-based test duration: If allowed, the test duration can be shortened, which in turn reduces 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 and partial discharge measurements. 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

Method	Significance and benefits	BAUR equipment
VLF testing	<ul style="list-style-type: none"> Easy voltage test (Verdict: Pass / Fail) 	frida / viola
$\tan \delta$ measurement	<ul style="list-style-type: none"> Evaluation of the dielectric condition of the insulation, indication of PD 	frida TD / viola TD
PD test	<ul style="list-style-type: none"> Diagnostics of local weak points and their location 	PD-TaD 60 & frida / viola
Simultaneous $\tan \delta$ and PD measurement	<ul style="list-style-type: none"> Combination of statements of a $\tan \delta$ measurement and PD measurement Shorter test duration with simultaneous $\tan \delta$ and PD measurement Better detection of hidden faults (e.g. moist joints) through conditioning of weak points and simultaneous monitoring of $\tan \delta$ values and PD activities 	PD-TaD 60 & frida TD / viola TD
MWT with $\tan \delta$	<ul style="list-style-type: none"> Evaluation of the dielectric condition of the insulation, indication of PD Intelligent withstand voltage test Shorter test duration for cables in good condition 	frida TD / viola TD
MWT with PD	<ul style="list-style-type: none"> Localisation of faults in the cable insulation Intelligent withstand voltage test Shorter test duration for cables in good condition 	PD-TaD 60 & frida / viola
Full MWT	<ul style="list-style-type: none"> Evaluation of the dielectric condition of the insulation, indication of PD Localisation of faults in the cable insulation Intelligent withstand voltage test with shorter test duration for cables in good condition Shorter test duration with simultaneous $\tan \delta$ and PD measurement Better detection of hidden faults (e.g. moist joints) through conditioning of weak points and simultaneous monitoring of $\tan \delta$ values and PD activities 	PD-TaD 60 & frida TD / viola TD

Technical data

HV coupling + PD measuring device	
HV coupling:	
Input voltage	42.5 kV _{rms} / 60 kV _{peak}
Capacitance of coupling capacitor	8 nF
PD measuring device:	
Power supply	Via Power Box (PoE cable)
Signal amplification	0 – 75 dB
Dimensions (W x H x D)	410 x 497 x 320 mm
incl. HF filter	410 x 702 x 320 mm
Weight	Approx. 17.5 kg
incl. HF filter	Approx. 17.9 kg
Calibrator CAL 1B	
Pulse charging	0.1 / 0.2 / 0.5 / 1 / 2 / 5 / 10 nC
Power supply	9 V block battery, DIN/IEC 6F22
BAUR software	
Multilingual user interface	in 23 languages
For more details, see the data sheet for BAUR software PD measurement	
Partial discharge location	
Theoretical measurement range	10 to 12 800 m (at 80 m/μs)
Propagation speed	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)
Integrated graphics	Intel HD Graphics 4600 1 GB
Display	15.6"
Working memory	min. 4 GB
Hard disk	min. 250 GB HDD / 7 200 rpm
Power Box	
Input voltage	90 – 264 V, 47/63 Hz
Power rating	
VLF generator	3 500 W
Laptop	500 W
Max. current	16 A
Dimensions (W x H x D)	160 x 120 x 240 mm
Weight	1.7 kg
Data interface	PoE injector
Connection cable:	
Power Box – laptop (Ethernet and power supply)	2.5 m
Power Box – HV generator:	2.5 m
Power Box – power supply:	2.5 m
Power Box – HV coupling (PoE)	Galvanic isolation: 4 kV, 10 m, Optional 25 m, 50 m, 80 m
General	
Ambient temperature (operational)	-10 °C to +50 °C
Storage temperature	-20 °C to +60 °C
Rel. humidity	Non-condensing
Height above sea level	2 000 m
Safety and EMC	CE compliant according to Low Voltage Directive (2014/35/EC) and EMC Directive (2014/30/EC)

Standard delivery includes

PD-TaD 60, incl.:	Item 411+062
<ul style="list-style-type: none"> ▪ HV coupling unit with integrated PD measurement unit ▪ HF filter ▪ Fixing angles 	Transport case 1
<ul style="list-style-type: none"> ▪ Power Box ▪ Calibrator CAL 1B ▪ Connection set incl. connection cables and adapters ▪ User manuals 	Transport case 2

- Laptop incl. carrying bag
- BAUR system software 3.x on USB drive
- Windows 7 on USB drive

Options

- PD phase-resolving module Item 470-823