

TDM series

High power test and diagnostics combination for MV cables



- **Powerful cable testing:** Standard compliant withstand testing of cables up to 30 km in length
- **Precise diagnostics:** Loss factor measurement with automatic result interpretation according to IEEE 400.2
- **Effective PD measurements:** Reliable weak point detection using VLF CR/Slope and DAC
- **Tailored solutions:** Various options, ranging from portable to fully integrated systems for 22 kV and 36 kV networks, flexibly combinable with fault location systems

DESCRIPTION

The TDM series sets new standards in the testing and diagnostics of medium-voltage cables (MV cables). Featuring a pioneering, patented system, the TDM series responds to the increasing demand from energy providers for flexible and application-specific testing and measuring devices. Market trends, such as the growing length of MV cable systems, are optimally addressed by this innovative high-performance system.

Available in two voltage levels – optimised for 20/22 kV networks (TDM 4540) and 36 kV networks (TDM 6260) – the TDM series offers a range of application packages. These range from pure testing systems to fully integrated diagnostic solutions, which can be seamlessly combined with fault location systems like PRIMEON or CENTRIX EVOLUTION. Whether portable, in a van, trailer, or container, the TDM series adapts perfectly to your requirements.

One of the outstanding features is its impressive output performance at 0.1 Hz, allowing for the standard-compliant testing of cable lengths up to 30 km, often found in renewable energy supply networks. The TDM series ensures comprehensive testing of large cable systems with its high capacity of up to 8 μF at 36 kV_{RMS} and 5 μF at 54 kV_{RMS}.

In addition to VLF testing, the system offers an integrated loss factor measurement (Tan Delta), which reliably analyses the condition of the cables and provides the user with actionable recommendations according to IEEE 400.2.

The most remarkable feature of the TDM series, however, is its ability to perform partial discharge (PD) measurements at near power grid frequency. This provides asset managers with precise and reliable data for decision-making. With a choice between VLF cosine-rectangular (VLF CR/Slope) and damped alternating current (DAC) as testing methods, you benefit from scientifically proven advantages over traditional VLF Sinusoidal testing for detecting and locating weak points in MV cable systems.

By investing in the TDM series, you are choosing cutting-edge technology that offers maximum performance, flexibility, and reliability for your testing and diagnostic needs.



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TECHNICAL DATA (maximum configuration)	25 kV networks (TDM 4540)	35 kV networks (TDM 6260)
System option	portable and system-integrated	system-integrated
Output voltage		
VLF Sine	0 ... 45 kV _{peak}	0 ... 62 kV _{peak}
VLF CR	0 ... 40 kV _{RMS}	0 ... 60 kV _{RMS}
DC	0 ... ± 45 kV	0 ... ± 62 kV
DAC	0 ... ± 40 kV _{peak}	0 ... ± 60 kV _{peak}
Frequency		
VLF Sinusoidal/rectangular	0.01 ... 0.1 Hz (automatic frequency adaption)	
VLF cosine-rectangular (VLF CR)	0.1 Hz	
Damped AC (DAC)	20 ... 500 Hz	
Output current	12 mA	23 mA
Leakage current measurement	0 ... 20 mA, resolution 10 µA	0 ... 20 mA, resolution 10 µA
Testable capacity		
VLF Sine	0.6 µF @ 0.1 Hz 10 µF max	1 µF @ 0.1 Hz 10 µF max
VLF CR	5 µF @ 0.1 Hz (40 kV _{RMS}) 5.6 µF @ 0.1 Hz (36 kV _{RMS}) 10 µF @ 0.1 Hz (18 kV _{RMS})	4.4 µF @ 0.1 Hz (60 kV _{RMS}) 7.8 µF @ 0.1 Hz (36 kV _{RMS}) 10 µF @ 0.1 Hz (18 kV _{RMS})
DAC	5 µF (40 kV _{peak})	4.6 µF (60 kV _{peak})
Sheath testing/pinpointing	0 to 5 / 10 / 20 kV	0 to 5 / 10 / 20 kV
Internal tan delta (option)		
Range	10 ⁻³ to 10 ⁻⁰	10 ⁻⁴ to 10 ⁻⁰
Accuracy	10 ⁻³	10 ⁻⁴
Resolution	10 ⁻⁴	10 ⁻⁵ / 10 ⁻⁶
Partial discharge	option	
Control	Portable: via VLF unit, PD measurement via laptop System-integrated: via laptop or Primeon/Centrix control-unit	
Duty cycle	continuous	
Weight / dimensions	Depending on configuration	
Operating temperature	- 20 °C ... + 55 °C	
Storage temperature	- 20 °C ... + 70 °C	

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Order information TDM 4540 (portable)	
Product	Order no.
TDM 45 (VLF Sine) Moderate test performance at full voltage. Consisting of: VLF Sine 45 kV	1015415
TDM 45-TD (VLF Sine) Moderate test performance at full voltage and basic diagnostics using loss factor measurement. Consisting of: VLF Sine 45 kV Internal Tan Delta	1015415 138316309
TDM 45-PD (VLF Sine) Moderate test performance at full voltage and basic diagnostics using PD measurement. Consisting of: VLF Sine 45 kV PDS 62-SIN or PDS 60-V3 (see corresponding data sheets)	1015415
TDM 45-TD-PD (VLF Sine) Moderate test performance at full voltage and basic diagnostics using loss factor measurement and PD measurement. Consisting of: VLF Sine 45 kV Internal Tan Delta PDS 62-SIN or PDS 60-V3 (see corresponding data sheets)	1015415 138316309
TDM 4540 (VLF Sine and VLF CR) High test performance at full voltage. Consisting of: VLF Sine 45 kV VLF CR-40-TB	1015415 128311042
TDM 4540-TD (VLF Sine and VLF CR) High test performance at full voltage and basic diagnostics using loss factor measurement. Consisting of: VLF Sine 45 kV VLF CR-40-TB Internal Tan Delta	1015415 128311042 138316309
TDM 4540-PD (VLF Sine, VLF CR/Slope and DAC) High test performance at full voltage and professional diagnostics using PD measurement with VLF CR/ Slope and DAC. Consisting of: VLF Sine 45 kV VLF CR-40-TB PDS 60-V3 (see PDS 60-V3 datasheet)	1015415 128311042
TDM 4540-TD-PD (VLF Sine, VLF CR/Slope and DAC) High test performance at full voltage and professional diagnostics using loss factor measurement and PD measurement with VLF CR/ Slope and DAC. Consisting of: VLF Sine 45 kV VLF CR-40-TB Internal Tan Delta PDS 60-V3 (see PDS 60-V3 datasheet)	1015415 128311042 138316309
Manadory selection of lead set (1x)	
Lead set „Standard“	2003742
Lead set „NAFTA“	2007861
Manadory selection of mains cable (1x)	
Mains cable EU	810000024
Mains cable UK	118307335
Mains cable US	502025220
Mains cable AUS	90020435
Options	
Set of test adapter VLF CS-SF6-UNI-L (long 460 mm)	1013586
Set of test adapter VLF CS-SF6-UNI-K (short 310 mm)	1013587
HV connection cable VLF Sine 45, 10 m	2004420
HV connection cable VLF Sine 45, 15 m	2004421
HV cable drum VLF Sine 45, manual, 25 m	1011515
HV cable drum VLF Sine 45, manual, 50 m	1011516
Transport case VLF Sine 45	90021849
Transport case VLF CR-40-TB	90021850

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Options	
ESG NT2 ground fault locator	1014430
External safety unit with / without controls	2006112 / 2010001
Calibration certificate VLF Sine 45 kV	2004132
Calibration certificate VLF CR-40-TB	2006981
Software MeggerBook 3 for Windows - full license	2015875
Sales packages for system-integrated TDM series (Please contact your sales partner or the factory for a detailed offer)	
Test packages	
Basic Moderate test performance of 1 μ F at full voltage and 0.1 Hz	VLF Sine, 44 kV _{RMS} / 62 kV _{peak}
Ambition M (for cables rated up to 22 kV) High test performance of 5 μ F at full voltage and 0.1 Hz	VLF CR, 40 kV _{RMS}
Ambition L (for cables rated up to 36 kV) High test performance of 4.4 μ F at full voltage and 0.1 Hz	VLF CR, 60 kV _{RMS}
Diagnostic packages	
Basic Entry-level solution for testing and basic diagnostics, including loss factor measurement	VLF Sine, 44 kV _{RMS} / 62 kV _{peak} Internal Tan Delta
Advanced Entry-level solution for testing and basic diagnostics, including loss factor measurement and PD measurement with 0.1 Hz VLF Sine.	VLF Sine, 44 kV _{RMS} / 62 kV _{peak} Internal Tan Delta PD measurement with VLF Sine 0.1 Hz
Dynamic M (for cable range 22 kV) Professional solution for testing and comprehensive diagnostics using VLF CR/ Slope and DAC for PD measurement under power frequency comparable conditions	VLF CR, 40 kV _{RMS} PD measurement with VLF CR/Slope and DAC
Dynamic L (for cable range 36 kV) Professional solution for testing and comprehensive diagnostics using VLF CR/ Slope and DAC for PD measurement under power frequency comparable conditions	VLF CR, 60 kV _{RMS} PD measurement with VLF CR/ Slope and DAC
Ultimate M (for cable range 22 kV) The ultimate diagnostic system. All technologies and excitation voltages are supported.	VLF Sine, 32 kV _{RMS} / 45 kV _{peak} VLF CR, 40 kV _{RMS} Internal Tan Delta PD measurement with VLF Sine 0.1 Hz, VLF CR/Slope and DAC
Ultimate L (for cable range 36 kV) The ultimate diagnostic system. All technologies and excitation voltages are supported.	VLF Sine, 44 kV _{RMS} / 62 kV _{peak} VLF CR, 60 kV _{RMS} Internal Tan Delta PD measurement with VLF Sine 0.1 Hz, VLF CR/Slope and DAC
Comfort Internal PD coupler for maximum comfort and safety. For more information, please contact your sales partner.	VLF Sine, 44 kV _{RMS} / 62 kV _{peak} VLF CR, 60 kV _{RMS} Internal Tan Delta PD measurement with VLF Sine 0.1 Hz, VLF CR/Slope and DAC

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