

PD-TaD 60

BAUR portable PD diagnostics system

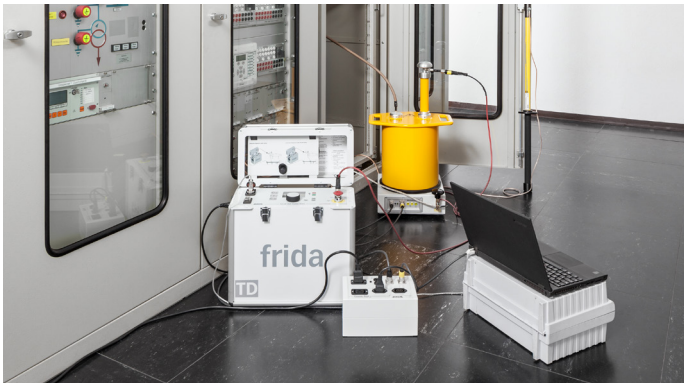


Figure: PD-TaD 60 with optionally available VLF generator frida TD

smart testing

with BAUR PD-TaD – PD Test & Diagnostics

NEW

- Better overview of the cable condition with **Full Monitored Withstand Test***
Full MWT = VLF cable testing with parallel partial discharge and dissipation factor measurement
- Parallel partial discharge and dissipation factor measurement*
- At 17.5 kg, the lightest and most compact PD measuring unit on the market
- Coupling capacitor incl. measurement impedance and PD measuring unit in one device
- PD phase resolving for classification of PD faults (optional)
- Integrated filter for suppressing noise signals
- Stable data transmission and power supply via Power over Ethernet (PoE)
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
- Suitable for the integration into cable test vans

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 diagnostics system PD-TaD 60 is used in combination with a BAUR VLF generator for carrying out:

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

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 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.

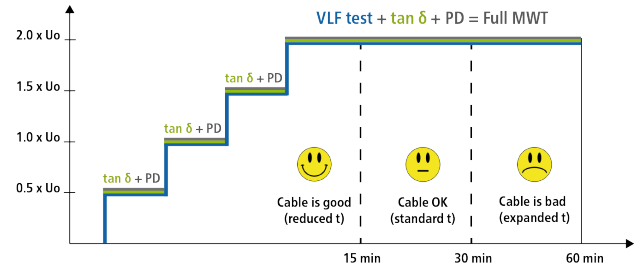
* Available methods and BAUR equipment required for these, can be found on page 2

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: 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 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 with PD-TaD 60

| Method | Significance and benefits | BAUR mobile equipment* |
|--|---|--|
| PD test | <ul style="list-style-type: none"> ▪ Diagnostics of local weak points ▪ Localisation of faults in the cable insulation | PD-TaD 60 & frida / viola / PHG portable |
| VLF cable testing with parallel PD measurement | <ul style="list-style-type: none"> ▪ Intelligent withstand voltage test ▪ Diagnostics of local weak points ▪ Localisation of faults in the cable insulation | PD-TaD 60 & frida / viola / PHG portable |
| Dissipation factor measurement | <ul style="list-style-type: none"> ▪ Evaluate the dielectric condition of the insulation ▪ Indication of PD, water trees, humidity in joints, etc. | PD-TaD 60 & PHG portable |
| 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) and simultaneous analysis of $\tan \delta$ values and und PD activities | PD-TaD 60 & frida TD / viola TD |
| Full MWT | <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 ▪ 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 60 & 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 60.

PD-TaD is also suitable for the integration into cable test vans. Please contact BAUR GmbH or your nearest BAUR representative.

Technical data

| PD-TaD 60 | |
|--|--|
| HV coupling: | |
| Input voltage | 42.5 kV _{rms} / 60 kV _{peak} |
| Capacitance of coupling capacitor | 8 nF |
| PD measurement unit: | |
| Power supply and data transmission | Via Power Box (Power over Ethernet) |
| Signal amplification | 0 – 75 dB |
| Degree of protection | IP54 |
| 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. 18.0 kg |
| Calibrator CAL1B | |
| Pulse charging | 0.1 / 0.2 / 0.5 / 1 / 2 / 5 / 10 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 | 5 pC – 100 nC |
| Accuracy | Approx. 1% of cable length |
| Resolution | 0.1 pC / 0.1 m |

Standard delivery

PD-TaD 60 incl.

- HV coupling unit with integrated PD measurement unit Transport case 1
- HF filter, mounting brackets
- Power Box
- Calibrator CAL1B Transport case 2
- Connection set incl. connection cable and adapter
- User manuals
- 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

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 | 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/EC) and EMC Directive (2014/30/EC) Environmental testing EN 60068-2-ff |

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

| | |
|-----------------------------------|-------------------------------------|
| Transport case 1 with PD-TaD 60 | approx. 38 kg; 800 x 581 x 482 mm |
| Transport case 2 with accessories | approx. 22.5 kg; 627 x 497 x 303 mm |

Options

- PD phase resolving module
- Calibrator CAL1E (pulse charging 0.5 / 1 / 2 / 5 / 10 / 20 / 50 nC)

HV sources

(not included in the standard delivery of PD-TaD 60)

- BAUR VLF tester frida
- BAUR VLF tester viola
- BAUR VLF test system PHG portable

HV sources incl. tan-d measurement function:

- BAUR VLF testing and diagnostics device frida TD
- BAUR VLF testing and diagnostics device viola TD
- BAUR VLF test system PHG portable (tan δ measurement with PD-TaD 60)