MBB1

Automated measurement balanced bridge for differential PD measurements

Reliable PD detection in high-interference test settings

Noise interferes with PD measurements

The signals emitted from partial discharge (PD) activity often have a low intensity. For reliable detection, it is therefore crucial to use highly sensitive PD measurement equipment, like our MPD 800 system.

Techniques used to eliminate noise

Since PD measurements often cannot be carried out in shielded areas, noise suppression and source separation techniques are very important to ensure reliable results.

In addition to these techniques, differential measurement using a PD measurement balanced bridge is a common method for reducing interference during PD testing as specified by IEC 60270.

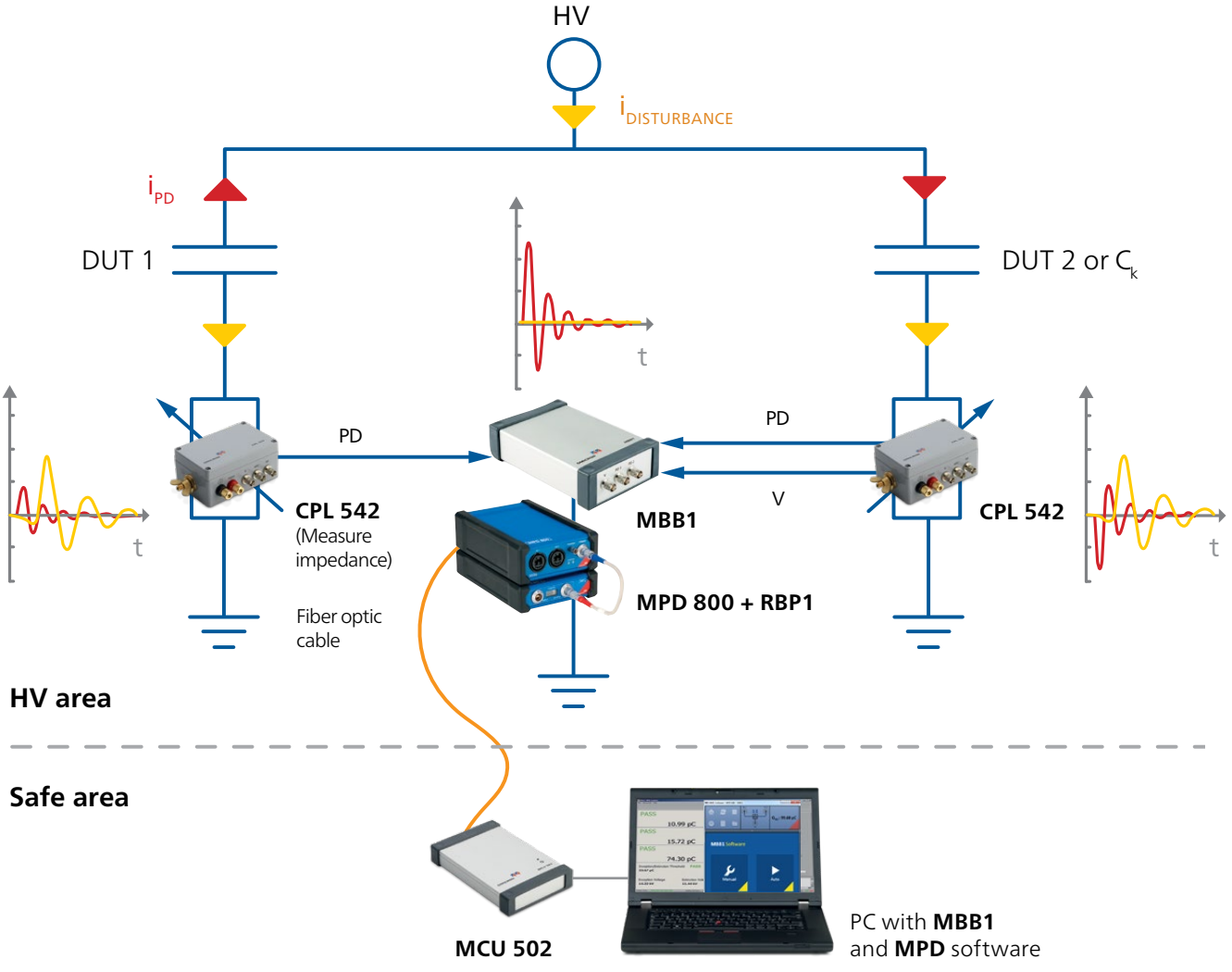
Principle of differential PD measurement

In a differential PD balanced bridge measurement, the PD signals are measured at two positions in the circuit with a shared reference potential. These include the Device Under Test (DUT) branch and the second Device Under Test (DUT 2) or coupling capacitor (C_K) branch.

The impact of disturbances, which couple into the PD test setup as a common mode signal, is reduced by using the difference of the measurement signal of both branches in a balanced setup.

The differential PD measurement leads to an improvement of the signal-to-noise-ratio and to a significant reduction of common-mode disturbance signals.

Differential PD measurement with MBB1



MBB1 at a glance

Our MBB1 is a smart, computer-controlled measurement balanced bridge used with our MPD 800 system to perform differential PD measurements as recommended by IEC 60270.

It can be applied to AC and DC test setups both in the laboratory and on site. It enables balanced, single-phase PD testing on a variety of high-voltage assets, such as:

> Bushings
> Cables
> Instrument transformers

Automated settings increase efficiency

The MBB1 is the only PD measurement balanced bridge to feature plug-and-play operation. Automated settings allow you to work quickly and to achieve optimal results.

Flexible bridge settings

During PD testing, the MBB1 allows you to switch between various bridge states. The calibration factor is automatically set according to the chosen state.

As a result, single branch measurements and balanced or unbalanced differential measurements may be easily compared during the test without disruption.

A comparison of the PD pattern in different MBB1 switching states helps you to characterize and localize signal sources during the measurement.

Applicable also on asymmetrical circuits

Due to the adjustable weighting capability of the MBB1, it can be used on asymmetrical measuring circuits that have differences in impedance and capacity of up to a factor of about ten in the two branches.

Your benefits

> Performs differential PD measurements with our MPD system as specified by IEC 60270
> Ensures enhanced noise reduction in test areas with high interference
> Guided workflows and automated settings ensure greater efficiency and optimal test results
> Remotely controlled by a PC from a safe working area in HV environments

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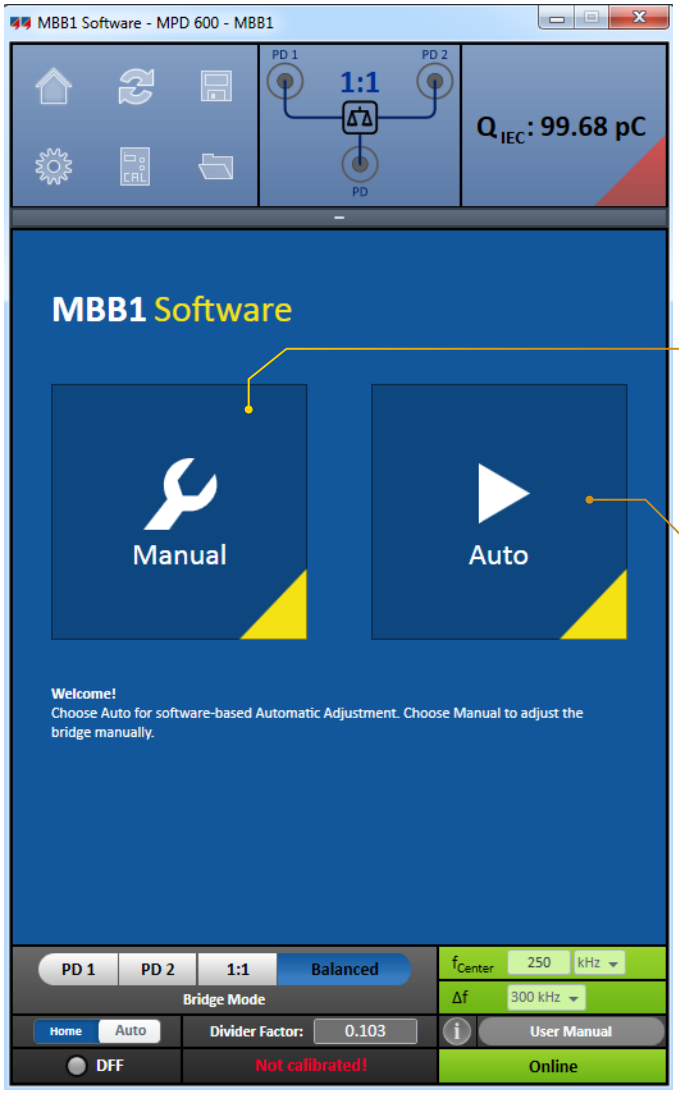
MBB1 Software

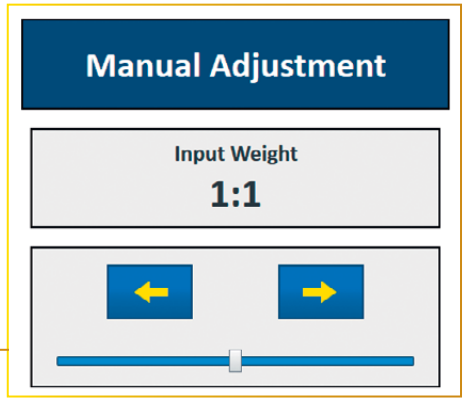
Remote control of the MBB1 measurement balanced bridge is done with the MBB1 software on a computer in the safe area. It allows you to control all hardware parameters, either manually or automatically. Guided workflows help you to balance and calibrate the PD measurement system.

The software also provides you with a real-time overview of the bridge and measurement settings. You can save bridge settings and reload them for later use to ensure consistent test results.

Software Dashboard

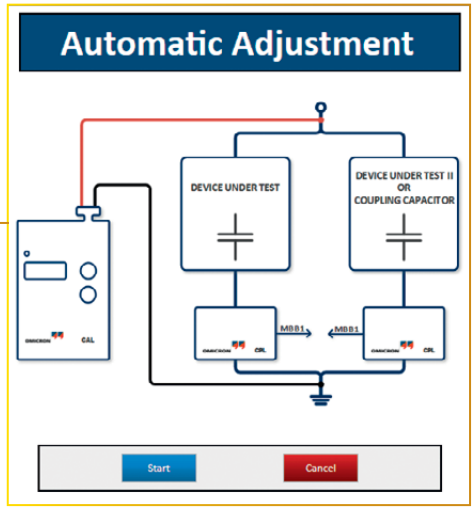


Manual mode



The weighting of the two input branches can be adjusted manually with a single slider.

Automatic mode



Parameters are automatically calculated based on measurement setup and frequency.

Technical data and ordering information

Technical data

MBB1 Hardware

Device

Material	Extruded aluminum
Dimensions (W x D x H)	110 x 190 x 44 mm (4.33 x 7.48 x 1.73 in)
Weight	650 g (1.43 lb)

Power Supply

Source	Fed via AUX connector from MPD 600
Power consumption in standby	< 700 mW
Max. power consumption during parameter change / communication	1300 mW

Dynamic

Frequency range	100 kHz – 1 MHz
Maximum voltage V input	60 Vrms
Maximum voltage PD inputs	10 Vrms

Connections

Primary connections	3 × BNC (PD-1, PD-2, V)
Outlet	2 × BNC (PD, V)
Control and power supply	via AUX-connection (4-pin LEMO plug) to MPD 600 with MBB1

Environmental conditions

Operating temperature	0 °C ... 55 °C (32 °F ... 131 °F)
Storage temperature	-10 °C ... 70 °C (14 °F ... 158 °F)
Humidity	5 % ... 95 %, non-condensing

MBB1 Software

Control software

MPD Suite Software 1.30 or later (MPD/MI Software 1.6.3 or later for MPD 600) and MBB1 License on MCU are necessary.

Software system requirements

MPD Suite Software 1.30 or later (MPD/MI Software 1.6.3 or later for MPD 600) installed.

Operating system	Windows 7™ (64 bit), Windows 8 and 8.1™ (64 bit), NET4.0 or later
CPU	Multicore system with 1.2 GHz or faster Single core system with 1.2 GHz or faster
RAM	4 GB or more
Display resolution	1280 x 768 or higher
Graphics Adapter	Support of DirectX 7.0 or higher

Ordering information

Description	Order no.
MBB1 Measurement Balance Bridge Package > 1 x MBB1 > 1 x AUX cable > 5 x BNC cables > 1 x MBB1 software and MBB1 license, user manual, software CD/DVD	P0006459

We create customer value through ...

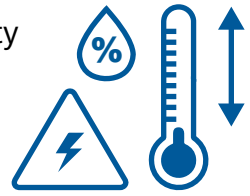
Quality

You can rely on the highest safety and security standards

Superior reliability with up to

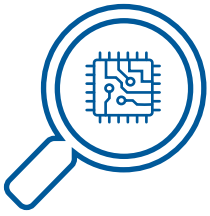
72

hours burn-in tests before delivery



100%

routine testing for all test set components



ISO 9001
TÜV & EMAS
ISO 14001
OHSAS 18001

Compliance with international standards

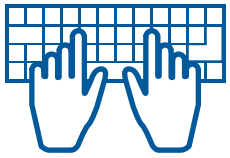
Innovation

... a product portfolio tailored to my needs

More than

200

developers keep our solutions up-to-date



More than

15%

of our annual sales is reinvested in research and development

Save up to

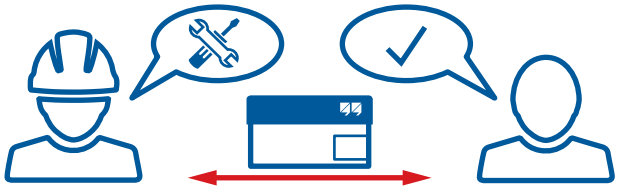
70%

testing time through templates, and automation

Support

Professional technical support at any time

Loaner devices help to reduce downtime



Cost-effective and straight-forward repair and calibration

offices worldwide for local contact and support

Knowledge

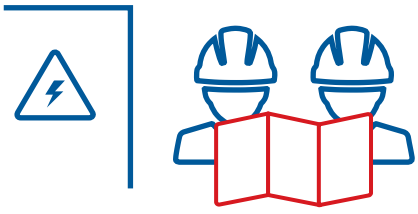
More than

300

Academy and numerous hands-on trainings per year

Frequently OMICRON hosted user meetings, seminars and conferences

to thousands of technical papers and application notes



Extensive expertise in consulting, testing and diagnostics

OMICRON is an international company that works passionately on ideas for making electric power systems safe and reliable. Our pioneering solutions are designed to meet our industry's current and future challenges. We always go the extra mile to empower our customers: we react to their needs, provide extraordinary local support, and share our expertise.

Within the OMICRON group, we research and develop innovative technologies for all fields in electric power systems. When it comes to electrical testing for medium- and high-voltage equipment, protection testing, digital substation testing solutions, and cybersecurity solutions, customers all over the world trust in the accuracy, speed, and quality of our user-friendly solutions.

Founded in 1984, OMICRON draws on their decades of profound expertise in the field of electric power engineering. A dedicated team of more than 900 employees provides solutions with 24/7 support at 25 locations worldwide and serves customers in more than 160 countries.

For more information, additional literature, and detailed contact information of our worldwide offices please visit our website.

www.omicronenergy.com