

PHG 70 TD PD, PHG 80 TD PD

BAUR VLF test and diagnostics system



The figure is illustrative.

truesinus

Universal test and diagnostics system – flexible, modular, extendable

- Cutting-edge testing and diagnostics technology: VLF truesinus®
- High performance test generator with three voltage shapes
- Automatic testing and diagnostic sequences

The modular PHG test and diagnostics system is used for cable testing, dissipation factor measurement and partial discharge testing. The modular design allows the system configuration to be tailored exactly to your needs and extended as required at any time.

PHG 70 / PHG 80: Used for cable and cable sheath testing of medium-voltage cables up to 50 kV. The VLF testing makes it possible to locate insulation faults in plastic- and paper-insulated mass-impregnated cables in the shortest of testing times without impairing the quality of the surrounding insulating material.

PHG 70 TD / PHG 80 TD: Extend the range of functions of the PHG to include dissipation factor measurement. The dissipation factor measurement with 0.1 Hz VLF truesinus® provides differentiated information on the ageing condition of paper-insulated mass-impregnated and PE/XLPE cables. In the case of PE/XLPE cables, the dissipation factor measurement is capable of differentiating between new, slightly or severely "water tree"-damaged cables. This makes it possible to prioritise the need to replace cables.

PHG 70 TD PD / PHG 80 TD PD: Additionally offer partial discharge testing. Partial discharge testing allows a fast and reliable evaluation of partial discharge activity and the location of PD faults in a cable. Potential faults can thus be recognised early and further damage reduced.

Functions and features

Cable testing

- Max. test voltage up to 38 / 57 kV_{rms}
- Voltage shapes: VLF truesinus®, VLF square wave voltage and DC voltage
- Load-independent, reproducible sinusoidal high voltage by means of VLF truesinus® testing technology
- Cable testing according to: IEC 60060-3, IEC 60502.2, CENELEC HD 620/621 (DIN VDE 0276-620/621), IEEE 400-2012, IEEE 400.2-2013
- Cable sheath testing according to IEC 60502/IEC 60229

Dissipation factor measurement: PHG 70 TD, PHG 80 TD

- Dissipation factor measurement on medium-voltage cables up to 50 kV operating voltage
- Highly precise dissipation factor measurement with precision of 1×10^{-4}
- Measurement results take leakage currents into consideration

Partial discharge testing: PHG 70 TD PD, PHG 80 TD PD

- Partial discharge testing and calibration of the measurement setup according to IEC 60270
- Measurement of
 - PD level and PD quantity
 - PD inception and extinction voltages
- PD phase resolving for classification of PD fault locations

Further information on dissipation factor and partial discharge measurement can be found in the BAUR Software 4 cable testing and diagnostics data sheet

PHG 70, PHG 80

High performance test generator with VLF truesinus® technology

VLF truesinus® – A voltage shape for all methods and method combinations

VLF truesinus® is the only voltage shape that enables both the reliable voltage tests as well as precise dissipation factor measurements and partial discharge testing. Unlike other voltage shapes, the VLF truesinus® voltage is load-independent, symmetrical and continuous. This is a prerequisite for high precision as well as reproducibility and comparability of measurement results.

The key features

The high performance HV generator fulfils all requirements with regard to safety, durability and operational convenience. All of the key cable data can be stored in the user-friendly software. The results of every test and every measurement are saved along with these cable data, which creates a comprehensive cable database that allows the operational evaluation on the basis of historical trends.

- Single voltage source for all tests, dissipation factor and partial discharge measurements
- Symmetrical voltage prevents any undesired effects (e.g. space charge)
- Actual and trend analysis of the cable conditions thanks to the cable database
- Intuitive user interface in multiple languages adapted to the work flow
- Comprehensive safety concept with automatic discharge unit
- Compact design
- Suitable for installation in cable test vans

Examples of installation in cable test vans



Technical data

Output voltage	PHG 70	PHG 80
VLF truesinus®	0 – 38 kV _{rms} 1.4 – 53.7 kV _{peak}	0 – 57 kV _{rms} 1.4 – 81 kV _{peak}
VLF square wave voltage	0 – 57 kV	0 – 80 kV
Frequency range	0.01 – 1 Hz	0.01 – 1 Hz
DC voltage	0 to ±70 kV	0 to ±80 kV
Max. capacitive load	Up to 20 µF	Up to 20 µF 1.2 µF @ 0.1 Hz @ 57 kV _{rms}
	3 µF @ 0.1 Hz @ 38 kV _{rms}	3 µF @ 0.1 Hz @ 38 kV _{rms}
	5 µF @ 0.1 Hz @ 38 kV square wave voltage	5 µF @ 0.1 Hz @ 38 kV square wave voltage
	4 µF @ 0.1 Hz @ 30 kV _{rms}	4 µF @ 0.1 Hz @ 30 kV _{rms}
Resolution	0.1 kV	0.1 kV
Accuracy	1%	1%
Output current	PHG 70	PHG 80
Output current	10 mA @ DC 70 kV 60 mA @ DC 50 kV 90 mA @ DC 20 kV	1.8 mA @ DC 80 kV 60 mA @ DC 50 kV 90 mA @ DC 20 kV
Max. burn current	120 mA	120 mA
Resolution	10 µA	10 µA
Accuracy	1%	1%
Dissipation factor measurement	PHG 70 TD	PHG 80 TD
VLF truesinus®	0 – 38 kV _{rms}	0 – 57 kV _{rms}
Load range	≥10 nF	≥10 nF
Measurement range	0.1 x 10 ⁻³ – 1,000 x 10 ⁻³	0.1 x 10 ⁻³ – 1,000 x 10 ⁻³
Accuracy	1 x 10 ⁻⁴	1 x 10 ⁻⁴
Resolution	1 x 10 ⁻⁶ (mean value of the dissipation factor)	1 x 10 ⁻⁶ (mean value of the dissipation factor)
Detection and compensation of leakage currents	Automatically via the VSE box	Automatically via the VSE box
Partial discharge testing	PHG 70 TD PD	PHG 80 TD PD
VLF truesinus®	0 – 38 kV _{rms}	0 – 57 kV _{rms}
Theoretical measurement range	10 – 12,800 m (at v/2 = 80 m/µs)	10 – 12,800 m (at v/2 = 80 m/µs)
Velocity of propagation (v/2), adjustable	50 – 120 m/µs	50 – 120 m/µs
Sampling rate	100 MSamples/s (10 ns)	100 MSamples/s (10 ns)
PD measurement range	1 pC – 100 nC	1 pC – 100 nC
Accuracy	Approx. 1% of cable length	Approx. 1% of cable length
Resolution	0.1 pC / 0.1 m	0.1 pC / 0.1 m
Calibrator		
Electrical charge (pulses)		
CAL1B	0.1 / 0.2 / 0.5 / 1 / 2 / 5 / 10 nC	
CAL1E	0.5 / 1 / 2 / 5 / 10 / 20 / 50 nC	
Power supply	9 V block battery, DIN/IEC 6F22	

Technical data (continued)

BAUR Software 4

Information about the BAUR Software 4 and the system requirements can be found in the data sheet for BAUR Software 4 cable testing and diagnostics.

General

Display	TFT monitor acc. to quotation
Power supply	200 – 260 V, 50/60 Hz
Option	100 – 140 V, 50/60 Hz with auto transformer
Max. power consumption	3,500 VA
Ambient temperature (HV generator)	-20°C to +55°C
Storage temperature (HV generator)	-30°C to +70°C
Relative humidity	> 90%, non-condensing
Dimensions (W x H x D) (HV generator)	Approx. 483 x 623 x 775 mm
Weight	
HV generator	Approx. 160 kg
Total	From 250 kg (depending upon equipment)
Safety and EMC	CE-compliant in accordance with Low Voltage Directive (2014/35/EU), EMC Directive (2014/30/EU), EN 60068-2-ff Environmental testing

* from 45°C with reduction in performance

Standard delivery

The standard delivery depends on the quotation.

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