BAUR Software 4

Cable testing and diagnostics

The screenshot is illustrative.

Efficient. Cost-saving. Forward-looking.

- Better decisions based on a comprehensive condition evaluation of the cable network
- Saves time on site thanks to automated sequences and report generation
- Extremely user-friendly

The BAUR Software is used in combination with the BAUR test and diagnostics systems for the testing, diagnostic measurement and condition evaluation of medium voltage cables and electrical equipment. Thanks to its innovative operating concept, the BAUR Software provides optimal support to both asset managers and measurement engineers in their work flows, and allows operators to efficiently plan and carry out measurements, as well as precisely monitor the condition of cable networks. Asset management also profits from having standardised sequences throughout the company and a professional and reproducible condition evaluation of electrical equipment, making it possible to devise maintenance and replacement strategies and prioritise specific measures. At the same time, the automated sequences and integrated combination of methods minimise the time required to carry out diagnostics on site. The simple and efficient data management allows comprehensive data acquisition and analysis, along with the distribution of information such as measurement programmes and evaluation criteria to all of the measurement systems in use.

Highlights

- **Better decisions** based on a comprehensive condition evaluation of the cable network
  - Conclusive measurement methods and clear measurement results
  - Professional, objective and reproducible condition evaluation of the cable network as a basis for decision making for a condition-based maintenance strategy
  - Accumulation of experience thanks to comparable measurement results and historical data comparison
  - Import and export interfaces for simple data exchange and standard sequences
- **Saves time on site** thanks to automated sequences and report generation
  - Use of standardised diagnostics sequences for different applications and cable routes that can simply be accessed on site
  - Systematic measurement procedures on site
  - Automated evaluation and conclusive report generation thanks to pre-defined evaluation criteria
- **Extremely user-friendly**
  - Intuitive user interface in multiple languages adapted to the work flow
  - Minimal training required
  - New operating concept that provides the operator with optimal support during operational maintenance and when carrying out measurements on site
  - Greater process reliability thanks to the standardisation of sequences and avoidance of errors during the configuration and evaluation of measurements

The following measurement methods are supported, depending on the BAUR Software module:

Cable testing

- Cable testing (VLF truesinus®, VLF square wave, DC voltage)
- Cable sheath testing

TD

- Dissipation factor measurement

PD

- Partial discharge testing

TD & PD

- Parallel dissipation factor and partial discharge measurement
- Monitored Withstand Test (MWT) with dissipation factor or partial discharge testing
- Full Monitored Withstand Test (Full MWT)

The availability of the functions referred to depends on the version of the software.

BAUR GmbH · Raiffeisenstraße 8, 6832 Sulz, Austria · T +43 (0)5522 4941-0 · F +43 (0)5522 4941-3 · headoffice@baur.eu · www.baur.eu

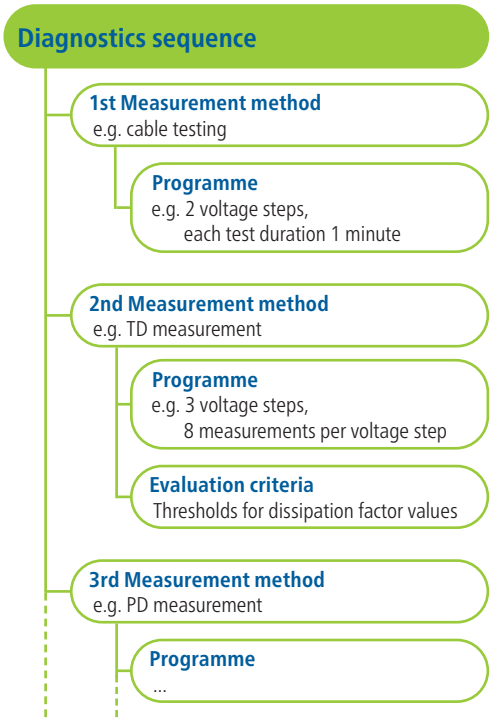
BAUR Software 4

Optimised asset management

Definition of testing and diagnostic sequences

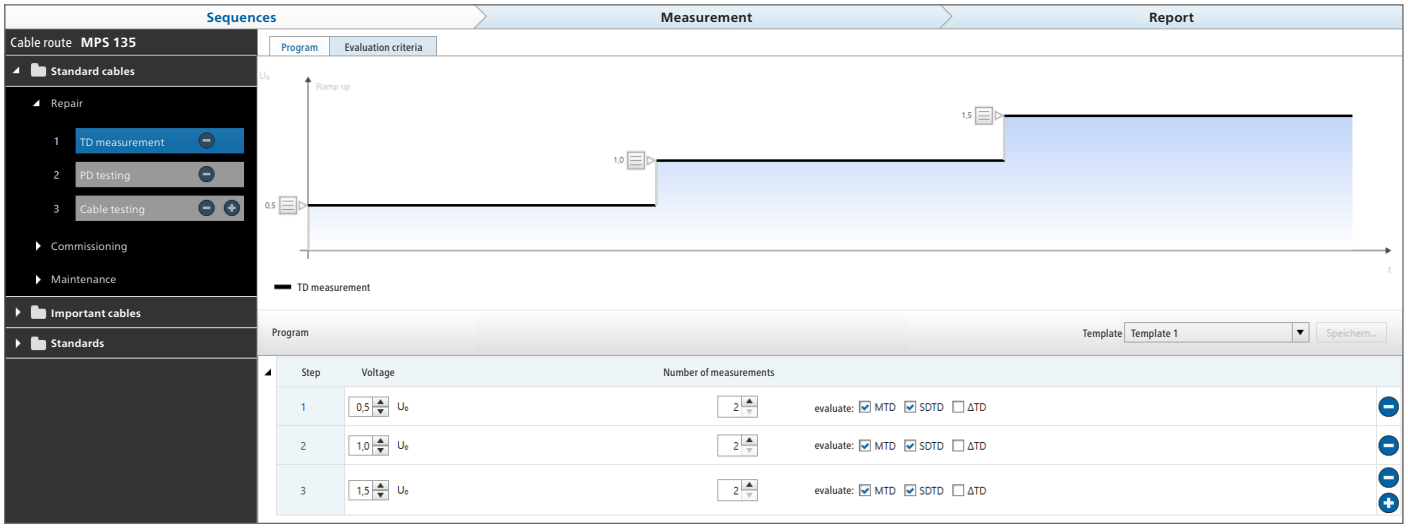
With the BAUR Software, you can optimally map your company-specific diagnostics philosophy by using diagnostics sequences. Simply create your in-house specifications for the performance and evaluation of cable diagnostics for various cables or various phases in the network life cycle (e.g. commissioning or maintenance) within the diagnostics sequences. You can then distribute the sequences directly via the import/export function to all of the BAUR measurement systems in use.

A sequence specifies the measurement methods, the order in which they are performed and the course of each measurement. Evaluation criteria can be defined for each measurement and the overall sequence. They can either replicate the current standards and guidelines and be provided as templates, or correspond to in-house requirements. The stored criteria are used for the automatic evaluation of the measurement results, which also enables inexperienced operators to gather professional information on the condition of the cable route immediately after the measurement.



For a better overview, you can allocate sequences to various categories, e.g. according to the priority of the cable route or the individual asset management approach. When on site, the operator selects the desired sequence, and immediately sees what the next steps will be.

Sequences can be exchanged between the BAUR measurement systems and adjusted at any time as required, simplifying knowledge transfer and the accumulation of experience. This also makes it possible to generate reproducible and comparable measurement results that show not only the condition but also the ageing of a cable route over time.



Example: Configuration of a dissipation factor measurement within a sequence

The screenshots are illustrative.
The availability of the functions referred to depends on the version of the software.

Data sheet: BAUR GmbH · 826-130-6 · 01.2023 · Subject to modifications.

BAUR Software 4

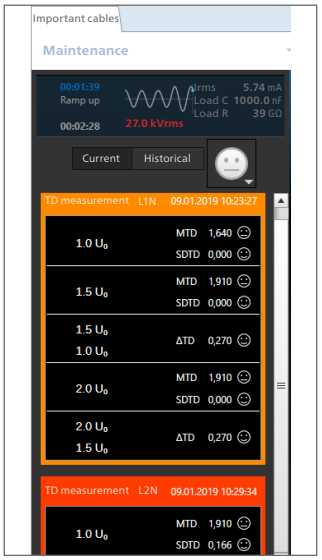
Cable testing and diagnostics

Central cable data management

You can manage and update the cable data with all the relevant information in the central cable database of the BAUR Software. Alternatively, you can also import the cable data via the optional GIS interface. All measurements and tests, including all condition data, are saved for each cable route and are thus available centrally for you to use in your strategic planning.

Systematic measurement procedure on site

The BAUR Software controls the connected test and diagnostics system and performs the diagnostics. The specified diagnostics sequences significantly streamline the measurement procedure on site, as the measurement and evaluation parameters are already stored and the measurement can simply be started with a few clicks.

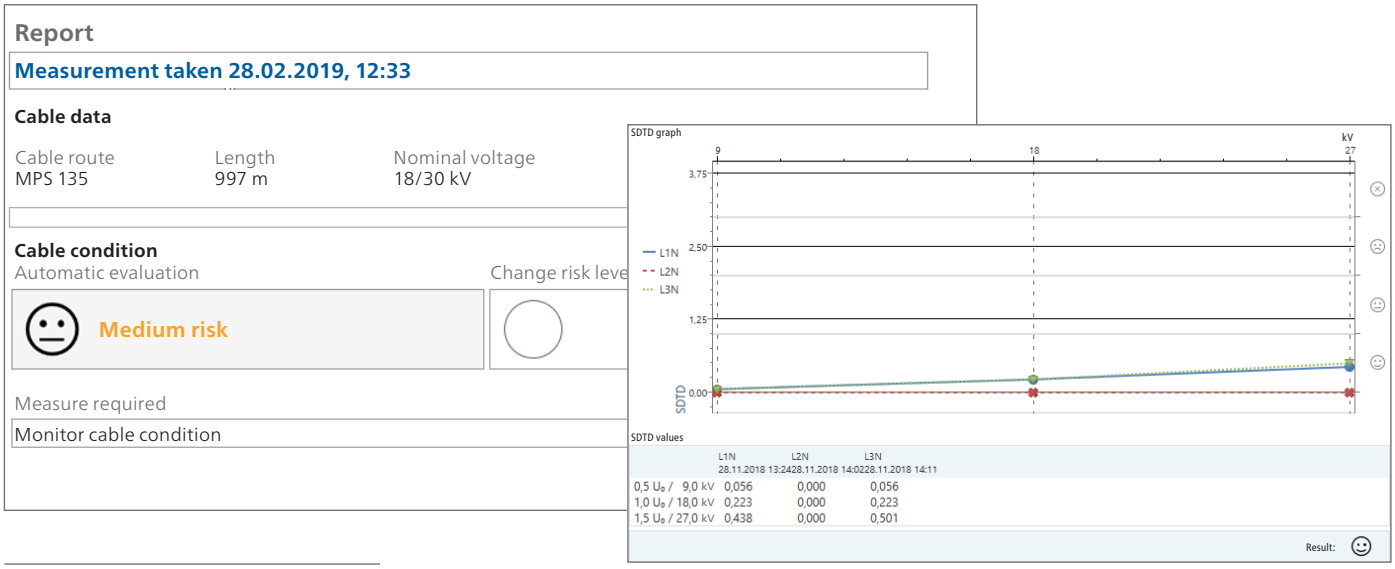


Automated evaluation for reliable condition evaluation

All relevant measurement results are visualised numerically and graphically and evaluated during the measurement according to the specified threshold values. The condition of the cable route is therefore visible at all times, and the operator can intervene in the measurement procedure if required. Once a sequence is complete, the overall condition of the cable route and the results of the individual measurements are automatically evaluated based on all of the measurement results.

Report generation

The BAUR Software automatically generates reports on the measurements that have been performed, including all the information on the tested electrical equipment. This gives you a comprehensive overview of the test object, the diagnostics results and the condition evaluation. All of the measurement parameters, evaluation criteria and measurement results are presented as diagrams and in tables, which can be shown and hidden as required. Comments and snapshots of diagnostics results can be added to enhance the reports. It is also possible to include a company logo and address. The finished report can then be exported as a PDF file.



The screenshots are illustrative.
The availability of the functions referred to depends on the version of the software.

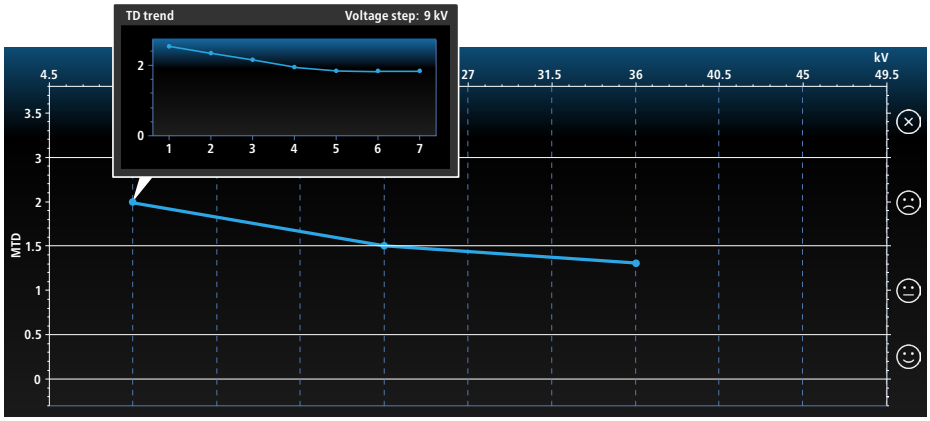
BAUR Software 4

Dissipation factor measurement

The dissipation factor measurement (TD measurement) is a non-destructive and integral procedure that serves to evaluate the condition of a cable route. It provides clear information on the condition of the cable insulation and its ageing condition. With the BAUR Software dissipation factor measurement, a fast and detailed assessment of the cable insulation can be carried out within a few minutes and weak points can be detected:

- Areas in the insulation of XLPE cables that are damaged by water (water trees)
- Faults in the insulation of paper-insulated mass-impregnated cables due to drying
- Insufficient insulation of paper-insulated mass-impregnated cables due to moisture
- Moisture in joints/terminations
- Possible partial discharges

Clear measurement results for a reliable evaluation of the cable condition



Example:
Condition evaluation while increasing the voltage in steps (ramp-up stage). Falling dissipation factor values indicate moisture in a joint.

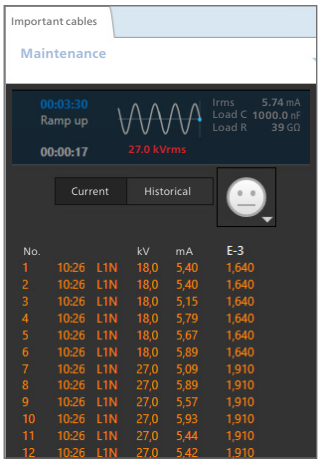
The key features

- High measurement accuracy (1 x 10^{-4}) and significance thanks to:
  - Detection of leakage currents
  - Resolution up to 1 x 10^{-6} (MTD)
- Measurement and evaluation based on current standards or individually specified threshold values for all dissipation factor parameters and for various cable types
- Continuous evaluation of the measurement results during the measurement
- Numeric and/or graphical representation of MTD, SDTD and ΔTD in real time
- Automatic cancellation of the measurement if the corresponding threshold values are exceeded
- Recording of the voltage and current curves during the measurement
- Trend analysis by comparison of the current and previous dissipation factor values
- Reliable, reproducible measurement results using the load-independent VLF truesinus® voltage

The dissipation factor measurement module is available as an option.

The recording and clear visualisation of all relevant dissipation factor parameters by the BAUR Software allows marked distinctions to be made between different ageing effects on the cable. The following values are continuously displayed and evaluated numerically and graphically for this purpose:

SDTD: Standard deviation (dissipation factor stability)
MTD: Mean value of dissipation factor
ΔTD: Change of the dissipation factor between successive voltage steps



The screenshots are illustrative.
The availability of the functions referred to depends on the version of the software.

Data sheet: BAUR GmbH · 826-130-6 · 01.2023 · Subject to modifications.

BAUR Software 4

Partial discharge testing

In many cases, partial discharges (PD) are the preliminary stage for a breakdown, whereby their occurrence is a key criterion for evaluating the quality of the insulation. Partial discharge testing is performed after laying a new cable, making repairs and to verify the operational reliability of aged cables as it is capable of identifying the following faults:

- Faults in new and old cable accessories (e.g. incorrectly mounted joints)
- Faults in the insulation of plastic-insulated cables (e.g. electrical trees)
- Insufficient mass-impregnated paper insulation due to drying
- Mechanical damage to the cable sheath

Phase-resolved PD presentation (PRPD)

The phasing of partial discharges can be determined through state-of-the-art analysis methods. The type of fault can be isolated and subsequent measurements and repairs can be targeted, thus saving time and money.

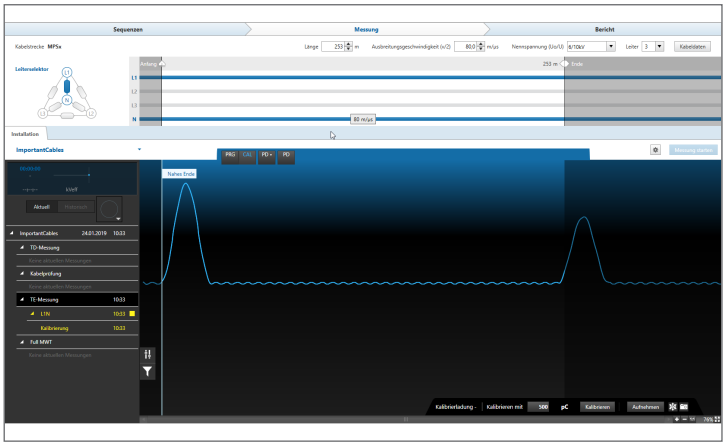
The advantage of combinations

Dissipation factor measurement and partial discharge testing are ideal complements, because you can both detect the overall condition and locate individual faults in the cable.
The combination with VLF cable testing provides additional information: 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 major advantage of MWT is the condition-based test duration. Provided it is permitted, the test duration can be shortened, which in turn lowers both the costs and the load on the cable route. This way, the cable is only exposed to the increased test voltage for the required duration.

The key features

- Partial discharge testing and calibration according to IEC 60270
- PD level measurement and clear visualisation
- Indication of weak points even during the measurement thanks to automatic PD detection and location
- Measurement of the inception voltage of partial discharges (also <> U_0)
- Measurement of the approximate extinction voltage of partial discharges
- Overview presentation of PD activity over the whole cable length
- Precise location of joints by partial discharge testing from the far and near end
- Precise determination of the type of fault by means of the phase-resolved display of the partial discharge
- Automatic PD evaluation: fast and easy
- Partial discharge testing is also performed despite high noise levels thanks to active noise suppression
- Exact location of PD activities in cable insulation, joints and terminations based on the cable data

The partial discharge testing module is available as an option.



The screenshots are illustrative.
The availability of the functions referred to depends on the version of the software.

Technical data

General	
Data exchange	Database (DB3)
Data export format	
Report	PDF
TD data for external systems and statex®	CSV

System requirements	
Operating system	Windows 11 Windows 10 (64-bit)
Memory	8 GB RAM Recommended: 16 GB RAM
Display	TFT monitor acc. to quotation Resolution min. 1280 x 1024 pixels Recommended: 1920 x 1080 pixels

Standard delivery

- BAUR Software 4
  Modules depend on system configuration:
  - Cable and cable sheath testing
  - TD (dissipation factor measurement)
  - PD (partial discharge testing)

Optional software functions

- GIS interface
- Mapping (available countries on request)
- BAUR Software 4 for office PC (office installation)
- TD || PD measurement (parallel dissipation factor and partial discharge measurement)

Information on individual functions and the required system configuration can be obtained from your BAUR representative.

Would you like to discover more about this product?
If so, contact us: www.baur.eu > BAUR worldwide

Data sheet: BAUR GmbH · 826-130-6 · 01.2023 · Subject to modifications.