

The unique combination system for cable testing and cable diagnosis



- Two proven voltage wave shapes in one device
- Standard compliant VLF cable testing with accompanying PD diagnosis
- Non-destructive PD diagnosis by means of proven DAC voltage
- 50 Hz Slope Technology for a direct comparison with the power frequency

DESCRIPTION

The next generation in cable diagnosis

Network operators can now get faster and significantly more reliable information about the quality and the condition of their cables. This is made possible thanks to the brand-new 50 Hz Slope Technology.For the first time, it has become possible to immediately locate faults in underground cables during the actual PD measurement.

The unique "ALL-IN-ONE" solution

The new TDS NT series offers the highest degree of flexibility in the area of cable testing and diagnosis. The TDS NT consists of a multifunctional, compact voltage source and a modern PD detector. The TDS test voltage source can be used for both simple VLF tests or for meaningful commissioning tests with accompanying PD diagnosis in connection with the PD detector. In addition to the proven VLF and DAC test voltage the TDS can also be used for DC tests and sheath tests in compliance with IEC 60229. Furthermore, in combination with the step voltage sensor ESG NT, it can also be used for precise pinpointing of sheath faults.

The 50 Hz Slope Technology

Both the VLF voltage and the DAC voltage work according to the principle of 50 Hz Slope Technology. This is particularly important for PD diagnosis, since reliable evaluation of the measured results requires a direct comparability with the power frequency.

It is widely known that PD characteristics change in case of large frequency differences, making reliable evaluation impossible. Our 50 Hz Slope Technology ensures comparability for both voltage wave shapes.

The focus of the new technology is on the user

The operating software is designed so that any user will come to grips with it immediately.

- Integrated database, simplified searching, browsing and administration of measurement and cable data.
- Improved fully automatic calibration with display of signal to noise ratio.
- "Real time" PD mapping: The PD evaluation algorithm enables a reliable automatic detection and precise location of partial discharges (PD mapping) whilst the measurement is taking place. Time-consuming post-processing of the measurement data is no longer needed, maintenance resources can be directly scheduled.
- Reporting by mouse click: immediately after the measurement has been completed, the operator can create a report with a clearly structured summary of the most important measurement data with a simple mouse click.



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TECHNICAL DATA TDS 40 / 60

Special features:

- Thanks to the high test capacitance, standard compliant 0.1 Hz VLF tests on long cables or multiple phases in parallel are guaranteed. This allows considerable time savings.
- Portable and easy to transport thanks to two-piece design.
- The integrated leakage measurement gives a first indication about the condition of the cable.
- Highest safety through integrated discharge unit, earth-loopmonitoring and breakdown detection.



Variant	TDS 40	TDS 60

Output	voltage	
Output	voitage	

3 ... 60 kV_{RMS} VLF 3 ... 40 kV_{RMS} 3 ... 40 kV_{peak} 3 ... 60 kV_{peak} DAC 3 ... ±60 kV DC 3 ... ±40 kV 7 mA 5 mA **Output current** Leakage current measurement $0\,\ldots\,7\;mA$ 0 ... 5 mA resolution 10 µA resolution 10 µA

Frequency

 VLF
 0.1 Hz

 DAC
 20 ... 500 Hz

Testable cable capacitance VLF

 Basic version
 2.4 μF / 40 kV $_{RMS}$ @ 0.1 Hz
 1 μF / 60 kV $_{RMS}$ @ 0.1 Hz

 Plus version
 4.8 μF / 40 kV $_{RMS}$ @ 0.1 Hz
 2 μF / 60 kV $_{RMS}$ @ 0.1 Hz

 Testable cable capacitance DAC
 5 μF / 40 kV $_{peak}$ 2 μF / 60 kV $_{peak}$

 10 μF max.
 10 μF max.

Testing 3...10 kV

yes

IP20

Sheath test / fault pinpointing

Pinpointing: 3...10 kV, pulse 1:3/ 1:5/ 1:9

Safety devices

Power supply

230 V, 50/60 Hz, 500 VA

120 V, 60 Hz, 500 VA

Reporting

 Temperature
 Operation
 -20 °C ... +55 °C

 Storage
 -40 °C ... +70 °C

Relative humidity 93 % / 30 °C 93 % / 30 °C until 50 kV (non-condensing) (non-condensing)

70 % / 30 °C from 50 kV to 60 kV (non-condensing)

Protection class

divided in two devices

 Weight (depends on options fitted)
 Approx. 55 kg + 48 kg
 Approx. 85 kg + 48 kg

 Dimensions W x H x D,
 550 x 1100 x 420 mm
 550 x 1100 x 420 mm



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TECHNICAL DATA

PD-Detector PDS 60

Voltage

 $\begin{array}{ccc} \text{Operation} & \text{max. 60 kV}_{\text{RMS}} \\ \text{Type} & \text{VLF CR or DAC} \end{array}$

Capacity of HV coupling capacitor 25 nF

Sensitivity range 2 pC ... 100 nC

 $\begin{array}{lll} \textbf{Resolution} & \pm 1 \text{ pC} \\ \textbf{PD self-noise level} & < 2 \text{ pC} \\ \textbf{PD impulse repetition rate} & 100 \text{ kHz} \\ \end{array}$

PD localization

Measuring range 0 ... 16.000 m / v/2 = 80 m/µs

Propogation velocity v/2 50 ... 120 m/µs
Sampling rate 125 MHz (8 ns)
Bandwidth 3 / 25 MHz (switchable)
Precision 1% of the cable length

Resolution ±1 pC / ±1 m

Filter analogue and digital

Power supply 24 V via TDS-System

Temperature

Operation $-20 \,^{\circ}\text{C} \dots +55 \,^{\circ}\text{C}$ Storage $-40 \,^{\circ}\text{C} \dots +70 \,^{\circ}\text{C}$ Relative humidity $93 \,^{\circ}\text{M} / 30 \,^{\circ}\text{C}$ (non-condensing)

Weight 30 kg

Dimensions (W x D x H) 40 x 78 x 54 cm

PD calibrator

(IEC 60270-compliant)

Measuring range 100 pC ... 100 nC
Power supply 9 V block battery

Software EasyGo principle,

integrated cable database, fully automatic evaluation

FEATURES

Special features of the evaluation software:

- Powerful database. Simplified searching, browsing and administration of measurement and cable data.
- Fully automatic calibration with the option of calibrating according to cable length or propagation velocity.
- Clear display of measurement results and real time PD localization. A time-consuming post-processing of the measured data is no longer necessary.
- Report generation by mouse click.





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ORDERING INFORMATION			
Product	Order no.		
TDS NT 40-B Set, consisting of:			
TDS 40-B; TDS 40 Basic power source (incl. lead-set, reporting SW)	138315765		
PDS 60-v2; PD Coupler PDS 60-v2	1007582		
PD calibrator; Measurement range 100 pC 100 nC	2008807		
PD software license; incl. 3 dongles	90011937		
Laptop ENG: (other languages on request)	2007129		
Mandatory selection PDS lead set (1x)			
Standard lead set PDS 60-v2	2003837		
NAFTA lead set PDS 60-v2	2011838		
Mandatory selection mains cable (1x)			
Mains cable EU	810000024		
Mains cable UK	118307335		
Mains cable US	502025220		
Mains cable AUS	90020435		
TDS NT 40-P Set, consisting of:			
TDS 40-P; TDS 40 Plus power source (incl. lead-set, reporting SW)	138315795		
PDS 60-v2; PD Coupler PDS 60-v2	1007582		
PD calibrator; Measurement range 100 pC 100 nC	2008807		
PD software license; incl. 3 dongles	90011937		
Laptop ENG: (other languages on request)	2007129		
Mandatory selection PDS lead set (1x)			
Standard lead set PDS 60-v2	2003837		
NAFTA lead set PDS 60-v2	2011838		
Mandatory selection mains cable (1x)			
Mains cable EU	810000024		
Mains cable UK	118307335		
Mains cable US	502025220		
Mains cable AUS	90020435		
TDS NT 60-B Set, consisting of:			
TDS 60-B; TDS 60 Basic power source (incl. lead-set, reporting SW)	138315405		
PDS 60-v2; PD Coupler PDS 60-v2	1007582		
TE Kalibrator; Measurement range 100 pC 100 nC	2008807		
PD software license; Incl. 3 dongles	90011937		
Laptop ENG: (other languages on request)	2007129		
Mandatory selection PDS lead set (1x)			
Standard lead set PDS 60-v2	2003837		
NAFTA lead set PDS 60-v2	2011838		
Mandatory selection mains cable (1x)			
Mains cable EU	810000024		
Mains cable UK	118307335		
Mains cable US	502025220		
Mains cable AUS	90020435		
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TDS 60-P; TDS 60 Basic power source (incl. lead-set, reporting SW) 138315410 PDS 60-W2; PD Coupler PDS 60-W2 1007582 Et Ralibrators; Measurement range 100 pC 100 nC 2008807 PD software license; incl. 3 dongles 90011937 Laptop EMG: (other languages on request) 2007129 Mandatory selection PDS 60-W2 203837 NAFTE lead set PDS 60-W2 2008837 Mains cable UK 118307335 Mains cable UK 118307335 Mains cable US 90020252 Mains cable US 90020435 Optional HV connection cable 3 90020250 Mains cable US 90020435 OPtional HV connection cable 3 m 2098832 PDS 60 HV connection cable 5 m 890019915 PDS 60 HV connection cable 10 m 89002355 PDS 60 HV connection cable PD free, 10 m (NAFIA) 2021596 PDS 62 HV connection cable PD free, 10 m (NAFIA) 2021596 PDS 62 HV connection cable PD free, 15 m (NAFIA) 2021596 TDS 40/60 HV control cable 10 m 2005667 TDS 40/60 HV control cable 10 m 2005667 TDS 40/60 HV control cable 10 m<	ORDERING INFORMATION	
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PDS 62 HV connection cable PD free, 10 m (NAFTA) 2021598 PDS 62 HV connection cable PD free, 15 m (NAFTA) 2021598 TDS 40/60 HV connection cable 10 m 2005665 TDS 40/60 HV control cable 10 m 2005687 TDS 40/60 earth cable 10 m 2012514 Optional accessoires: Diagnostic connection set 890017909 PD-free adapter TE PC-MC-UNI-L, long version (460 mm), incl. thread-adapter M16 to M12 1013564 PD-free adapter TE PC-MC-UNI-K, short version (310 mm), incl. thread-adapter M16 to M12 1013563 External safety device 128309600 Rain protection hood TDS 40 899005660 Rain protection hood TDS 40 899007332 Transport case for TDS 40 HV unit 90021851 Transport case for TDS 60 HV unit 90021852 Transport case for TDS 40/60 control unit 90021853 Transport case for PDS 60-V2 PD-Coupler 90019220 Vehicle mounting kit TDS 40/60 2013689 Vehicle mounting kit PDS 60-v2 2008388 Calibration certificate TDS 40 2008888	PDS 60 HV connection cable 15 m	890015603
PDS 62 HV connection cable PD free, 15 m (NAFTA) 2021598 TDS 40/60 HV connection cable 10 m 2005687 TDS 40/60 HV control cable 10 m 2005687 TDS 40/60 earth cable 10 m 2012514 Optional accessoires: Diagnostic connection set 890017909 PD-free adapter TE PC-MC-UNI-L, long version (460 mm), incl. thread-adapter M16 to M12 1013564 PD-free adapter TE PC-MC-UNI-K, short version (310 mm), incl. thread-adapter M16 to M12 1013563 External safety device 128309600 Rain protection hood TDS 40 899005660 Rain protection hood TDS 60 899007332 Transport case for TDS 40 HV unit 90021851 Transport case for TDS 60 HV unit 90021852 Transport case for PDS 60-V2 PD-Coupler 90019220 Vehicle mounting kit TDS 40/60 2013689 Vehicle mounting kit TDS 40/6 2008887 Calibration certificate TDS 40 2008888	PDS 62 HV connection cable PD free, 5 m (NAFTA)	2021596
TDS 40/60 HV connection cable 10 m 2005656 TDS 40/60 HV control cable 10 m 2005687 TDS 40/60 earth cable 10 m 2012514 Optional accessoires: Diagnostic connection set 890017909 PD-free adapter TE PC-MC-UNI-L, long version (460 mm), incl. thread-adapter M16 to M12 1013564 PD-free adapter TE PC-MC-UNI-K, short version (310 mm), incl. thread-adapter M16 to M12 1013563 External safety device 128309600 Rain protection hood TDS 40 899005660 Rain protection hood TDS 60 899007332 Transport case for TDS 40 HV unit 90021851 Transport case for TDS 60 HV unit 90021852 Transport case for TDS 40/60 control unit 90019220 Vehicle mounting kit TDS 40/60 2013689 Vehicle mounting kit TDS 40/60 2008887 Calibration certificate TDS 40 2008888	PDS 62 HV connection cable PD free, 10 m (NAFTA)	2021597
TDS 40/60 HV control cable 10 m 2005687 TDS 40/60 earth cable 10 m 2012514 Optional accessoires: Diagnostic connection set 890017909 PD-free adapter TE PC-MC-UNI-L, long version (460 mm), incl. thread-adapter M16 to M12 1013564 PD-free adapter TE PC-MC-UNI-K, short version (310 mm), incl. thread-adapter M16 to M12 1013563 External safety device 128309600 Rain protection hood TDS 40 899005660 Rain protection hood TDS 60 899007332 Transport case for TDS 40 HV unit 90021851 Transport case for TDS 60 HV unit 90021852 Transport case for TDS 40/60 control unit 90021853 Transport case for PDS 60-V2 PD-Coupler 90019220 Vehicle mounting kit TDS 40/60 2013689 Vehicle mounting kit PDS 60-v2 2008358 Calibration certificate TDS 40 2008887 Calibration certificate TDS 60 2008888	PDS 62 HV connection cable PD free, 15 m (NAFTA)	2021598
TDS 40/60 earth cable 10 m 2012514 Optional accessoires: Diagnostic connection set 890017909 PD-free adapter TE PC-MC-UNI-L, long version (460 mm), incl. thread-adapter M16 to M12 1013564 PD-free adapter TE PC-MC-UNI-K, short version (310 mm), incl. thread-adapter M16 to M12 1013563 External safety device 128309600 Rain protection hood TDS 40 899005660 Rain protection hood TDS 60 899007332 Transport case for TDS 40 HV unit 90021851 Transport case for TDS 60 HV unit 90021852 Transport case for TDS 40/60 control unit 90021853 Transport case for PDS 60-V2 PD-Coupler 90019220 Vehicle mounting kit TDS 40/60 2013689 Vehicle mounting kit PDS 60-v2 2008358 Calibration certificate TDS 40 2008887 Calibration certificate TDS 60 2008888	TDS 40/60 HV connection cable 10 m	2005656
Diagnostic connection set 890017909 PD-free adapter TE PC-MC-UNI-L, long version (460 mm), incl. thread-adapter M16 to M12 1013564 PD-free adapter TE PC-MC-UNI-K, short version (310 mm), incl. thread-adapter M16 to M12 1013563 External safety device 128309600 Rain protection hood TDS 40 899005660 Rain protection hood TDS 60 899007332 Transport case for TDS 40 HV unit 90021851 Transport case for TDS 60 HV unit 90021852 Transport case for TDS 40/60 control unit 90021853 Transport case for PDS 60-V2 PD-Coupler 90019220 Vehicle mounting kit TDS 40/60 2013689 Vehicle mounting kit PDS 60-v2 2008358 Calibration certificate TDS 40 Calibration certificate TDS 60 2008888	TDS 40/60 HV control cable 10 m	2005687
Diagnostic connection set PD-free adapter TE PC-MC-UNI-L, long version (460 mm), incl. thread-adapter M16 to M12 PD-free adapter TE PC-MC-UNI-K, short version (310 mm), incl. thread-adapter M16 to M12 External safety device 128309600 Rain protection hood TDS 40 Rain protection hood TDS 60 Rain protection hood TDS 60 Rain protection hood TDS 40 HV unit 90021851 Transport case for TDS 40 HV unit 90021852 Transport case for TDS 60 HV unit 90021853 Transport case for PDS 60-V2 PD-Coupler Vehicle mounting kit TDS 40/60 Vehicle mounting kit PDS 60-v2 Calibration certificate TDS 40 2008888 Calibration certificate TDS 60	TDS 40/60 earth cable 10 m	2012514
PD-free adapter TE PC-MC-UNI-L, long version (460 mm), incl. thread-adapter M16 to M12 PD-free adapter TE PC-MC-UNI-K, short version (310 mm), incl. thread-adapter M16 to M12 External safety device Rain protection hood TDS 40 Rain protection hood TDS 60 Rain protection hood TDS 60 Rain protection hood TDS 60 Rain protection hood TDS 60 HV unit 90021851 Transport case for TDS 40 HV unit 90021852 Transport case for TDS 40/60 control unit 90021853 Transport case for PDS 60-V2 PD-Coupler Vehicle mounting kit TDS 40/60 Vehicle mounting kit PDS 60-v2 Calibration certificate TDS 40 2008388 Calibration certificate TDS 60	Optional accessoires:	
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External safety device 128309600 Rain protection hood TDS 40 899005660 Rain protection hood TDS 60 899007332 Transport case for TDS 40 HV unit 90021851 Transport case for TDS 60 HV unit 90021852 Transport case for TDS 40/60 control unit 90021853 Transport case for PDS 60-V2 PD-Coupler 90019220 Vehicle mounting kit TDS 40/60 2013689 Vehicle mounting kit PDS 60-v2 2008358 Calibration certificate TDS 40 2008887 Calibration certificate TDS 60 2008888	PD-free adapter TE PC-MC-UNI-L, long version (460 mm), incl. thread-adapter M16 to M12	1013564
Rain protection hood TDS 40 899005660 Rain protection hood TDS 60 899007332 Transport case for TDS 40 HV unit 90021851 Transport case for TDS 60 HV unit 90021852 Transport case for TDS 40/60 control unit 90021853 Transport case for PDS 60-V2 PD-Coupler 90019220 Vehicle mounting kit TDS 40/60 2013689 Vehicle mounting kit PDS 60-V2 2008358 Calibration certificate TDS 40 2008887 Calibration certificate TDS 60 2008888	PD-free adapter TE PC-MC-UNI-K, short version (310 mm), incl. thread-adapter M16 to M12	1013563
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Transport case for PDS 60-V2 PD-Coupler 90019220 Vehicle mounting kit TDS 40/60 2013689 Vehicle mounting kit PDS 60-v2 2008358 Calibration certificate TDS 40 2008887 Calibration certificate TDS 60 2008888	Transport case for TDS 60 HV unit	90021852
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Vehicle mounting kit PDS 60-v22008358Calibration certificate TDS 402008887Calibration certificate TDS 602008888	Transport case for PDS 60-V2 PD-Coupler	90019220
Calibration certificate TDS 402008887Calibration certificate TDS 602008888	Vehicle mounting kit TDS 40/60	2013689
Calibration certificate TDS 60 2008888	Vehicle mounting kit PDS 60-v2	2008358
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