OMICRON

MPD 800

Universal partial discharge measurement and analysis system

The next level in partial discharge testing: MPD 800

20 years of reliability and experience

The MPD 800 is the successor to our MPD 500 and MPD 600 partial discharge (PD) measurement and analysis systems. After 20 years of experience in this sector, it was time to bring PD testing to a new level.

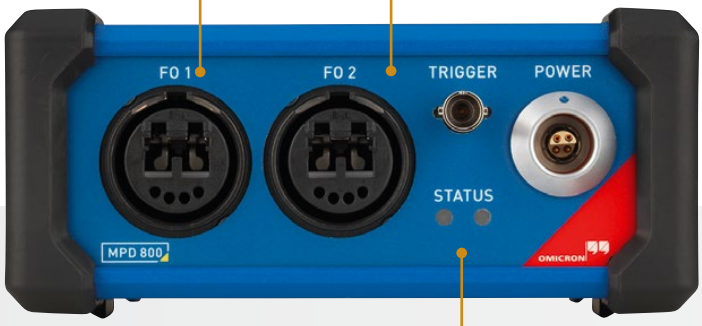
Established features were redesigned, resulting in the most powerful, accurate and robust test system on the market. MPD 800 is ideal for factory and on-site testing, even in the most demanding environments. Due to its excellent filtering features, even the smallest PD pulses can be separated from interference and analyzed.

FAST AND EASY

The two robust fiber-optic input channels are easy to connect. The improved MPD Suite software can be further simplified by defining individual user profiles. Both features help you to save time.

SYNCHRONOUS, SCALABLE SYSTEM

The MPD 800 system can be easily expanded by connecting multiple devices. It allows you to perform synchronous PD measurements with up to 18 measurement units.



STANDARDS-COMPLIANT TESTING

MPD 800 provides standard-compliant PD measurements according to IEEE and IEC standards. With just the click of a button, all parameters can be automatically set or reports generated

One device for all assets and testing applications

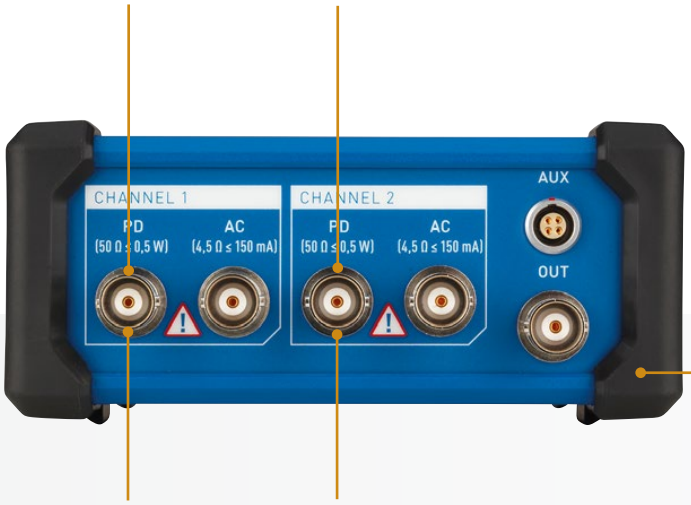
You can use the MPD 800 for a wide range of testing applications, beginning with the traditional power supply sector, at manufacturers or repair shops, in laboratories or, for example, during diagnostic testing of motors in the industry sector.

It supports you during standards-compliant PD testing for routine and type testing, factory and site acceptance testing, as well as for troubleshooting to localize or investigate PD sources in:

- Power transformers
- Power cables
- Rotating machines
- Gas-insulated switchgear (GIS) and medium-voltage switchgear
- Industrial drives
- Railway transportation
- High-voltage components such as bushings, insulators, capacitors, cable terminations, busbars

MULTI-CHANNEL TESTING

Future ready, the two PD measurement channels allow synchronous, multi-channel measurements, and enable gating to suppress disturbances.



OUTSTANDING SPECS

MPD 800's cutting-edge specifications make it ready for all upcoming measurement challenges. Its input bandwidth of up to 35 MHz, the 125 MS/s sample rate and the PD pulse rate of up to 2 Mio./s guarantee that you will never miss a PD event.

POWERFUL NOISE SUPPRESSION

For reliable PD testing in noisy industry environments, the MPD 800 enables PD source and disturbance separation using the latest 3PARD and 3FREQ technology.

Measuring principle to minimize the impact of on-site interferences

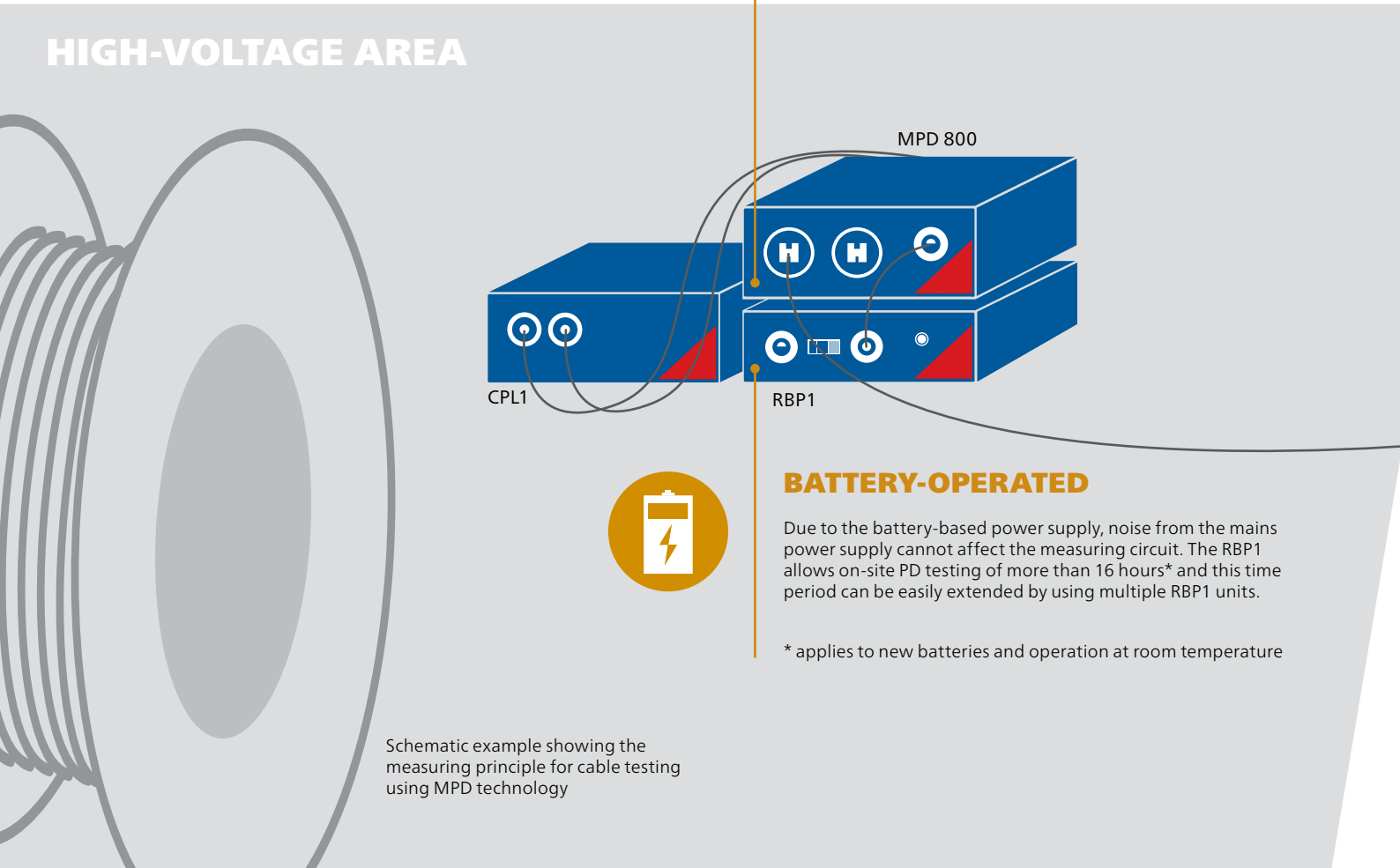
Challenges during partial discharge detection

The challenge when analyzing partial discharge (PD) is to detect and evaluate discharges in the range of pico-coulombs (pC), while dealing with test voltages of up to several hundred kilovolts (kV) and large test set-ups which act as radio-frequency (RF) antennas.

External interference and noise from nearby equipment, for example caused by corona or other radio-frequency sources, may overlay these highly sensitive PD measurements.

HIGH SENSITIVITY AND DIGITAL FILTER

The MPD 800 is placed as close as possible to the measurement point of the test object in order to keep the length of the BNC cable between the test object and the MPD 800 to a minimum. The short connection cable and flexible digital filters increase the sensitivity of the PD measurement by reducing influences from the surroundings.



BATTERY-OPERATED

Due to the battery-based power supply, noise from the mains power supply cannot affect the measuring circuit. The RBP1 allows on-site PD testing of more than 16 hours* and this time period can be easily extended by using multiple RBP1 units.

* applies to new batteries and operation at room temperature

Schematic example showing the measuring principle for cable testing using MPD technology

Measuring principle using MPD technology

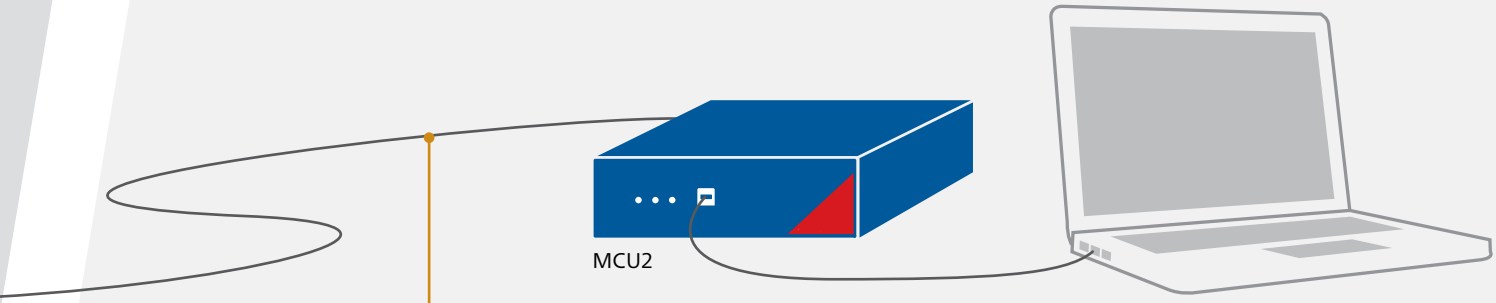
The MPD 800 system consists of an MPD 800 measurement device, the MCU2 control unit and the MPD Suite software. Depending on the measurement, the MCU2 is connected to a single or multiple MPD 800 devices using fiber-optic technology. The MPD 800 devices and RBP1 batteries are connected to the test object either directly or via CPL1 or CPL2 coupling devices. The MCU2 is connected via USB to a laptop or PC with the installed MPD analysis software. This approach results in several advantages:

- Safe testing approach due to galvanic isolation
- Battery-operated power supply
- Minimum of influences from the surroundings
- High synchronicity to improve PD analysis

SAFE APPROACH

You benefit from a clear separation of the high-voltage and working areas as only the measurement equipment must be placed in the high-voltage area. The test engineer can work safely on the computer in the working area due to the provided galvanic isolation.

WORKING AREA



MINIMIZED INFLUENCES

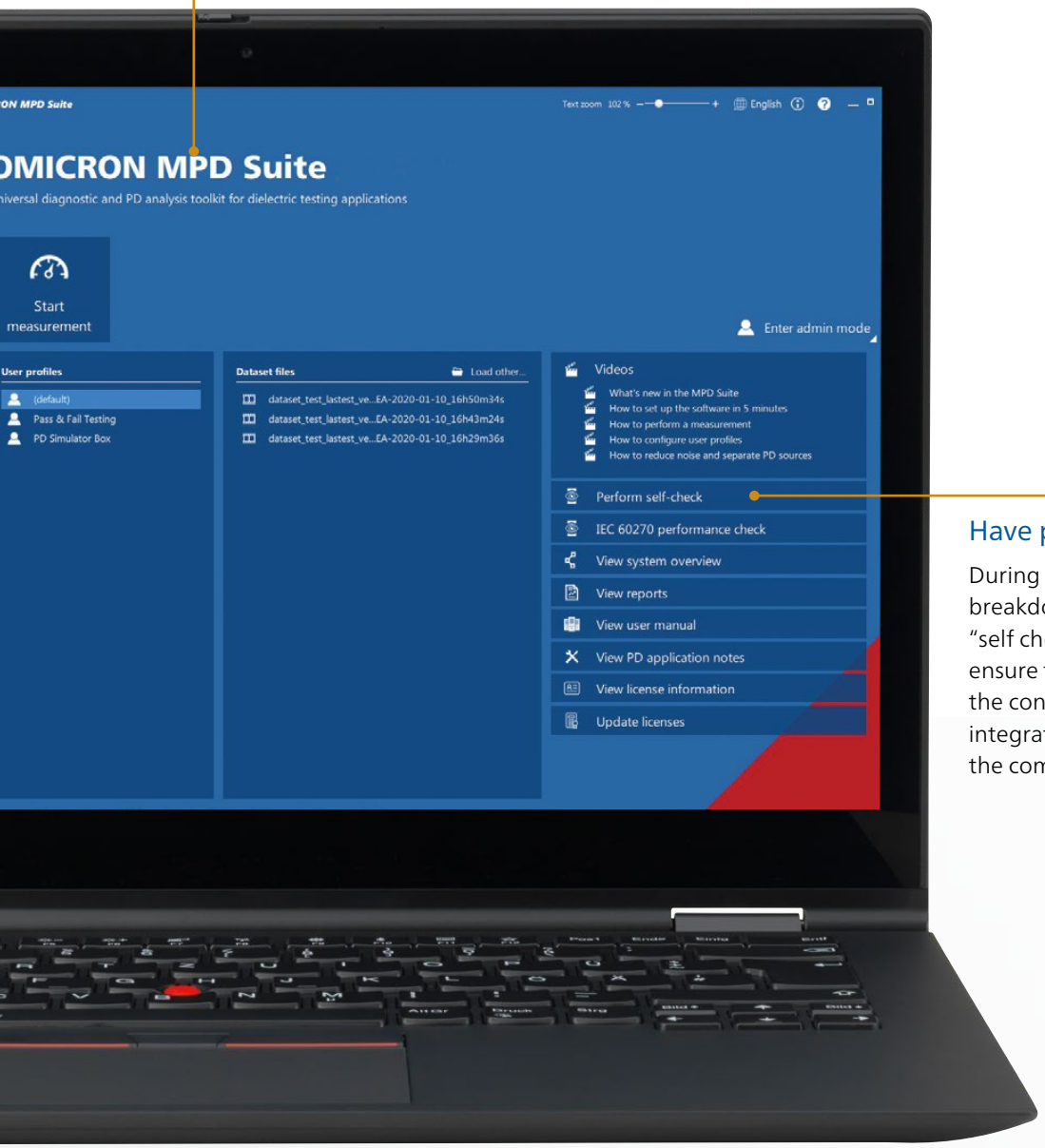
The fiber-optic cable to the MCU2 unit reduces the influence of interference coupling, minimizes ground loops and ensures a safe approach. Compared to conventional wires, fiber-optic cables enable precise synchronicity of all connected units down to the nanosecond range.

How to prepare partial discharge measurements

Flexible application-oriented packages

The MPD Suite software offers different software packages, software add-ons and modules for our MPD 800 system. You can choose between a set of software packages from essential to universal, and tailored application-oriented software packages.

Dedicated software modules provide you with specific functionalities, such as a .COM and web-based interface for easy automation, or for partial discharge (PD) measurement during DC voltage testing.



Have peace of mind

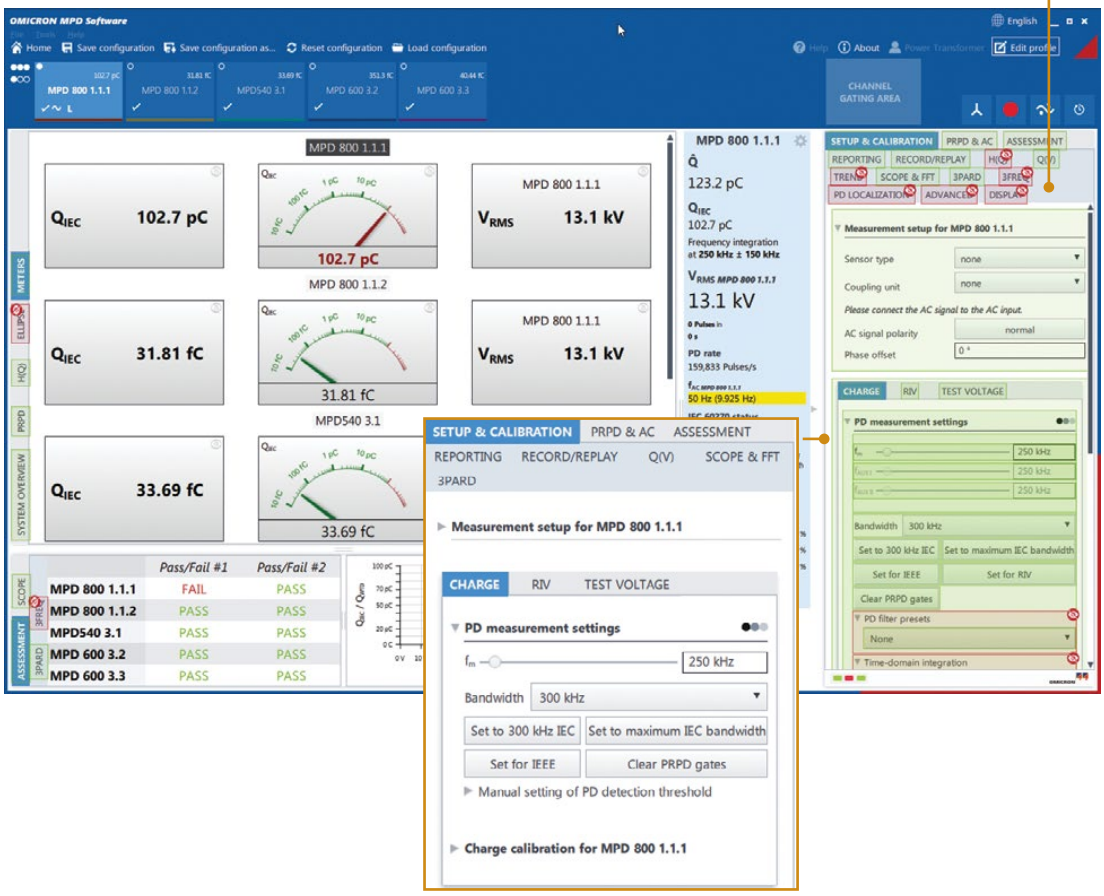
During high-voltage testing, flashovers and breakdowns can occur. The integrated "self check" functionality helps you to ensure the correct and reliable operation of the connected MPD 800 units. It verifies all integrated components as well as checking the communication with the software.

The start page provides you with a wide range of helpful information such as application notes or the MPD 800 user manual. In addition, it gives you easy access to recorded dataset files and created reports.

Simplify your user profiles

The MPD Suite software can be completely customized depending on your needs. You can set individual test specifications, such as frequency range, filters, assessment levels or hide individual software components such as tabs, diagrams, buttons, or feature groups.

This is useful, for example, in cases of dedicated testing applications, such as PD analysis on rotating machines or cables where you do not need all of the features the software offers.

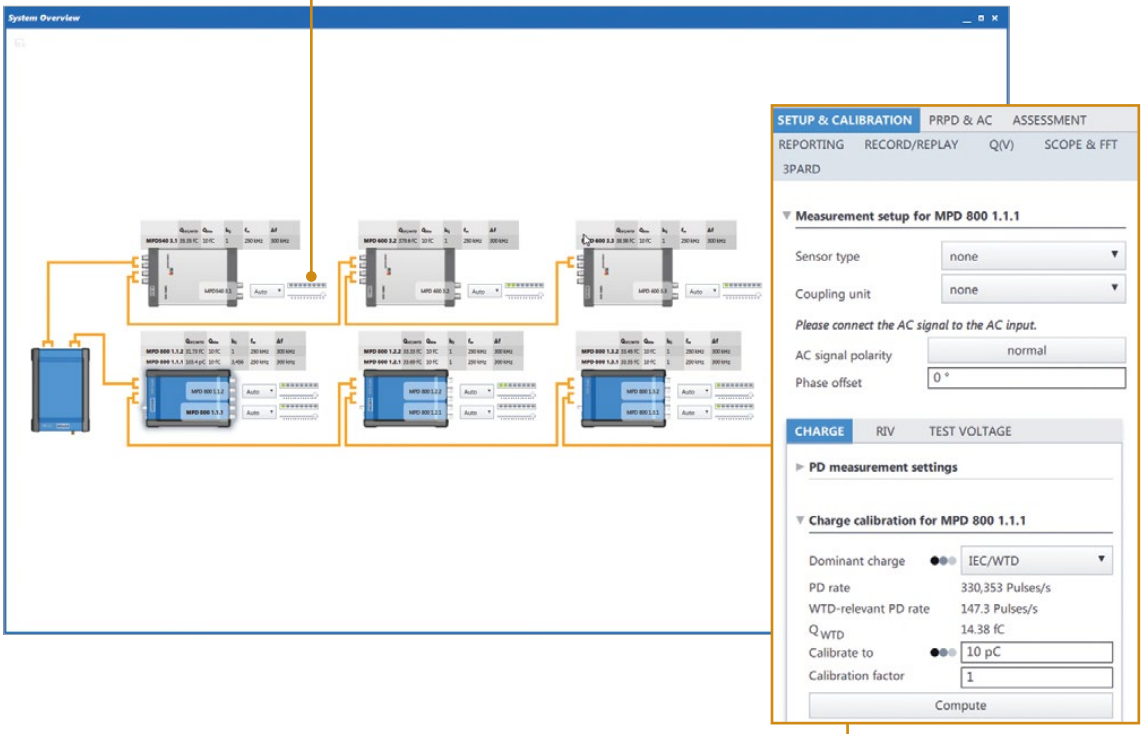


By changing the software settings and defining dedicated user profiles, you can simplify the user interface and save time.

How to set and perform partial discharge measurements

Keep an overview

Commonly, multiple MPD 800 devices are in use for multi-channel measurements or testing of transformers, generators, or on-site cable testing. The “system overview” functionality provides a clear overview of your measurement setup. It displays all connected MPD 800 units and shows the most important partial discharge (PD) measurement values and settings of each PD channel. Thus, you can keep an overview of the MPD measurement setup.



Configure your measurement

PD events can sometimes be overlaid by disturbances in certain frequencies. MPD 800 allows you to select individual measurement settings by adapting the center frequency and choosing between various bandwidths. By doing so, the frequencies with noise can be excluded and the analysis will target the real PD.

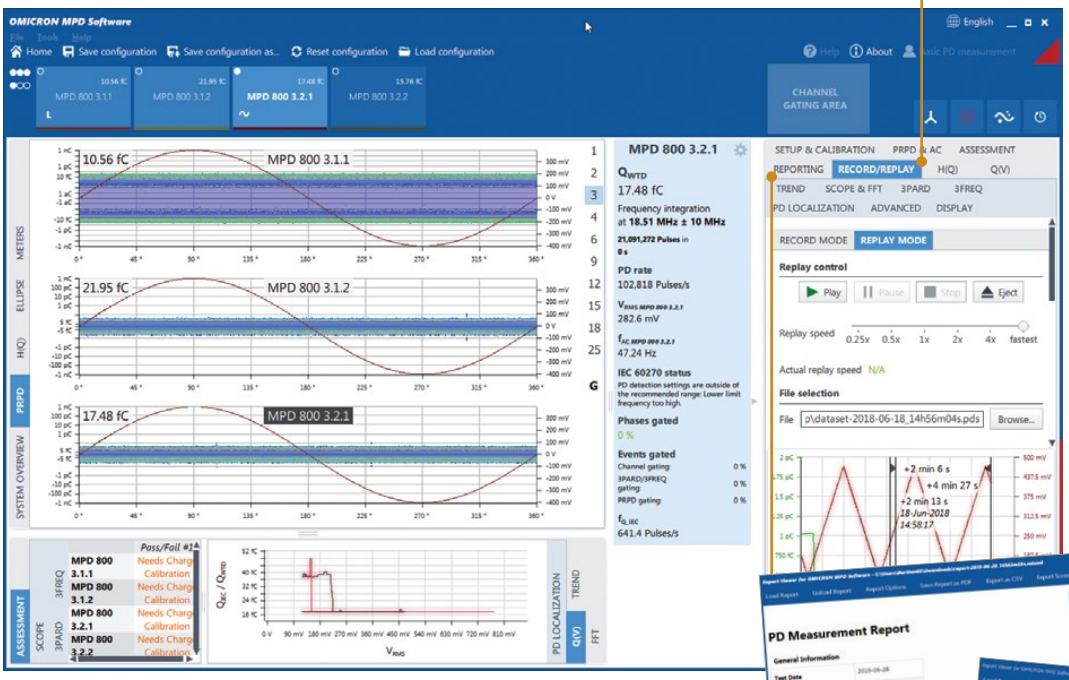
Calibrate your setup

Using the MPD 800 system, you can calibrate charge according to IEC or RIV (Radio Influence Voltage), which is mandatory according to IEC 60270, IEEE/NEMA and CISPR standards. Besides this, you can also use the MPD 800 to calibrate the test voltage. This ensures a comparability of the gained results.

Powerful recording and replay

MPD 800 records dedicated PD and RIV events into dataset files. These files contain unprocessed raw data and include all measured values and all relevant system settings. That way, measurements become traceable and you can use all kinds of analysis, gating and reporting functions for post-analysis.

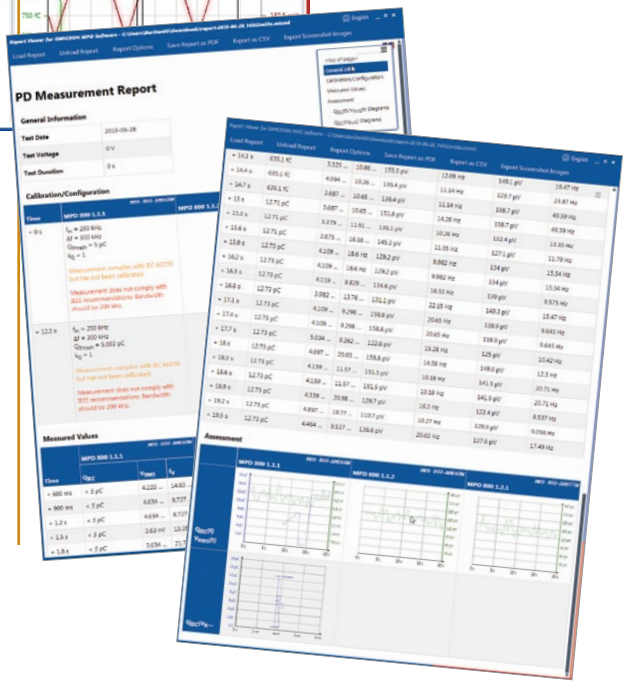
The recorded dataset files can be cut individually, for example, to focus on relevant PD events. As the playback speed can be freely selected, some sections can be played back more slowly in order to be analyzed in greater detail.



Customize your reports

You can record specific PD events, export the measurement data afterwards as .xml or as .csv files, and save diagrams on an individual basis.

In addition, you can adapt the report by selecting all included parts, reordering information, add screenshots or your company logo. At the end, reports can be stored as PDF files.

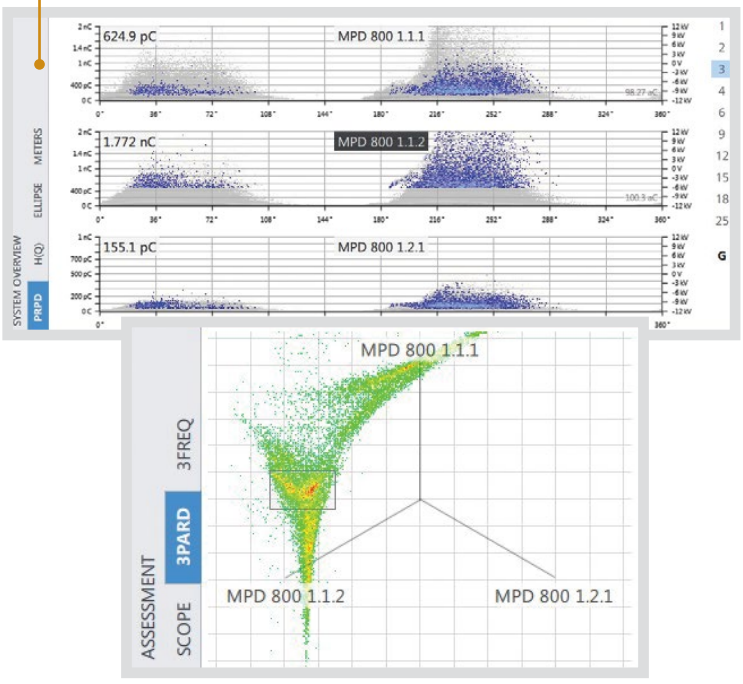


How to suppress noise and separate partial discharge sources for re

Three-phase filtering tool 3PARD

Partial discharge (PD) events closer to one phase can also be detected on the other phases. The 3PARD (3-phase amplitude relation diagram) tool simplifies the differentiation of various PD sources and PD interferences. It relies on a synchronous three-phase measurement of a test object.

The combined results are displayed in a single diagram, the 3PARD star diagram, which facilitates result comparison and PD pattern selection. To further increase the testing reliability, the PRPD diagram can be used to show filtered out pulses in real time while greying out the residual pulses in the background.

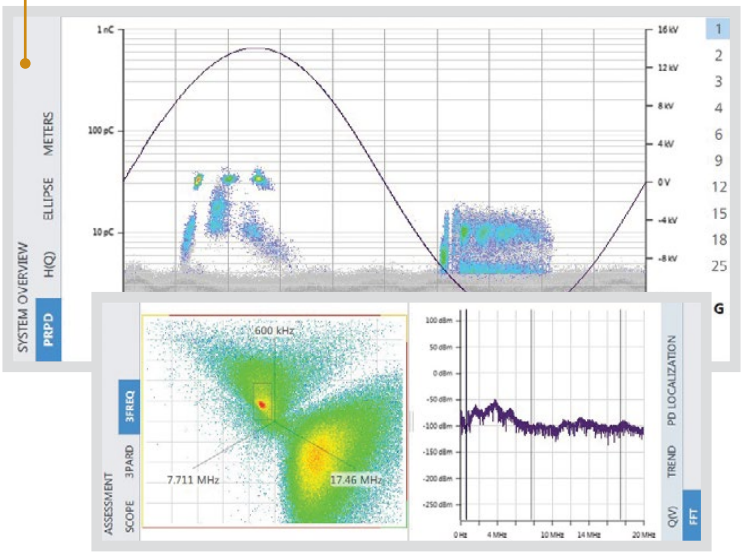


The 3PARD filter analyzes partial discharge on all three phases. Therefore you need at least three channels and respectively two MPD 800 devices in order to cover all phases.

Single-phase filtering tool 3FREQ

The 3FREQ (3-center frequencies relation diagram) is a one-channel filtering tool using three digital filter frequencies. It characterizes PD sources by their frequency signature.

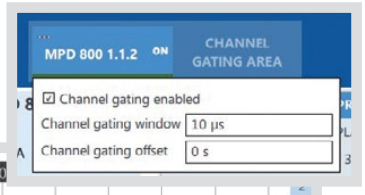
Using a 3FREQ diagram, you can separate PD events such as surface discharge, corona and internal void from disturbances. As with 3PARD, the PRPD diagram shows filtered out pulses while greying out the residual pulses in the background to improve the testing reliability.

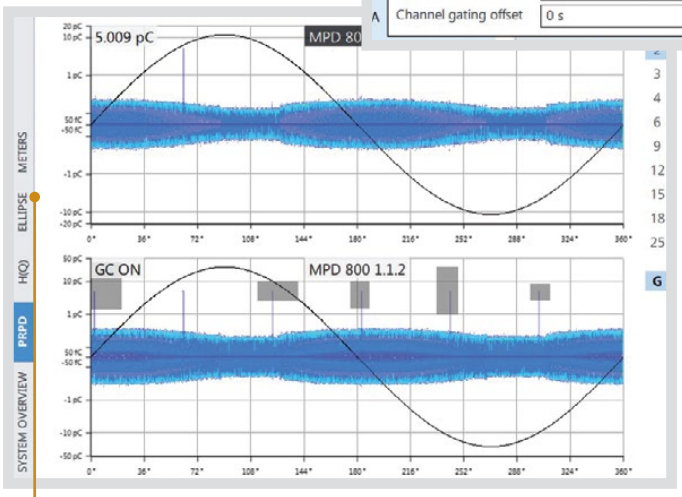


The 3FREQ filter uses three different center frequencies for PD analysis. Due to the one-channel measurement approach you only need one MPD 800 device.

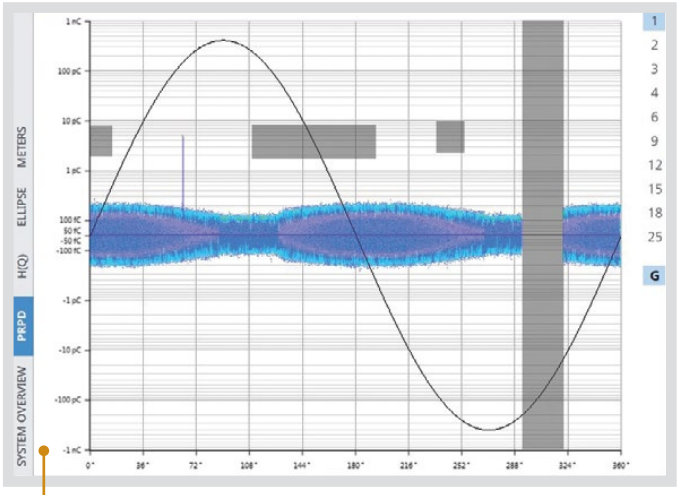
liable analysis

The channel gating can easily be configured or switched off in the software.





The 2-channel PRPD overview shows the filtered pulses (disturbances) and the measured PD pulses in real-time.



Measurement example using phase/amplitude window gating in the PRPD diagram.

Channel gating: Second channel for gating

To reduce the effect of frequency-variable disturbances, such as inverter noise on the measurement results, you can connect an additional MPD 800 channel as a gating channel.

PRPD gating: Window gating of phase and amplitude

Phase/amplitude gates allow the MPD 800 to eliminate frequency-stable signals with a certain amplitude and fixed phase position, for example converter pulses, drives, irrelevant PD. You can easily define the gating areas by marking them with the mouse. These areas will be excluded during the subsequent PD measurement.

Partial discharge measurements on power transformers

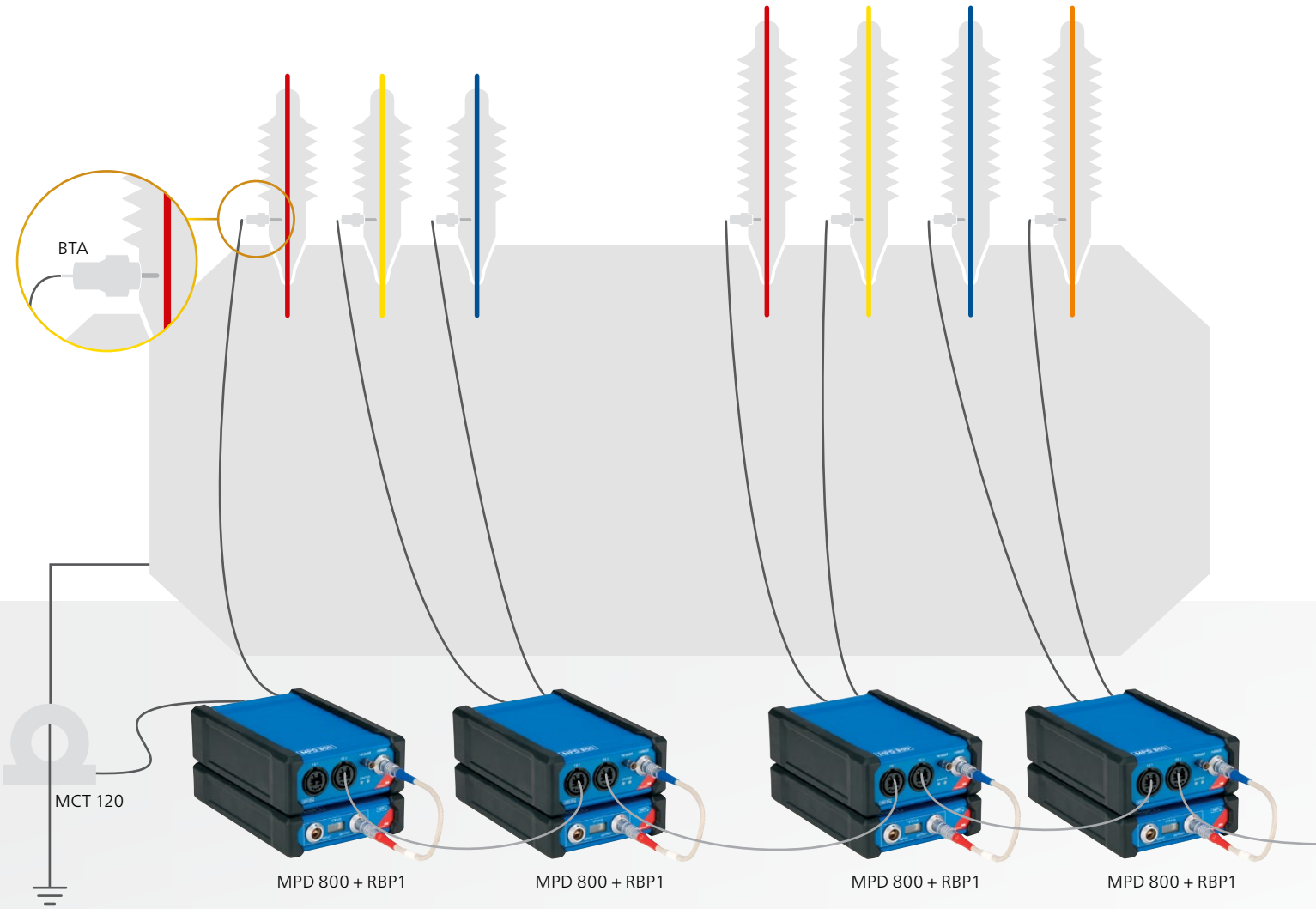
Which parts of power transformers can be tested?

- ✓ Bushings
- ✓ CTs
- ✓ Tap changer
- ✓ Winding
- ✓ Core
- Leads

When measuring and analyzing partial discharge (PD) activity in power transformers, the particular tests and test set-ups are determined by the type of transformer and depend on the standards according to which the measurements are performed.

Depending on the type of bushings used, MPD 800 is connected either to the capacitive tap of the bushings or to an external coupling capacitor. PD is measured either in µV (according to IEEE standards) or in pC (according to the IEC 60270 standard).

PD measurements on power transformers are performed during factory acceptance, on-site commissioning and routine testing in order to detect critical defects in the insulation and assess potential risks.



Your benefits for PD testing on power transformers

Standards-compliant measurements

MPD 800 ensures standards-compliant measurements – with just the click of a button, all parameters based on a specific standard can be automatically set and added to a report.

Simultaneous testing

MPD 800 supports you in the simultaneous measurement and analysis of charge (Q_{IEC}) and Radio Interference Voltage (RIV) values, for example during factory acceptance testing.

Powerful separation tools

Advanced filtering options (3PARD and 3FREQ) help you to reliably distinguish between harmful PD and external noise and to separate multiple PD sources.

Two input channels

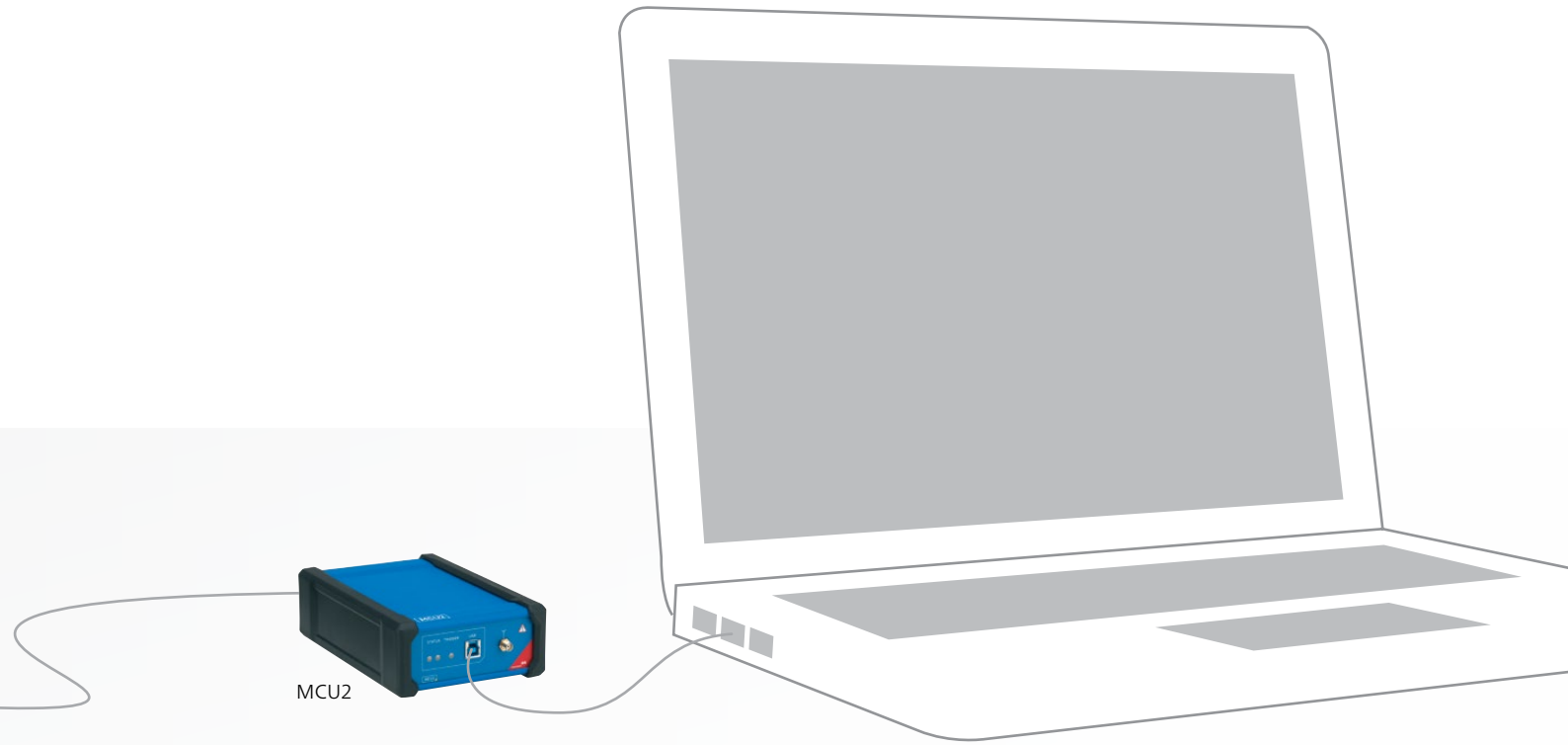
MPD 800 has two PD input channels to enable synchronous, multi-channel measurements using one device, and to allow real-time gating of the current measurement in order to suppress surrounding noise.

PD trigger functionality

By drawing a trigger-window, pulses can be displayed in the PD scope for detailed pulse shape analysis and for triggering acoustic PD localization with PDL 650 via the optical output of MPD 800.

UHF measurements (available soon)

To further verify the signal source, PD can be additionally measured inside the tank of liquid-insulated transformers using ultra-high frequency sensors.



Partial discharge measurements on rotating machines

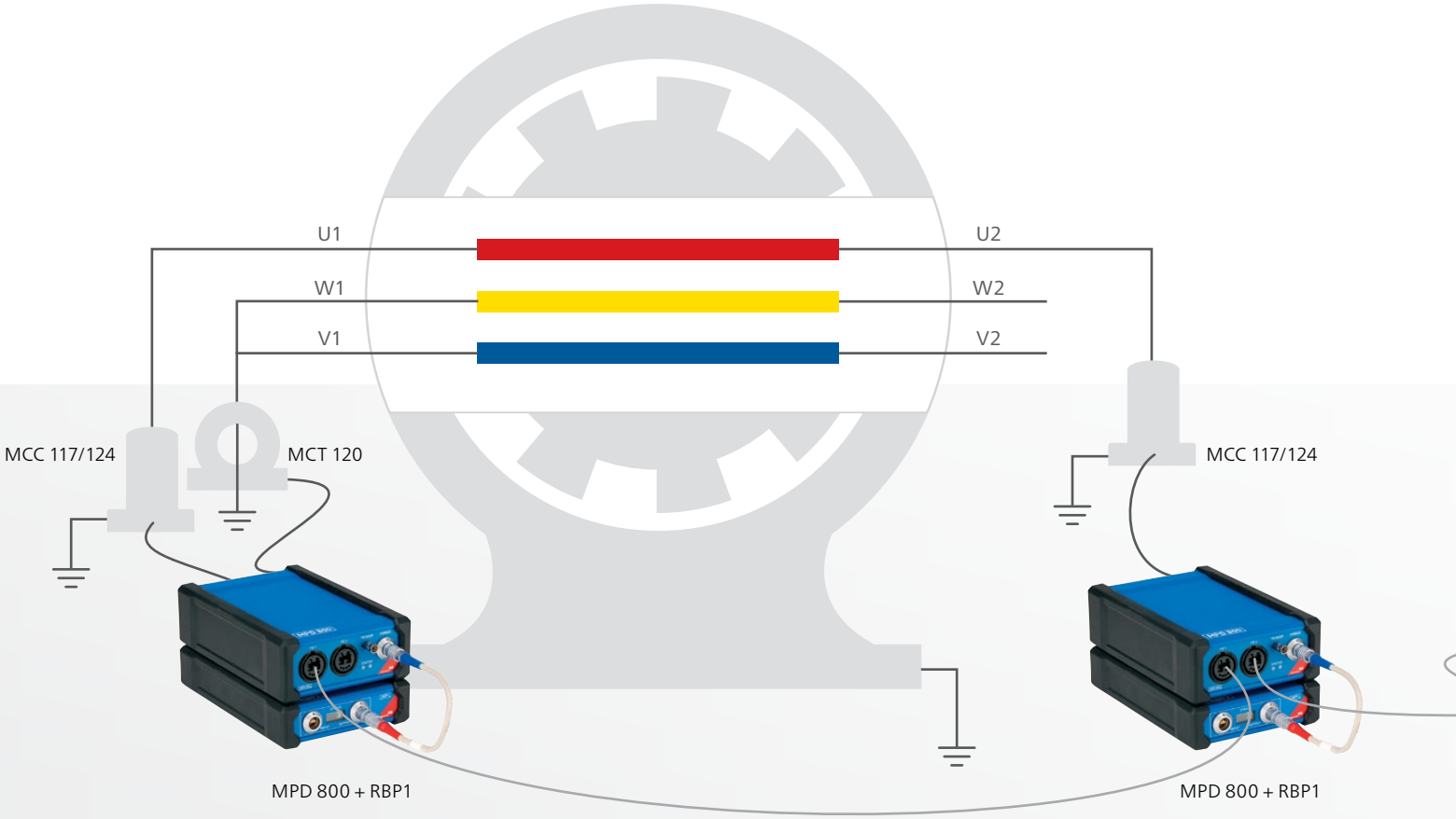
Which machine parts can be tested?

- ✓ Stator
- ✓ End Winding
- ✓ Busbar
- Core
- Magnet
- Rotor

Partial discharge (PD) testing on rotating electrical machines is performed according to international standards, either off-line when the machine is taken out of service and energized with a high-voltage source or on-line when the machine is in service.

Depending on whether the star point is accessible, a single-phase measurement can be done. Otherwise a three-phase measurement in combination with source separation techniques enables you to identify PD activity in a specific phase.

Off-line PD measurements on rotating machines are performed during factory acceptance, on-site commissioning and routine maintenance testing to detect critical defects in the insulation and assess potential risks. On-line PD measurements can also be performed on large generators when in service using permanently installed coupling capacitors.



Your benefits for PD testing on rotating machines

Standards-compliant measurements

MPD 800 ensures standards-compliant measurements – with just the click of a button, all parameters based on a specific standard can be automatically set.

Two input channels

MPD 800 has two PD input channels to enable synchronous, multi-channel measurements using one device, and to allow real-time gating of the current measurement to suppress surrounding noise.

Powerful separation tools

Advanced filtering options (3PARD and 3FREQ) help you to reliably distinguish between harmful PD and external noise and to separate multiple PD sources.

Create user profiles

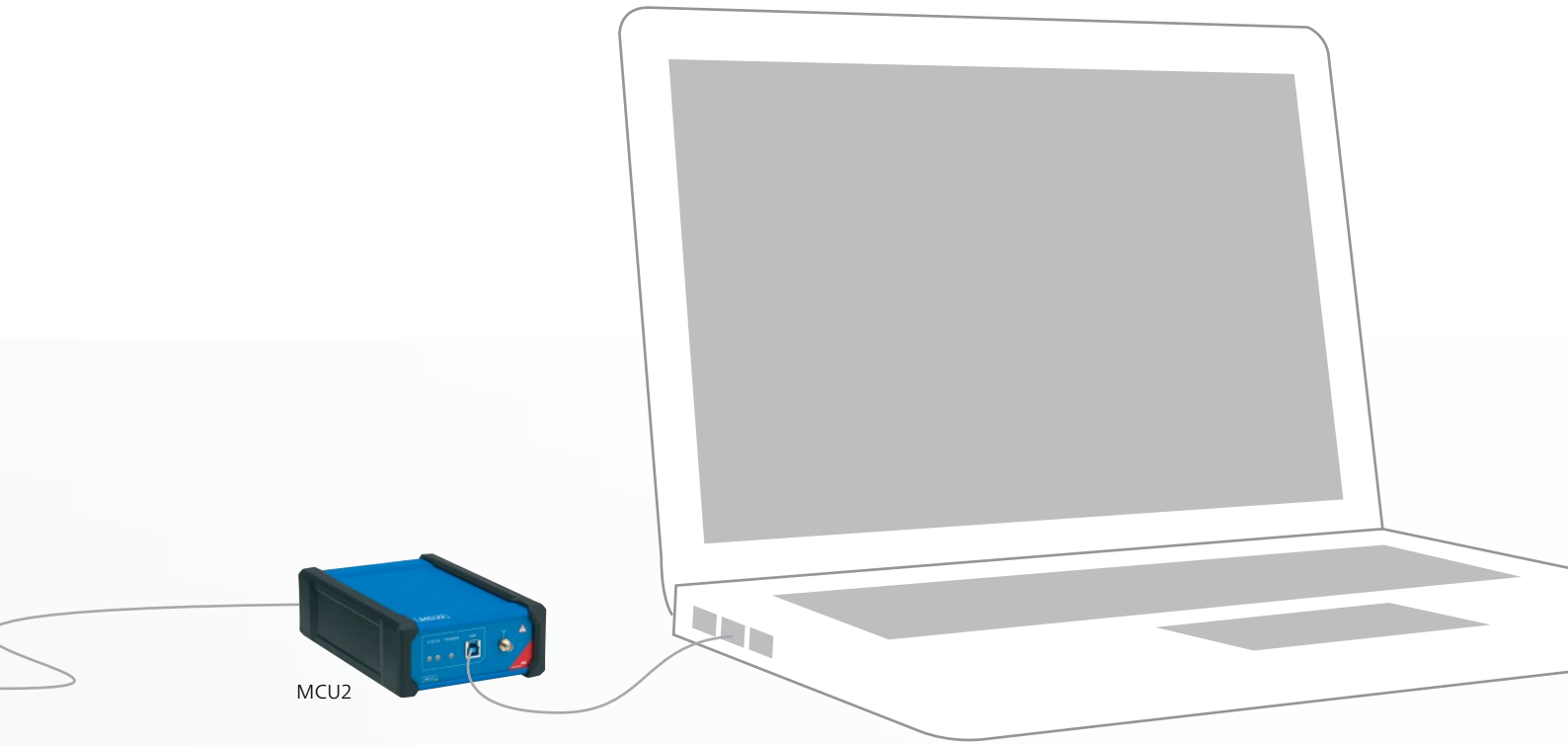
For different types of PD tests on rotating machines, you can set up specific measurement or user profiles with the required test parameters according to international standards.

Flexible user interface

The flexible MPD software allows you to configure measurements, select only the analysis tools you need and to determine how data should be displayed.

Record and replay PD measurements

Live data sets can be recorded and replayed later for analysis. You can focus on specific segments of the data set and include these in reports.



Partial discharge measurements on power cables

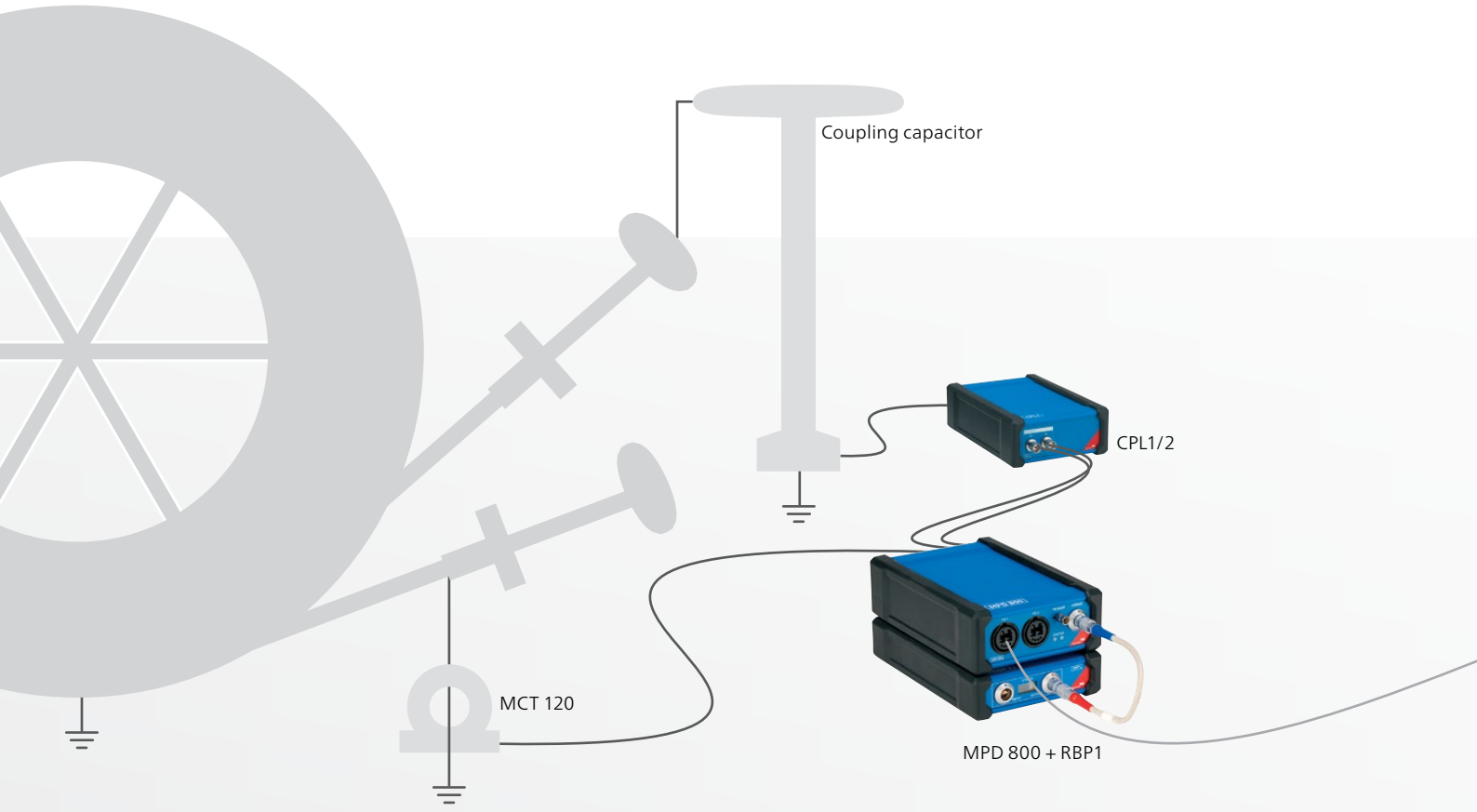
Which parts of power cables can be tested?

- ✓ Main conductor
- ✓ Terminations
- ✓ Joints
- Sheath
- Shielding

Partial discharge (PD) testing on medium- and high-voltage cables starts in the factory as this it clearly reveals manufacturing-related insulation defects. During factory testing, the test voltage is increased according the relevant international standard, while the PD signals are decoupled within the coupling capacitor path.

A test voltage is applied that is higher than the normal operating voltage of the power cable and the PD measurement is made. The goal of the test is to determine whether the cable insulation is free from PD before it is put into service.

PD testing is also important during site acceptance testing of installed cable systems at their joints and terminations. Regular in-service PD testing can also be performed on-line to assess the dielectric condition of the cable system as it ages.



Your benefits for PD testing on power cables

Standards-compliant measurements and negative superposition suppression

MPD 800 ensures standards-compliant measurements – with just the click of a button, all parameters based on a specific standard can be automatically set, and can be manually adjusted to on-site conditions (noise).

Two input channels

MPD 800 has two PD input channels to enable synchronous, multi-channel measurements using one device, and to allow real-time gating of the current measurement to suppress surrounding noise.

High sensitivity for locating defects

Advanced broadband PD localization filters, multi-channel time domain reflectometry (TDR), a wide localization range (> 130 µs) as well as statistical (sTDR) localization techniques allow you to quickly locate defects along entire lengths of cables.

Create user profiles

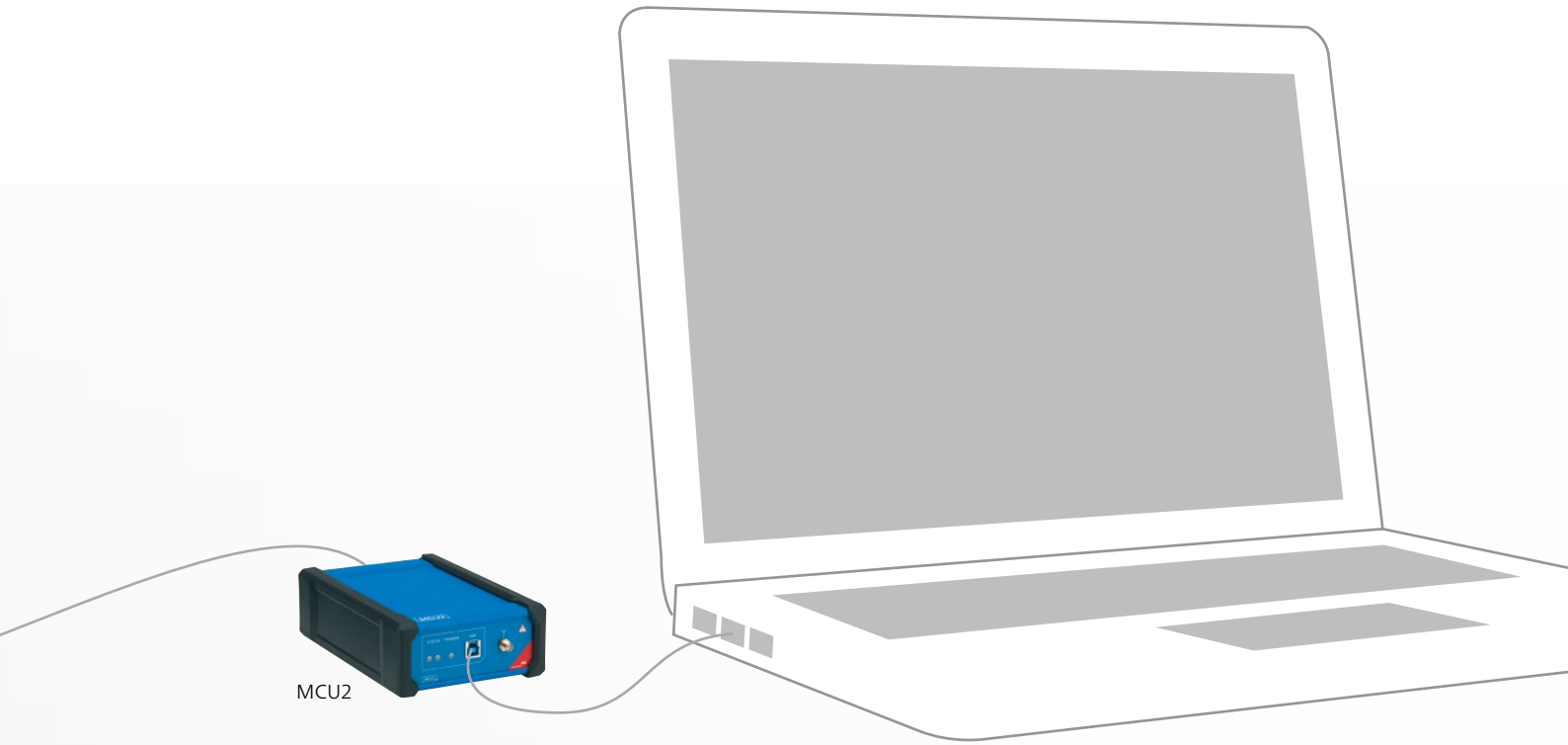
For different types of PD tests on power cables, you can set up specific measurement or user profiles with the required test parameters according to international standards.

Synchronous multi-channel measurements

Synchronous multi-channel measurements at the terminations and joints ensure a more complete assessment of the insulation system and reliable localization of defects along the entire cable length for on-site testing.

Powerful separation tools

An advanced 3PARD filtering option helps you to reliably distinguish between harmful PD and external noise and to separate multiple PD sources on site.



Partial discharge measurements on other high-voltage components

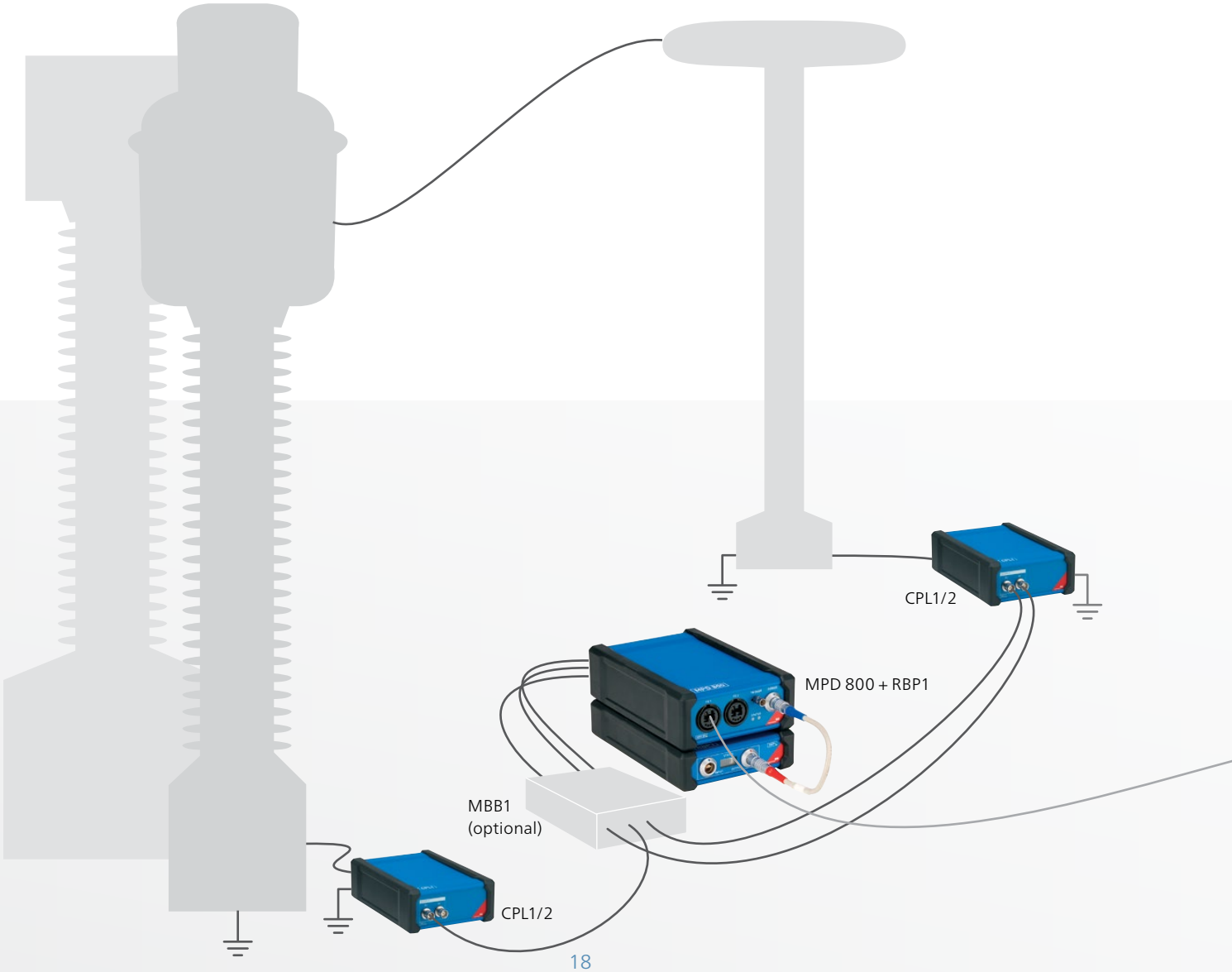
Which component parts can be tested?

- ✓ Windings
- ✓ Voltage/Current divider
- ✓ Capacitors
- ✓ Compensation reactor

Partial discharge (PD) testing is essential for high-voltage components used in many electrical assets, such as electrical insulators, bushings, converters and capacitors. It is important to determine whether they meet specific design and operational requirements.

Off-line single-phase PD measurements are performed on these components in a test lab with an external voltage source according to international standards. In many cases, a test voltage is applied that is higher than the normal operating voltage. Also the PD measurement is made while other machines run in the factory, creating disturbances which influence the PD testing.

These types of measurements are performed on a pass-fail basis during the development of high-voltage components as well as quality control during factory acceptance tests.



Your benefits for PD testing on high-voltage components

Standards-compliant measurements

MPD 800 ensures standards-compliant measurements – with just the click of a button, all parameters based on a specific standard can be automatically set.

Record and replay PD measurements

Live PD datasets can be recorded and replayed later for analysis and PD data comparison. You can focus on specific segments of the PD dataset and include these in reports.

Powerful separation tools

The advanced 3FREQ filtering option helps you to reliably distinguish between harmful PD and external noise for more reliable analysis. Additional noise filtering can be achieved with our MBB1 balanced measurement bridge.

HVDC testing

New features focussed on HVDC standards compliant PD testing will be available soon.

Flexible user interface

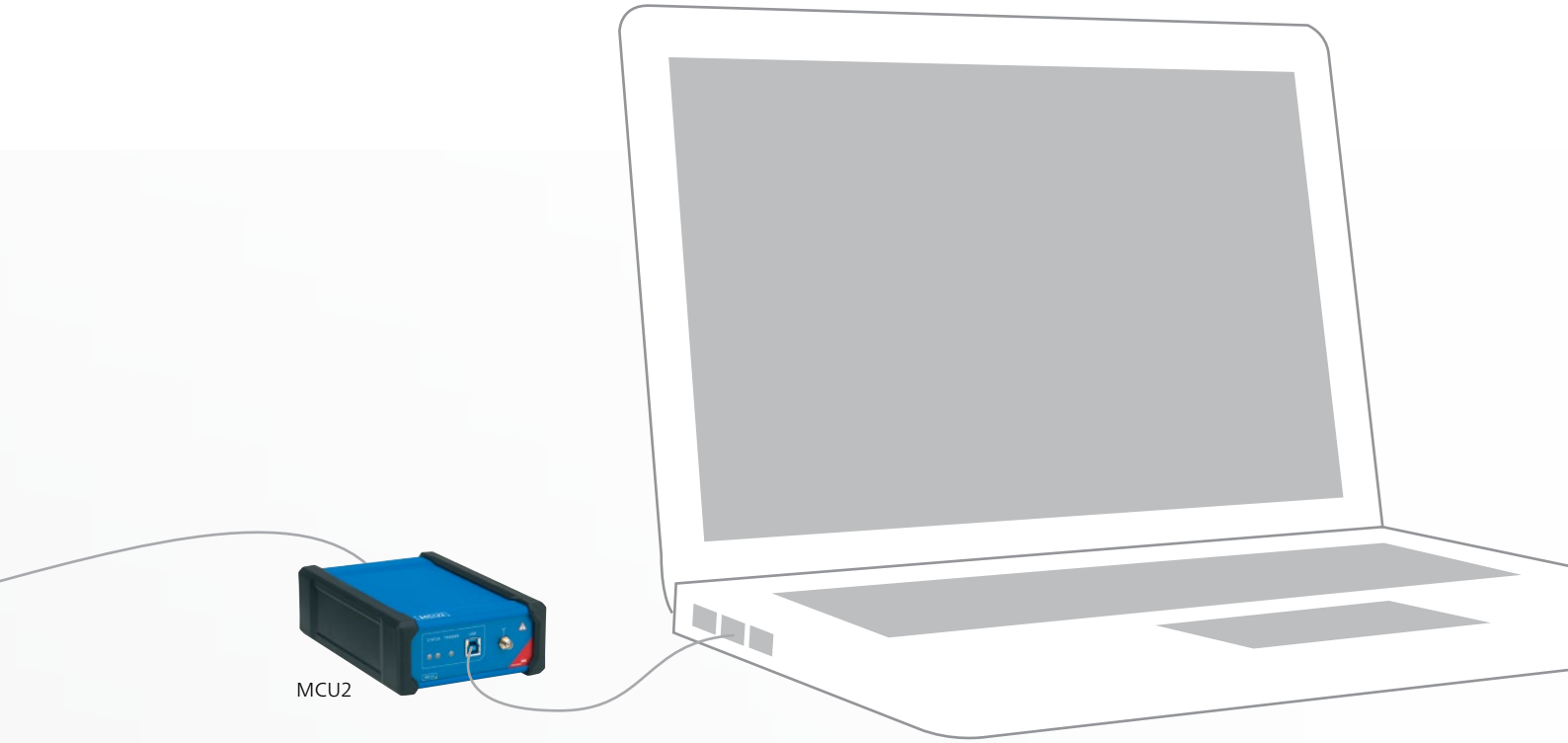
The flexible MPD software allows you to configure measurements, select only the analysis tools you need and to determine how data should be displayed.

Create user profiles

For different types of PD tests on high-voltage components, you can set up specific measurement or user profiles with the required test parameters according to international standards.

Customized reporting

You can select the measurement parameters and images to include and how they are displayed in automatically generated reports.



Extend your MPD 800 system depending on your application area and

	 Power transformer testing	 Rotating machine testing	 Power cable testing	 Instrument transformer testing	 High-voltage GIS testing	 Medium-voltage GIS testing	Other high-voltage component testing
MPD System							
MPD 800	■	■	■	■	■	■	■
RBP1	■	■	■	■	■	■	■
Fiber-optic cables	■	■	■	■	■	■	■
MCU2	■	■	■	■	■	■	■
Calibration							
CAL 542	□ (Type C)	□ (Type D)	□ (Type A or B)	□ (Type B)	□ (Type A or B)	□ (Type B)	□ (Type B)
RIV1	□	–	–	□	–	–	□
Sensors							
CPL1 / CPL2 *	■	■	■	■	■	■	■
MCC	□	□	□	□	□	□	□
BTA	□	–	–	–	–	–	□
PDL 650	□	–	–	–	–	–	–
MBB1	–	–	–	□	–	□	□
MCT 120	□	□	□	□	□	□	□
Extensions							
MPD 800 (for multi-channel measurements)	□	□	□	□	□	□	□
UHF 800 (for UHF measurements)	□	–	□	–	□	–	–

* Required either for tests with coupling capacitors larger than 2 nF, when the MPD is installed in the test object path, or when breakdowns of the test objects are expected during testing.

testing requirements

	 Power transformer testing	 Rotating machine testing	 Power cable testing	 Instrument transformer testing	 High-voltage GIS testing	 Medium-voltage GIS testing	Other high-voltage component testing
UHF System							
UHF 800	■	–	■	–	■	–	–
RBP1	■	–	■	–	■	–	–
Fiber-optic cables	■	–	■	–	■	–	–
MCU2	■	–	■	–	■	–	–
Calibration							
UPG 620	□	–	□	–	□	–	–
Sensors							
UVS 610	□	–	–	–	–	–	–
UHT1	□	–	–	–	–	–	–
UCS1	–	–	□	–	–	–	–

■ included □ compatible and optional accessory – not compatible

Technical data

MPD 800 system

MPD 800

Input

Voltage	PD input:	80 V_{peak}
Current	AC input (max. RMS continuous):	250 mA
	AC input (min. RMS):	20 nA
Impedance	PD input:	50 Ω ± 20 %
	AC input (f < 4 kHz):	5 Ω ± 20 %
Ports	PD input:	2 × BNC
	AC input:	2 × BNC
Dynamic range	PD input:	140 dB (overall), 70 dB (per range)
	AC input:	170 dB (overall), 107 dB (per range)
Levels	PD input:	14
	AC input:	5

Frequency range

PD input internal quadripole	Enabled:	6 kHz … 35 MHz
	Disabled:	0 Hz … 35 MHz
AC input	DC, 0.1 Hz … 10 kHz	

Accuracy

PD input	± 2 %
AC input	0.02 %
Frequency	± 1 ppm

PC requirements

Hardware[3]	Minimum[1]: Quad-Core 64-bit Intel or AMD CPU with at least 1.6 GHz, 4 GB RAM (e.g. Intel i5, AMD Ryzen 3) Recommended[2]: Quad-Core 64-bit Intel or AMD CPU with at least 2.5 GHz, 8 … 16 GB RAM, dedicated GPU (e.g. Intel i7, AMD Ryzen 5) High-End[3]: Octa-Core 64-bit Intel or AMD CPU with at least 3.2 GHz, 32 GB RAM, dedicated GPU (e.g. Intel i7/i9, AMD Ryzen 7)
Software	Windows 8™, Windows 8.1™, Windows 10™ (all 64-bit)

[1] For example, for 1 × MPD 800 for "pass/fail" testing
[2] For example, for 1 to 4 × MPD 800 including 3PARD, PD fault localization, channel gating
[3] For example, for multi-units up to 18 measurement channels
[4] Time domain integration

Output

Optical trigger port	1 × ST (820 nm), OM2, FO cable length ≤ 50 m
OUT port	1 × BNC, 50 Ω ± 10 %, 5 V ± 0.5 %
AUX port	For MBB1 support

Fiber-optic ports

Wavelength	1 308 nm
Connector type (FO1, FO2)	2 × LC (interchangeable)

PD data processing

Time domain	50 ns … 8 µs	
PD sampling rate	125 MS/s	
Resolution	PD:	14 bits
	AC:	24 bits
PD pulse rate	Max.:	2 Mio./s
PD filters/bandwidths	RIV:	4.5 kHz and 9 kHz
	Charge:	30 kHz, 100 kHz, 200 kHz, 300 kHz, 400 kHz, 600 kHz, 900 kHz, 1 MHz, 2 MHz, 5 MHz, 10 MHz, 20 MHz
PD input low-pass filters	1.1 MHz, 2.3 MHz, 4.7 MHz	
PRPD pre-recording time	0s … 30 s	
PD scope	Recording depth:	131 µs
	Refresh rate:	41 ms
PD event time resolution	< 2 ns	
System noise	Typical[4]: < 0.010 pC	
Spectrum analyzer noise (100 kHz … 5 MHz)	< 140 dBm	
Max. double pulse resolution (BW = 20 MHz)	< 100 ns	
Negativ superposition error	< 3 %	

Mechanical data and ambient conditions

Humidity	5 % … 95 %, non-condensing
Operation temperature	-20 °C … 55 °C / -4 °F … 89 °F
Dimensions (W × H × D)	119 × 190 × 55 mm / 4.7 × 7.5 × 2.2 in
Weight	870 g / 1.9 lbs

Protection specifications

Input surge current withstand capability PD input (8/20 µs, 10 operation)	20 kA
Input surge current withstand capability PD input (1 s, 50 Hz, 10 operations)	20 A
Input surge current withstand capability AC input (100 s, 50 Hz, 1000 operations)	5 A

Equipment reliability

Shock	IEC/EN 60068-2-27
Vibration	IEC/EN 60068-2-6
Damp heat	IEC/EN 60068-2-78
Ingress protection (IEC/EN 60529)	IP4x
Temperature changes	IEC/EN 60068-2-14
Dry heat	IEC/EN 60068-2-2
Cold	IEC/EN 60068-2-1
EMV	IEC/EN 61326-1 (industrial electromagnetic environment) FCC subpart B of part 15, class A
Safety	IEC/EN/UL 61010-1 IEC/EN/UL 61010-2-030
Laser class	EN 60825-1:2007 EN 60825-2:2007

Certificates

IEC 60270 type test	50 ns … 8 µs

MCU2 – Multi-device control unit

The controller MCU2 converts optical signals transmitted by a fiber-optic cable to standard electrical communication signals.

Interface	USB 3.0
Fiber-optic (FO) network	For MPD 800: LC For MPD 600: ST
Connector type	2 × LC (FO1, FO2) 1 × ST pair (FO3)
Max. FO cable length	2.5 km / 15.5 mi

Mechanical data

Dimensions (W × H × D)	119 × 175 × 55 mm / 4.7 × 6.9 × 2.2 in
Weight	750 g /1.7 lbs

RBP1 – Lithium-ion battery pack

The RBP1 is a rechargeable battery pack for operating the MPD 800, including a battery status display. Up to five RBP1 can be connected to power long-time PD measurement setups.

Operating time for MPD 800 with RBP1	At -20 °C / -4 °F: At 23 °C / 73 °F: At 55 °C / 131 °F:	13 hours 16 hours 16 hours
Typical charging duration	< 4 hours	
Battery lifecycle	1 000 cycles or 5 years[5]	
Nominal voltage	11.1 V	
Nominal energy	96.6 Wh	

Power supply

Battery charge voltage	8 V DC … 12.4 V DC
Power supply voltage	100 V … 240 V (50 Hz … 60 Hz)

Mechanical data

Dimensions (W × H × D)	115 × 38 × 175 mm / 4.5 × 1.5 × 6.9 in
Weight	910 g / 2 lbs

[5] Whichever occurs first, remaining 50 % state of health (SoH) equals 40 Wh remaining energy.

Technical data

MPD 800 accessories

CAL 542 – Charge calibrator/injector

The CAL 542 charge calibrator is used to inject a defined charge into and verify the measurement circuit.

Technical data	
Pulse repetition frequency	300 Hz
Pulse rise time	< 4 ns[1]
Dimensions (W × H × D)	110 × 30 × 185 mm / 4.3 × 1.2 × 7.3 in
Weight	520 g /1.2 lbs (incl.battery)
Output connector	1 × BNC (with BNC adapter, cables and connection clamps)
Power supply	Lithium Battery 9 V, Lifetime > 10 years

[1] Typical value for type A and B

RIV1 – RIV Test calibrator

The RIV1 calibrator enables the reliable calibration of the MPD system for PD measurement based on Radio Influence Voltage (RIV) according to NEMA and CISPR standards.

Technical data	RIV1-NEMA	RIV1-CISPR
Frequency range	100 kHz … 2 MHz (50 kHz steps)	100 kHz … 2 MHz (50 kHz steps)
Magnitude	10 µV … 10 mV	10 µV … 10 mV @ 300 Ω
Magnitude accuracy	< 2 %	< 2 %
Output impedance	< 2 Ω	20 kΩ
Standards met	NEMA 107 - 1987, IEEE C57.12.90-2008	IEC 60437, CISPR 18-2 (2)
Accessory (Quadripole)	CPL 542 NEMA 0.5 A, CPL 542 NEMA 1.2 A	CPL 542 CISPR 0.5 A, CPL 542 CISPR 1.2 A

Connectors	1 × BNC
Dimensions (W × H × D)	120 × 40 × 183 mm / 4.7 × 1.6 × 7.2 in
Weight	680 g /1.5 lbs
Temperature	Operating: 0 °C … 50 °C / -4 °F … 122 °F Storage: -20 °C … 70 °C / 14 °F … 158 °F
Humidity	10 % … 95 %, non-condensing

CPL1/CPL2 – Measuring impedance

The CPL1/2 quadripoles are external measuring impedances (coupling device) for PD measurements. All CPL1/2 versions include surge current withstand capability of up to 8 kA.

Technical data	IEC	NEMA/IEC/CISPR	CISPR/IEC
Max. input current	7 A	7 A	7 A
Min. input current	5 µA	5 µA	5 µA
Input impedance	50 Ω ± 20 %	150 Ω ± 20 %	300 Ω ± 13 %
PD frequency range (-6 dB resp. 1 MHz)	5 kHz … 35 MHz	20 kHz … 40 MHz	35 kHz … 2 MHz
Dimensions (W × H × D)	119 × 175 × 55 mm / 4.7 × 6.9 × 2.2 in		
Weight	1.3 kg / 2.8 lbs		

MBB1 – Measurement balanced bridge

The MBB1 is used to obtain reliable PD measurements in test environments with heavy interference. It enables you to perform differential PD measurements as recommended by IEC 60270.

Technical data	
Frequency range	100 kHz … 1 MHz
Maximum voltage input	60 V_{rms}
Maximum PD voltage inputs	10 V_{rms}
Input connections	3 × BNC (PD-1, PD-2, V)
Output connections	2 × BNC (PD, V)
Control and power supply	via AUX-connection to MPD 600 or MPD 800
Dimensions (W × H × D)	110 × 190 × 44 mm / 4.3 × 7.5 × 1.7 in
Weight	650 g / 1.4 lbs

MCC – Coupling capacitor

The coupling capacitor connects the MPD system to the high-voltage test object. Different MCC coupling capacitors are available for various voltage levels.

Technical Data	MCC 112	MCC 117-C	MCC 124-C	MCC 210
$U_{phase\text{-}to\text{-}ground\ (RMS)}$	12 kV	17.5 kV	24 kV	100 kV
$C_{nominal}$	1.2 nF (± 20 %)	2 nF (± 15 %)	1.0 nF (± 15 %)	1.0 nF (± 10 %)
Withstand voltage (1 min)	28 kV	38 kV	50 kV	120 kV
Q_{PD}	< 2 pC @ 13.2 kV	< 2 pC @ 20.7 kV	< 2 pC @ 26.4 kV	< 1 pC @ 100 kV
Weight	4.5 kg / 9.9 lbs	2.3 kg / 5.1 lbs	3.2 kg / 7.1 lbs	10 kg / 22.1 lbs
Dimensions (W × H × D)	182 × 158 × 182 mm / 7.2 × 6.2 × 7.2 in	104 × 150 × 165 mm / 4.1 × 5.9 × 6.5 in	150 × 219 × 150 mm / 5.9 × 8.6 × 5.9 in	450 × 766 × 450 mm / 17.5 × 30.15 × 17.5 in
Scope of delivery	Adapter (TNC to BNC), BNC connection cable	Adapter (TNC to BNC), BNC connection cable	Adapter (TNC to BNC), BNC connection cable	BNC connection cable
Connection type	Directly connected to MPD 800	Directly connected to MPD 800	Directly connected to MPD 800	Directly connected to MPD 800

BTA kits – Bushing tap adapters

The following BTA kits consist of a BTA adapter that connects to the specific measurement tab and includes a gas discharge tube. The kits also include a BTA to BNC adapter and a coaxial cable that connects either via CPL or directly to the MPD system.

Technical Data	
BTA3 kit	G ¾" inside thread, 4 mm female connector (e.g. for ABB / Micafil standard, RTKF, RTKG)
BTA6 kit	2¼" – 12 UN outside thread, 8 mm female connector
BTA7 kit	M30 × 1.5 outside thread, 4 mm female connector (e.g. for HSP type SETF)
BTA9 kit	¾" – 14 NPSM outside thread, spring contact interface (e.g. for ABB type T)
BTA14 kit	M24 inside thread, 4 mm male connector (e.g. for F&G or HSP type EKTF)

MCT 120 – High frequency CT

The MCT 120 is a high-frequency current transformer (HFCT), which picks up PD signals in moderate heights and at a safe distance from high-voltage.

Technical Data	
Frequency range (-6 dB)	80 kHz … 40 MHz (0 mm gap)
Inner hole dimensions	ø ~ 53.5 mm / 2.1 in
Outer dimensions	114 × 154 × 62 mm / 4.5 × 6.1 × 2.5 in
Ferrite core	Split
Connector	BNC, 50 Ω, female
Weight	1.2 kg / 2.7 lbs
Operating temperature	-20 °C … 55 °C / -4 °F … 130 °F

Technical data

MPD 800 accessories

UHF 800

The UHF 800 is an ideal PD measurement solution for measuring power transformers and gas-insulated substations (GIS). It measures in the very high frequency (VHF) and ultra-high frequency (UHF) ranges. The UHF 800 is connected to the MCU2 or MPD 800 units and can be used together with UVS 610, UCS1 and UHT1 sensors, as well as most of the pre-installed UHF PD sensors for GIS.

Technical Data	
UHF input range fc	100 MHz … 100 MHz – 2 GHz
Measuring bandwidth Δf	Broadband and narrowband modes
Impedance UHF input	50 Ω (N-type input jack)
RF pre-amplifier	Switchable +20 dB and attenuator
Synchronization via UHF sensor	10 Hz … 100 Hz

Mechanical Data	
Connector type (FO1, FO2)	2 × LV (interchangeable)
Wavelength	1 308 nm
Connectivity	FO series connection with MPD 800 units
Power supply	Powered by RBP1 battery
Dimension (W × H × D)	119 × 190 × 55 mm / 4.7 × 7.5 × 2.2 in
Ambient temperature	-20 °C … 55 °C / -4 °F … 89 °F
Relative humidity	5 % … 95 %, non-condensing

UHT1 – Hatch-type UHF sensor

The UHT1 is a hatch-type sensor used for detecting PD inside power transformers in the ultra-high frequency (UHF) range. It is installed permanently on the surface of a tank of oil-paper-insulated power transformers, which do not have oil drain valves for a UVS 610.

Technical Data	
Frequency range	200 MHz … 1 GHz
Leakage tightness	For oil temperatures of -15 °C … 120 °C / 5 °F … 248 °F at 5 bar pressure
Operating temperature	-15 °C … 120 °C / 5 °F … 248 °F
Storage temperature	-15 °C … 70 °C / 5 °F … 158 °F
Humidity	5 % … 95 % (non-condensing)
Dimensions (Ø × h)	150 × 109 mm / 5.9 × 4.3 in
Insertion depth	28 mm / 1.1 inch from flange to oil barrier
Weight	5 kg / 11 lbs
UHF (output)	Coaxial RF connector (TNC socket)
TEST (input)	Coaxial RF connector (type N socket)

UVS 610 – UHF valve sensor

The UHF valve sensor allows PD measurements in high-frequency ranges in power transformers with liquid insulation. It is inserted through the oil drain valve (DN 50 and DN 80).

Technical Data	
Usable frequency range	150 MHz … 1 GHz
Tightness	Up to 5 bar pressure -15 °C … 120 °C / 5 °F … 248 °F
Insertion depth	55 mm … 450 mm / 2.2 in … 17.7 in
Weight	3.1 kg / 6.8 lbs
Dimensions (Ø × H)	200 × 610 mm / 7.9 × 24 in

UPG 620 – Pulse generator

The UPG 620 generates very fast slope pulses and is mainly used to verify the measurement circuit in the UHF range.

Technical Data	
Rise time	< 200 ps
Decay time	> 100 ns
Frequency repetition rate	100 Hz
Power supply	2 × 9 V lithium battery for > 120 h continuous operation
Weight	700 g / 1.5 lbs
Dimensions (W × H × D)	110 × 28 × 185 mm / 4.3 × 1.1 × 7.3 in
Operating temperature	0 °C … 55 °C / 35 °F … 130 °F

UCS1 – UHF cable sensor

This sensor performs PD measurements in UHF ranges in grounding systems of high-voltage cables and cable terminations.

Technical Data	
Frequency range	100 MHz … 1 000 MHz
Capacitance	2 nF
Insulation level	12 kV
AC withstand voltage	28 kV; 1 min.
Operating temperature	-20 °C … 85 °C / -4 °F … 185 °F
Dimensions (Ø × H)	105 × 107 mm / 4.1 × 4.2 in
Weight	1.2 kg / 2.6 lbs
Primary connections	Screw thread 2 × M8x14
Connector	TNC

MPD 800 cases

MPC1

The MPC1 is the universal MPD 800 protection case for outdoor usage and rough industrial environments. It offers several configuration options for flexible usage.

Technical Data

Configuration options	2 × MPD 800 1 × MPD 800 and 2 × CPL1 1 × MPD 800 and 1 × UHF 800
Weight (empty)	3900 g / 8.59 lbs
Ingress protection	IP65
Dimensions (W × H × D)	477 × 174 × 330 mm / 18.8 × 6.9 × 13 in
Operating Temperature	-20 °C … 45 °C / -4 °F … 113 °F (50 °C / 122 °F with one MPD 800)

MTC1

The MTC1 is a universal MPD transport case and can contain up to a 5 MPD 800 units, one UHF 800, one RIV and one IEC calibrator, a controller and batteries. Alternatively, the MTC1 can include a 3-unit MPD 800 system 3 CPLs, one UHF 800, a controller, two calibrators (IEC, RIV) and batteries.

Technical Data

Ingress protection	IP67
Weight (empty)	8500 g / 18.73 lbs
Dimensions (W × H × D)	560 × 455 × 265 mm / 22.04 × 17.91 × 10.43 in

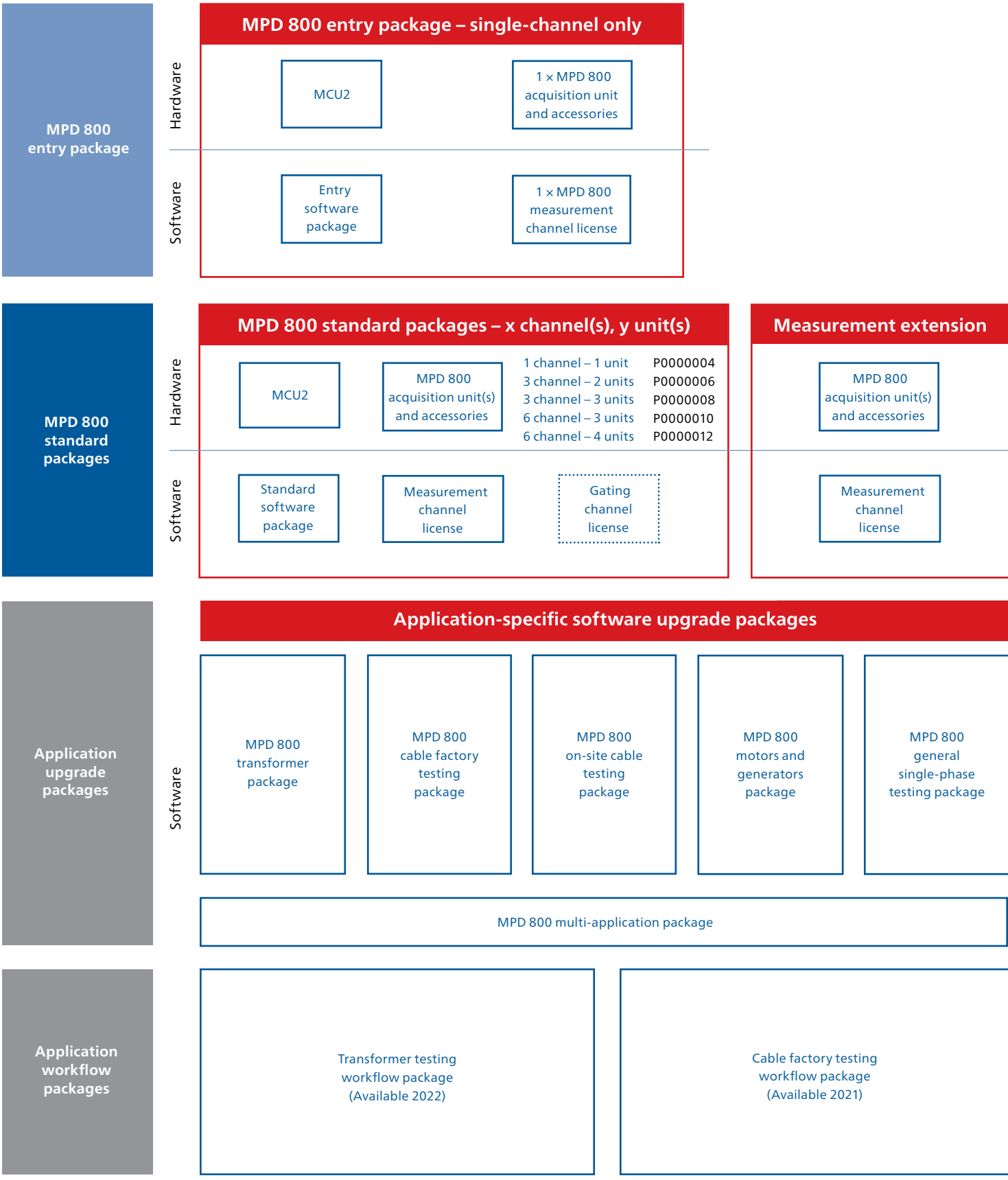
MTC2

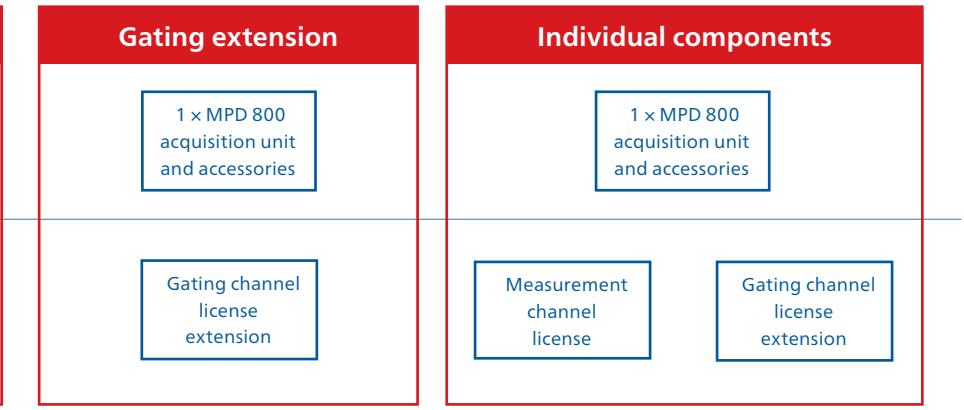
The MTC2 is the MPD flight case. It can contain up to 3 MPD 800 units, an UHF 800, one calibrator, MCU2 controller and batteries.

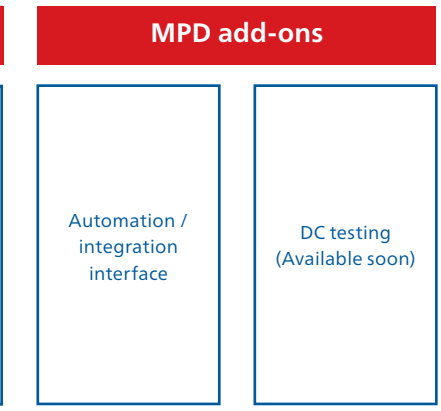
Technical Data

Ingress protection	IP5x
Weight (empty)	4000 g / 8.81 lbs
Dimensions (W × H × D)	543 × 368 × 207 mm / 21.37 × 14.48 × 8.14 in

How to configure the MPD 800 system




Gating extension
1 × MPD 800 acquisition unit and accessories
Gating channel license extension
Individual components
1 × MPD 800 acquisition unit and accessories
Measurement channel license
Gating channel license extension


MPD add-ons
Automation / integration interface
DC testing (Available soon)

Ordering information

MPD 800 entry package

The MPD 800 entry package includes one MPD 800 acquistion unit, the rechargeable RBP1 battery pack, the fiber-optical controller MCU2, and all required accessories such as CPL, cables, adapters and clamps. It also includes the entry software package of the MPD Suite software.

	Description	Ordering No.
MPD 800 entry package	PD entry package to perform routine tests in a high-throughput environment and for fixed installations. The package is limited to one PD measurement channel. For additional channels, upgrade to the standard software package of the MPD Suite software.	P0000002

MPD 800 standard packages

All MPD 800 standard packages include the desired number of MPD 800 acquistion units, the rechargeable RBP1 battery pack, the fiber-optical controller MCU2, and all required accessories such as CPLs, cables, adapters and clamps. It also includes the standard software package of the MPD Suite software.

	Description	Ordering No.
MPD 800 standard package (1 channel, 1 unit)	General package for single-phase PD testing, using one channel and one MPD 800 devices. It is applicable on all assets and applications, including a comprehensive diagnostic tool set for simplified, customized testing, analysis and reporting.	P0000004
MPD 800 standard package (3 channels, 2 units)	Typical package for three-phase PD testing, using three channels and two MPD 800 devices. It is ideal for motors, generators and large transformers, as well as for on-site cable PD testing.	P0000006
MPD 800 standard package (3 channels, 3 units)	Enhanced package for three-phase PD testing, using three channels and three MPD 800 devices. It is ideal for motors, generators and transformers, as well as for on-site cable PD testing.	P0000008
MPD 800 standard package (6 channels, 3 units)	Typical package for three-phase PD testing, using six channels and three MPD 800 devices. This is ideal for transformers or on-site cable PD testing.	P0000010
MPD 800 standard package (6 channels, 4 units)	Enhanced package for three-phase PD testing, using six channels and four MPD 800 devices. This is ideal for large transformers or on-site cable PD testing.	P0000012

MPD 800 extension packages

	Description	Ordering No.
MPD 800 measurement extension package	Measurement extension package to expand your existing MPD 800 system by one additional PD measurement channel. It includes 1 × MPD 800 unit, 1 × measurement channel license and accessories.	P0000014
MPD 800 gating extension package	Gating extension package to enhance disturbance/noise suppression in noisy environments for your MPD system. It includes 1 × MPD 800 unit, 1 × gating channel license and accessories.	P0000016
MPD 800 unit	1 × MPD 800 unit to expand your existing MPD 800 system by one additional MPD 800 unit. A measurement channel license must be ordered separately.	P0000018

MPD 800 license extensions

	Description	Ordering No.
MPD 800 PD measurement channel license extension	Software license upgrade to activate one additional PD channel for measurements.	P0000020
MPD 800 gating channel license extension	Software license upgrade to perform channel gating on one additional PD channel for disturbance suppression in noisy environments.	P0000021

MPD Suite software application upgrade options

The MPD Suite software upgrade options are application-focused PD testing packages.

	Description	Ordering No.
MPD 800 entry to standard upgrade option	Software license upgrade to benefit from the standard feature set of the MPD 800 software for general single-phase PD testing.	P0000003
MPD 800 standard to multi-application upgrade option	Software license upgrade to benefit from the combined feature set for multi-application PD testing, including 3PARD, 3FREQ, PD localization and the VLF testing add-on.	P0000028
MPD 800 standard to transformer testing upgrade option	Software license upgrade to get all the features needed to perform multi-phase PD measurements on power transformers, including 3PARD and the synchroneous Radio Influence Voltage (RIV) and charge measurement functionality.	P0000022
MPD 800 standard to motors & generators testing upgrade option	Software license upgrade to get all the features needed to perform multi-phase PD measurements on motors & generators, including 3PARD.	P0000023
MPD 800 standard to general single-phase testing upgrade option	Software license upgrade to perform single-phase PD measurements on various high-voltage assets and components, such as instrument transformers, bushings, capactiors, insulators and switchgear. It includes 3FREQ and the synchroneous RIV and charge measurement functionality.	P0000024
MPD 800 standard to cable factory testing upgrade option	Software license upgrade to get all the features needed to perform PD cable localization with dedicated filters, VLF testing support and 3FREQ.	P0000025
MPD 800 standard to cable on-site testing upgrade option	Software license upgrade to get all the features needed to perform on-site PD testing and commissioning at multiple measurement points, such as cable joints and terminations. It includes 3PARD, cable PD localization tools with dedicated filters and VLF testing support.	P0000026

See page 36–37 for an overview of all available software packages.

Ordering information

MPD Suite software upgrade options

Software license upgrade options are available for you to benefit from the multi-application feature set of the MPD Suite software, including 3PARD, 3FREQ, PD localization, and the add-on "VLF testing" module.

	Ordering No.
MPD 800 standart to multi-application upgrade option	P0000029
MPD 800 transformer testing to multi-application upgrade option	P0000030
MPD 800 motors & generators testing to multi-application upgrade option	P0000031
MPD 800 general single-phase testing to multi-application upgrade option	P0000032
MPD 800 cable factory testing to multi-application upgrade option	P0000033
MPD 800 cable on-site testing to multi-application upgrade option	P0000034

MPD Suite software add-ons

These MPD 800 software add-ons are dedicated application packages. They can be added to the MPD 800 standard license and software upgrade options.

	Description	Ordering No.
MPD 800 "DC testing" add-on	Software license upgrade to perform PD testing in HVDC applications.	P0000038 (Available soon)
MPD 800 "Automation/Integration interface" add-on	Software license upgrade to enable automation of the MPD system in existing test environments.	P0000039

MPD 800 application workflows

These MPD 800 factory testing workflows can be added to the MPD 800 standard license and software upgrade options.

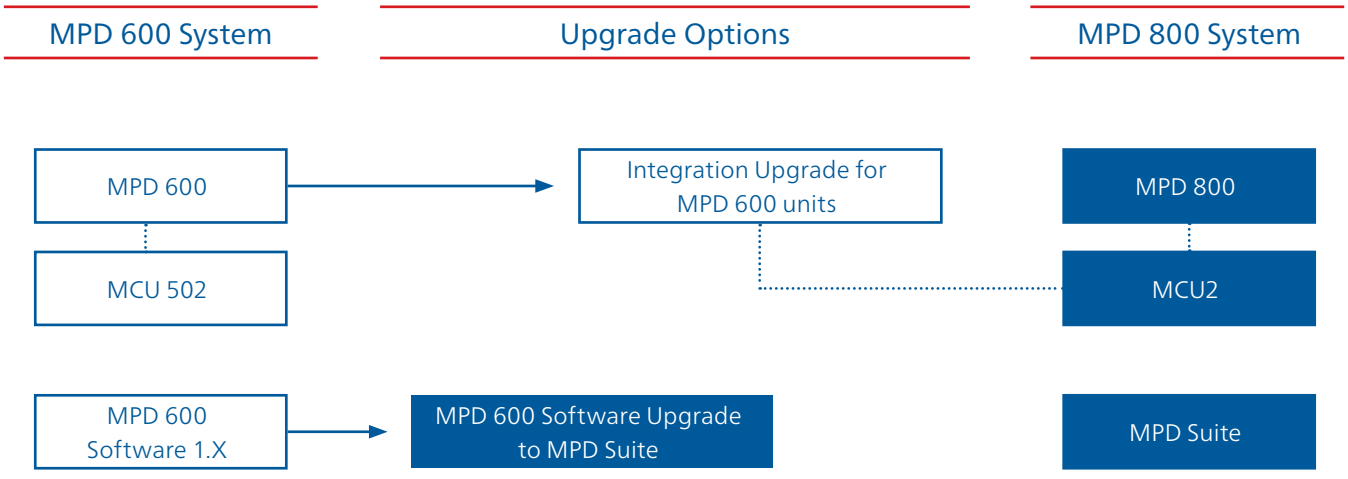
	Description	Ordering No.
MPD 800 "Transformer factory testing workflow"	Software license upgrade to benefit from a guided transformer testing workflow. This is ideal for transformer manufacturers.	(Available 2022)
MPD 800 "Cable factory testing workflow"	Software license upgrade to benefit from a guided cable testing workflow. This is ideal for cable manufacturers.	(Available 2021)

Dear MPD 600 customers,

We have not forgotten you during the development of the new MPD 800. We guarantee you **full compatibility** for combined usage of your MPD 600 and new MPD 800 devices, as well use of your MPD 600 devices with the new MPD 800 software.

Find out how you can upgrade your exisiting MPD 600 system with new MPD 800 devices and software.

www.omicronenergy.com/mpd-600-customer



Upgrade options for MPD 600 users

	Description	Ordering No.
MPD 600 integration upgrade option	This upgrade option allows you to integrate and continue to use your existing MPD 600 PD measurement devices with new MPD 800 PD measurement devices.	P0000035
MPD 600 software upgrade option	This upgrade option allows you to use your existing MPD 600 PD measurement devices with the new MPD Suite software. It provides you with a 1-to-1 feature upgrate and allows you to take advantage of new software features, such as user profile creation and the improved software interface.	P0000036
MPD software suite 90-day trial upgrade option	This upgrade option allows you to try the new MPD Suite software for a period of 90 days.	(Upon request)

See page 38–41 for an overview of available MPD 800 upgrade packages for MPD 600 users and hardware feature comparisons.

Ordering information

MPD 800 accessories

	Description	Ordering No.
BTA kits	The following Bushing Tap Adapter (BTA) kits consist of a BTA adapter that connects to a specific bushing measurement tap and includes a gas discharge tube:	
	> BTA3 kit	VEHZ4162
	> BTA6 kit	VEHZ4163
	> BTA7 kit	VEHZ4164
	> BTA9 kit	VEHZ4165
	> BTA14 kit	VEHZ4166
CAL 542	The CAL 542 charge calibrator is used to inject a defined charge to verify the measurement circuit.	
	> Version A (0.1 pC … 10 pC)	VE004200
	> Version B (1 pC … 100 pC)	VE004210
	> Version C (10 pC … 1 000 pC)	VE004220
	> Version D (0.1 nC … 10 nC)	VE004230
CPL1	The CPL1 extends the test current range up to 7A and acts as additional protection device for the MPD 800.	
	> CPL1 Option IEC	P0000058
	> CPL1 Option NEMA/ANSI/IEC/CISPR	P0000059
	> CPL1 Option CISPR/IEC	P0000060
CPL2	The CPL2 is designed for easy integration of the MPD 800 into existing high-voltage systems whenever a coupling capacitor is used for PD testing and to measure the voltage to control the high-voltage source. The different CPL types are necessary for standard-compliant measurements.	
	> CPL2 Option IEC	P0000061
	> CPL2 Option NEMA/ANSI/IEC/CISPR	P0000062
	> CPL2 Option CISPR/IEC	P0000063
MBB1	The MBB1 balanced measurement bridge is recommended by IEC 60270 and enables you to perform differential PD measurements in test environments with heavy interference.	
	> MBB1 Basic version	VEHZ4149
	> MBB1 Package (incl. CAL 542-D and CPL1)	P0000064
MCC	The MCC coupling capacitor connects the MPD system to the high-voltage test object. Different MCC coupling capacitors are available for various voltage levels.	
	> MCC 112: 12 kV, 1.2 nF	VEHZ4118
	> MCC 117C: 17kV, 2.0nF	VEHZ4157
	> MCC 124C: 24 kV, 1.0 nF	VEHZ4158
	> MCC 210: 100 kV, 1.0 nF	VEHZ4117
MCT 120	The MCT 120 is a high-frequency current transformer (HFCT), which picks up PD signals in moderate heights and at a safe distance from high-voltage.	VEHZ4148
RIV1	The RIV1 calibrator enables the reliable calibration for PD measurement based on Radio Influence Voltage (RIV) according to NEMA and CISPR standards.	
	> RIV1-NEMA: Output impedance = < 2 Ω	VE004250
	> RIV1-CISPR: Output impedance = 20 kΩ	VE004251
V-to-AC adapter	The V-to-AC adapter enables the compatability of an CPL 542 or CPL 543 to new MPD 800 units.	P0000065

MPD 800 transport accessories

	Description	Ordering No.
MPC1	The MPC1 is the universal MPD 800 protection case for outdoor usage and rough industrial environments. It offers several configuration options for flexible usage.	P0000066
MTC1	The MTC1 is universal MPD transport case and can contain up to a 5 MPD 800 units, one UHF 800, one RIV and one IEC calibrator, a controller and batteries. Alternatively, the MTC1 can include a 3-unit MPD 800 system, 3 CPLs, one UHF 800, a controller, two calibrators (IEC, RIV) and batteries.	P0000067
MTC2	The MTC2 is the MPD flight case. It can contain up to 3 unit MPD 800 units, an UHF 800, one calibrator, MCU2 controller and batteries.	P0000068

MPD 800 extensions and accessories for UHF application

	Description	Ordering No.
UCS1	This sensor performs PD measurements in UHF ranges on cable terminations.	VEHZ4144
UHF 800	The UHF 800 is an ideal PD measurement solution for measuring power transformers and gas-insulated substations (GIS). It measures in the very high frequency (VHF) and ultra-high frequency (UHF) ranges.	P0000069 (Available soon)
UHT1	The UHT1 is a hatch-type sensor used for detecting PD inside power transformers in the ultra-high frequency (UHF) range. It is installed permanently on the surface of a tank of oil-paper-insulated power transformers, which do not have oil drain valves for a UVS 610.	VMON0194
UPG 620	The UPG 620 generates very fast slope pulses and is mainly used to verify the measurement circuit in the UHF range.	VE004242
UVS 610	The UHF valve sensor allows PD measurements in high-frequency ranges in power transformers with liquid insulation. It is inserted through the oil drain valve (DN 50 and DN 80).	VEHZ4131

Rechargeable external battery

	Description	Ordering No.
RBP1	The RBP1 is the external rechargeable battery which supplies power to the MPD 800 or UHF 800 units.	
	> RBP1 Package (battery, charger, cable)	VEHZ4147
	> RBP1 Battery cable	VEHK0605
	> RBP1 External (battery, cable, without charger)	VEHZ4146
	> Standard 24 W battery charger	VEHZ4143

Fiber Optical Cables

	Description	Ordering No.
Duplex fiber optical cables	Three different types of fiber optical cables are offered for fixed installations with a small head (slim), a easy to use standard cable and a rugged version for on-site testing and rough environments.	
	> Duplex fiber optical cable, 3 m / 10 ft	P0000070
	> Rugged duplex fiber optical cable 5 m / 16 ft	P0000071
	> Duplex fiber optical cable, 20 m / 65 ft	P0000072
	> Slim Duplex fiber optical cable, 20 m / 65 ft	P0000073
	> Rugged duplex fiber optical cable 50 m / 165 ft (drum)	P0000074

Get an overview about all MPD Suite software packages

MPD Suite software package	Entry	Standard	Multi-Application	Transformer testing	Motors & Generators testing	General single-phase testing	Cable factory testing	Cable on-site testing	Available soon
MEASUREMENT AND VISUALIZATION									
Multi-language support	■	■	■	■	■	■	■	■	
Display of ellipse view	■	■	■	■	■	■	■	■	
Meter display (PD and test voltage value)	■	■	■	■	■	■	■	■	
PD assessment (inception and extinction voltage as well as pass-fail testing)	■	■	■	■	■	■	■	■	
Self check	■	■	■	■	■	■	■	■	
IEC performance check	■	■	■	■	■	■	■	■	■
Q_{IEC} measurement	■	■	■	■	■	■	■	■	
Basic PD filter set	■	■	■	■	■	■	■	■	
Basic measurement range	■	■	■	■	■	■	■	■	
Reporting (settings, diagrams, values, viewer tool with PDF and CSV export)	■	■	■	■	■	■	■	■	
RIV support	–	■	■	■	■	■	■	■	
Display of phase-resolved pattern (PRPD)	–	■	■	■	■	■	■	■	
Multi-channel PRPD view	–	■	■	■	■	■	■	■	
Full measurement frequency range	–	■	■	■	■	■	■	■	
Synchronous multi-channel measurement	–	■	■	–	■	■	■	■	
MPD system overview diagram	–	■	■	■	■	■	■	■	
Synchronous oscilloscopes and FFT function	–	■	■	■	■	■	■	■	
H(Q), Q(U)	–	■	■	■	■	■	■	■	
Additional statistical values	–	■	■	■	■	■	■	■	
PRPD pre-recording	–	■	■	■	■	■	■	■	
PRPD dithering	–	■	■	■	■	■	■	■	
Customizable user profiles	–	■	■	■	■	■	■	■	■
Usability enhancements	–	■	■	■	■	■	■	■	
Additional display for parallel view of e.g. 3PARD / 3FREQ and PRPD	–	■	■	■	■	■	■	■	
Filtered and unfiltered PRPD view for 3PARD / 3FREQ	–	■	■	■	■	■	■	■	
Additional replay diagram	–	■	■	■	■	■	■	■	
Additional broadband PD filters (400 kHz, 900 kHz)	–	■	■	■	■	■	■	■	
IEEE compliant filters (e.g. 100 kHz, 200 kHz)	–	■	■	■	■	■	■	■	
PRPD mV-View	–	–	■	–	■	■	–	■	■
Unfiltered and filtered PD peak mV value	–	–	■	–	■	■	–	■	■
Synchronous RIV and Q_{IEC} measurement	–	–	■	■	–	–	■	–	

MPD Suite software package	Entry	Standard	Multi-Application	Transformers testing	Motors & Generators testing	General single-phase testing	Cable factory testing	Cable on-site testing	Available soon
TRENDING									
Standard trending of measured values	–	■	■	■	■	■	■	■	
Automatic PD event triggered trending	–	–	■	■	■	–	–	■	■
EXPORT FUNCTIONALITY									
Save pictures of diagrams (including PRPD)	–	■	■	■	■	■	■	■	■
Recording and replay	–	■	■	■	■	■	■	■	
Dataset export, Matlab export, .csv file export	–	■	■	■	■	■	■	■	■
COMPATIBILITY									
MPD 600 stream / dataset support	–	■	■	■	■	■	■	■	■
PD SEPARATION AND NOISE SUPPRESSION									
Phase-amplitude window gating	–	■	■	■	■	■	■	■	
Digital lowpass gating filters	–	■	■	■	■	■	■	■	
Gating channel support	–	■	■	■	■	■	■	■	
Real-time gating channel PRPD comparison	–	■	■	■	■	■	■	■	
3FREQ (incl. filtered and unfiltered signals in PRPD view)	–	–	■	–	–	■	■	■	
3PARD (incl. filtered and unfiltered signals in PRPD view)	–	–	■	■	■	–	–	■	
MBB1 support	–	■	■	■	■	■	■	■	
PD CABLE LOCALIZATION									
Cable fault localization (TDR and STDR)	–	–	■	–	–	–	■	■	
PD filters to eliminate negative superposition	–	–	■	–	–	–	■	■	
PD filters for localization (5 MHz, 10 MHz, 20 MHz)	–	–	■	–	–	–	■	■	
Time synced PD scopes	–	–	■	–	–	–	■	■	
PD cable localization map	–	–	■	–	–	–	■	■	■
TRIGGERING AND SYNCHRONIZATION									
Optical and electrical trigger (e.g. PDL 650)	–	–	■	■	–	–	–	■	
GPS synchronization (available 2021)	–	–	■	–	–	–	–	■	
SOFTWARE MODULES / ADD-ONS									
PD testing at VLF	–	–	■	–	–	–	–	–	■
PD DC measurement	–	–	–	–	–	–	–	–	■
Automation interface (Microsoft COM® and Web)	–	–	–	–	–	–	–	–	

■ included □ compatible and optional accessory – not compatible

Upgrade overview to MPD Suite software for MPD 600 users

MPD 600 Licence Upgrade Options to MPD Suite Software – Feature Comparison	Basic license upgrade to MPD Suite software	Advanced license upgrade to MPD Suite software	Feature requires an MPD 800	New feature	Improved feature	Available soon
MEASUREMENT AND VISUALIZATION						
Multi-language support	■	■	–	■	–	
Display of ellipse view	■	■	–	–	–	
Meter display (PD and test voltage value)	■	■	–	■	–	
PD assessment (inception and extinction voltage as well as pass-fail testing)	■	■	–	–	■	
Self check	–	–	■	■	–	
IEC performance check	–	–	■	■	–	■
Q_{IEC} measurement	■	■	–	–	–	
Basic PD filter set	■	■	–	–	–	
Basic measurement range	■	■	–	–	–	
Reporting	■	■	–	–	■	
RIV support	■	■	–	–	–	
Display of phase-resolved pattern (PRPD)	■	■	–	–	–	
Multi-channel PRPD view	■	■	–	–	–	
Full measurement frequency range	■	■	–	–	–	
Synchronous multi-channel measurement	■	■	–	–	–	
MPD system overview diagram	■	■	–	■	–	
Synchronous oscilloscopes and FFT function	–	–	■	–	■	
H(Q), Q(U)	–	■	–	–	■	
Additional statistical values	–	■	–	–	–	
PRPD pre-recording	–	–	–	■	–	
PRPD dithering	■	■	–	–	–	■
Customizable user profiles (lock,hide and limit features)	■	■	–	■	–	
Usability enhancements (quick access buttons, customizable and flexible display sizes)	■	■	–	■	–	
Additional display (for parallel view of e.g. 3PARD / 3FREQ and PRPD)	–	■	–	■	–	
Filtered and unfiltered PRPD view for 3PARD / 3FREQ	–	■	–	■	–	
Additional replay diagram	■	■	–	■	–	
PRPD mV-View	–	■	■	■	–	■
Unfiltered and filtered PD peak mV value	–	–	■	■	–	■
Additional broadband PD filters (400 kHz, 900k Hz)	–	–	■	■	–	
IEEE compliant filters (e.g. 100 kHz, 200 kHz)	–	–	■	■	–	
Synchronous RIV and Q_{IEC} measurement	–	–	■	■	–	

MPD 600 Licence Upgrade Options to MPD Suite Software – Feature Comparison	Basic license upgrade to MPD Suite software	Advanced license upgrade to MPD Suite software	Feature requires an MPD 800	New feature	Improved feature	Available soon
TRENDING						
Standard trending of measured values	–	–	■	■	–	■
Automatic PD event triggered trending	–	–	■	■	–	■
EXPORT FUNCTIONALITY						
Save pictures of diagrams (including PRPD)	■	■	–	–	–	■
Recording and replay	■	■	–	–	–	
Dataset export, Matlab export, .csv file export	■	■	–	–	–	■
COMPATIBILITY						
MPD 600 stream / dataset support	■	■	–	–	–	■
PD SEPARATION AND NOISE SUPPRESSION						
Phase-amplitude window gating	■	■	–	–	–	
Digital low pass gating filters	■	■	–	–	■	
Gating channel support	■	■	–	–	■	
Real-time gating channel PRPD comparison	■	■	–	–	–	
3FREQ (incl. filtered and unfiltered signals in PRPD view)	–	■	–	–	■	
3PARD (incl. filtered and unfiltered signals in PRPD view)	–	■	–	–	■	
MBB1 support	■	■	–	–	–	
PD CABLE LOCALIZATION						
Cable fault localization (TDR and STDR)	–	■	–	–	■	
PD filters to eliminate negative superposition	–	■	–	–	■	
PD filters for localization (5 MHz, 10 MHz, 20 MHz)	–	–	■	■	–	
Time synced PD scopes	–	–	■	–	–	
PD cable localization map	–	■	–	■	■	■
TRIGGERING AND SYNCHRONIZATION						
Optical and electrical trigger (e.g. PDL 650)	■	■	–	–	■	
GPS synchronization (available 2021)	–	–	■	–	■	
SOFTWARE MODULES / ADD-ONS						
PD testing at VLF	■	■	–	–	■	■
PD DC measurement	–	■	–	–	■	■
Automation interface (Microsoft COM® and Web)	–	■	–	–	■	

■ included □ compatible and optional accessory – not compatible

MPD 600 vs. MPD 800 comparison and compatibility

Hardware Features	MPD 800	MPD 600
Analogue Input bandwidth[a]	0 Hz … 62 MHz	0 Hz … 32 MHz
PD input frequency range[b]	6 kHz … 35 MHz	60 kHz … 20 MHz
AC input frequency (±0.01 dB)[c]	DC, 0.1 Hz … 10 kHz	DC, 0.1 Hz … 2.16 kHz
PD Input voltage	80 Vpeak	14 Vpeak
AC Input current (min. RMS)	20 nA	5 µA
PD Input impedance	50 Ω	50 Ω
AC / V Input impedance (f < 4kHz)	5 Ω (current input)	1 MΩ (parallel 1 µF) (voltage input)
AC input	170 dB (overall), 107 dB (per range)	102 dB (overall)
PD input	140 dB (overall), 70 dB (per range)	132 dB (overall), 70 dB (per range)
PD input ranges	14	12
AC / V input ranges	5	1
Number of PD channels per device	2	1
Number of AC channels per device	2	1
Measurement accuracy of AC / V input	0.02 %	0.05 % (after on-site calibration)
Measurement accuracy frequency[d]	±1 ppm (0.01 ppm)	±1 ppm
Measurement accuracy PD input	±2 %	±2 %
Time domain Integration	56 ns … 8 µs	100 ns … 8 µs
PD sampling rate	125 MS/s	64 MS/s
PD pulse rate (max.)	2 mio./s	1.5 mio./s
PD filters / bandwidths	4.5 kHz and 9 kHz (RIV) 30 kHz, 100 kHz, 200 kHz, 300 kHz, 400 kHz, 600 kHz, 900 kHz, 1 MHz, 2 MHz, 5 MHz, 10 MHz, 20 MHz	Standard: 9 kHz, 40 kHz, 100 kHz, 160 kHz, 300 kHz, 650 kHz, 800 kHz, 1 MHz, 1.5 MHz With broadband filter: 9 kHz, 30 kHz, 100 kHz, 300 kHz, 1 MHz, 3 MHz
PD input low-pass filters	1.1 MHz, 2.3 MHz, 4.7 MHz	2.3 MHz, 4.7 MHz
PRPD pre-recording time	0 s … 30 s	0 s … 30 s
PD scope recording depth	131 µs	32 µs
PD scope refresh rate	41 ms	41 ms
PD event time resolution	2 ns	2 ns

[a] Nyquist
[b] 6 dB cut-off frequency relative to 1 MHz
[c] Available soon / Software limitation: 5 Hz
[d] With GPS

Hardware Features	MPD 800	MPD 600
System noise (typical)[e]	< 0.010 pC	< 0.015 pC
Spectrum analyzer noise[f]	< -140 dBm	< -120 dB
Maximum double pulse resolution (BW = 20 MHz)	< 80 ns	< 200 ns
Fiber optical acccuracy[g]	20 ps	2 ns
Connector type (FO1, FO2)[h]	2 × Duplex LC (interchangeable)	2 × Duplex ST
Optical trigger port	Supported with every MPD	Supported with last MPD unit
OUT port	1 × BNC	Special MPD 600 required
AUX port	Yes, for MBB1 support	Yes, for MBB1 and UHF 620
Operating temperature	-20 °C … 55 °C / -4 °F … 131 °F	0 °C … 55 °C / 32 °F … 131 °F
COMPATIBILITY OF ACCESSORIES AND PD SENSORS		
MCU2	Supported	Supported
GPS sync	Supported, available soon	Supported, available soon
Timed license feature	Supported	Supported
RBP1	Supported with every MPD 800	Not supported
Multi-battery support	Yes	No
CPL1 / CPL2	Supported	Not supported
Minimum and maximum current	5 μA_{RMS} … 7 μA_{RMS}	Not applicable
PD frequency range	5 kHz … 40 MHz	Not applicable
CPL 542 / CPL 543	Supported (V-to-AC adapter required)	Supported
Maximum current	0.5 / 2 A / 5 A	0.5 / 2 A / 5 A
PD frequency range	20 kHz … 6 MHz	20 kHz … 6 MHz
UHF 620	Not supported	Supported
UHF 800	Supported, available soon	Not supported
All UHF accessories (e.g. UVS, UCS, UPG)	Supported, available soon	Supported
All MCT, MCC, BTA versions	Supported	Supported
PDL 650	Supported	Supported
MBB1	Supported	Supported

[e] Filter setting: time domain integration
[f] At 100 kHz - 50 MHz
[g] Of two adjacent MPD units for cable fault localization using TDR, TOF
[h] On request: Monomode for large distance (e.g. > 2.5 km)

A strong and safe connection

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At OMICRON you can always depend on an experienced team that actively supports you and an infrastructure that you can rely on. We always listen attentively in order to understand your needs so that we can offer you the best possible solutions.
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Udo Ranninger
Application Specialist

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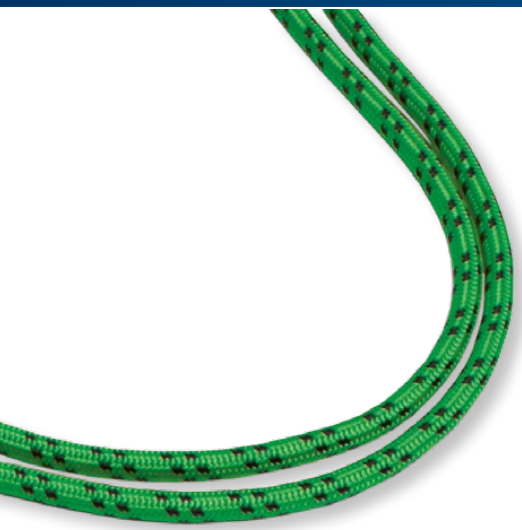

Bavley Farid
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OMICRON is an international company serving the electrical power industry with innovative testing and diagnostic solutions. The application of OMICRON products allows users to assess the condition of the primary and secondary equipment on their systems with complete confidence. Services offered in the area of consulting, commissioning, testing, diagnosis and training make the product range complete.

Customers in more than 160 countries rely on the company's ability to supply leading-edge technology of excellent quality. Service centers on all continents provide a broad base of knowledge and extraordinary customer support. All of this together with our strong network of sales partners is what has made our company a market leader in the electrical power industry.

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