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MIDAS micro2883

Mobile Insulation Diagnosis & Analysing System

Datasheet

HAEFELY

Current and voltage – our passion

Designed by Tettex

General Description

The MIDAS micro 2883 is the smallest and most compact insulation diagnosis set on the market. The weight of only 25 kg / 55 lbs and the one box design makes it the ideal tool for power / dissipation factor / tan δ and capacitance testing in the field and in the factory.

State-of-the art electronic design, advanced digital filtering and sophisticated calculation algorithms ensure highly stable results even under adverse conditions.

The three main operating modes offer the user a choice. For quick and straight-forward measurements the basic mode is used, where only the essential information is shown. For advanced tests such as variable frequency or voltage (tip up) measurements the guide mode is available. The user is guided through the measurements with safety and connection instructions shown on the colour touch screen. And the advanced mode offers additional flexibility for special test sequences.

The MIDAS micro 2883 is completed with extensive safety features. Hand and foot interlock switches, easily accessible emergency stop button and built in safety checks ensure safe operation under all circumstances.

Features	Advantages
▪ **Measures Dissipation Factor** (tan δ) and **Power Factor** (cos φ) with built-in high voltage supply up to **12 kV, 15 … 400 Hz** including manual and **automatic** (sequencer) test modes.	☑ **Shortest Measuring Time**: Shortest equipment set-up and measuring time by an “all in one” unit.
▪ **Compact one-box design weights only 25 kg** / 55 lb	☑ **Easy to carry** and is Ideal for power / dissipation factor / tan δ and capacitance testing in the field.
▪ **Accuracy** of 0.3% (capacitance) and $1x10^{-4}$ (tan δ)	☑ **Trustable results** and helps in taking decisions about health of High Voltage components.
▪ 7” color touch **screen** for easy operation	☑ **No external computer or additional connection** required. Connect, Measure and print test results - all from the same unit..
▪ Three operating modes: basic, guide, advanced	☑ Using the guided mode the **measurement is done just following the instructions on the screen**, while the advance mode allows special sequences or measurement procedures.
▪ Safe operation with interlock, emergency stop, safety checks and HV ground surveillance	☑ **Safety of the operators is guaranteed** by the interlock. Device is immediately disconnected if external dead-man type safety switch is released. Optional warning lamps available.

Applications

- Power Transformers
- Distribution Transformers
- Instrument Transformers
- Liquid Insulation
- Bushings
- Capacitors
- Circuit Breakers
- Surge Arrestorst
- Instrument Transformers
-

One Box – Rugged and easy to transport

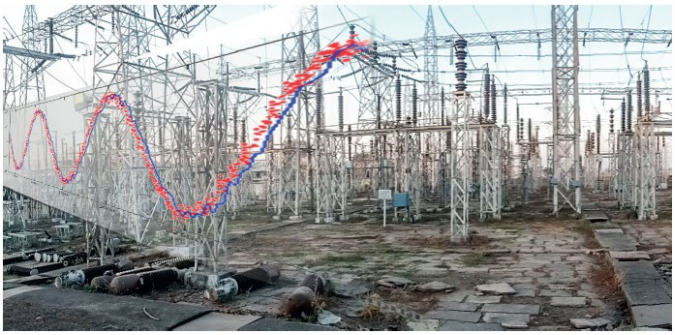
The complete instrument is built in one ruggedized case and has a total weight of only 25 kg / 55 lb. With the integrated casters transportation is convenient and test objects in remote locations can be reached easily.

The MIDAS micro 2883 has run through extensive type testing to simulate the rough environment a product can face during its lifetime. Fulfilling the MIL-STD-810G standard, MIDAS micro 2883 assures you the highest quality and reliability in operation.

Included are a variety of accessories all packed in a robust transportation bag which can be attached to the case. The measurement and high voltage cables are rolled on cable drums which make connection and storing convenient and quick.

Reliable results - always

Accurate measurements in substations can be difficult because of strong electrical fields generated by high voltage transmission lines. The MIDAS micro detects that interference is present and switches to the appropriate noise suppression mode, if necessary.



State-of-the-art digital signal processing is used to filter out the interfering signals. This results in stable and repeatable values under all conditions.

safe operation

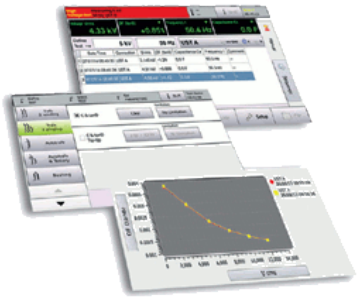
The MIDAS micro 2883 includes several features that ensure safety of the personnel and material. It is equipped with an open ground detection which allows high voltage to be switched on only when a proper ground connection has been made to the unit. In addition to an emergency stop button, the unit is equipped with an external dead-man type safety switch which must be held down prior to testing to allow for high voltage to be turned on. The warning sound and a warning lamp bar located on the top side of the display provide visual and audible warning signals. Additionally an external optional strobe light can be connected.

The features you need

The instrument includes all the features needed to perform tests on various high voltage components. The 12 kV voltage source delivers a clean signal, independent of the mains. The variable frequency source (15 – 400 Hz) allows for advanced measurements such as bushing analysis over a frequency range. A gas filled standard capacitor is used as an internal reference. This guarantees repeatable results and long term stability. With the USB interface and integrated thermal printer, reporting of results is easy.

Quickly to the results you want

Three operating modes are built in, to suit your needs. Use the basic mode for quick and straight forward measurements where only essential displays and controls are shown. Or allow the Guide Mode to walk you through the measurements - from basic insulation diagnosis to advanced tip-up and variable frequency bushing analysis. The advanced mode offers even greater flexibility for special test sequences.



The perfect couple for transformer testing

Combine the MIDAS micro 2883 with the Winding Analyzer 2293 for an entire test solution on transformers. With 2293 tests like winding resistance, transformer turns ratio and magnetic balance measurements can be done with one single connection. Compatible file formats allow data exchange between the two units and measurements results are combined for further analysis or processing.

Highest accuracy

Due to the technology used for this advanced test equipment we reached the highest accuracy in the market. **The built-in reference is a standard gas capacitor**, developed in-house, proven over 60 years, used as a calibration standard for high voltage laboratories and metrology national institutes.

This guarantees the highest long-term stability unbeaten by any other reference standard. Because of the design of our standard capacitor, the stability and the accuracy is independent of temperature, air pressure and humidity of the environment so there is no need for additional verification. It's all built-in already and all calibrations are done automatically as part of the self-test at boot-up. That's "accuracy by design".

temperature correction

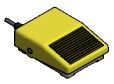
Built-in temperature correction curves for different insulation materials are used to recalculate the measured results to reference conditions (20°C, 68°F). The method of correction depends on the type of insulation and the relevant standard, and the predefined set of curves can be easily expanded or changed by the user.

Scope of supply

1. Measuring instrument MIDAS micro 2883 built in rugged case with casters
2. Rugged transportation bag including:
   - High voltage cable, 20 m / 65 ft with clamp
   - 3 shielded measuring cables with clamps, 20 m / 65 ft
   - High voltage ground cable with clamp
   - 2 cable drums
   - Safety interlock hand switch, 10 m / 32 ft
   - 2 mini clamps with cables
   - 3 bushing tap adapters 4 mm
   - Extension clamp
   - Operating Manual
   - Calibration Certificate with test results

Accessories and options

2883/SAFE Safety Strobe Light with magnetic base (e.g. for mounting on a transformer tank), providing visual warning of high voltage presence.



2883/FS Foot operated interlock switch as alternative to the included hand switch

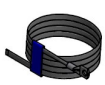
288x/TEMP2 Temperature probe for surface mount (magnetic), 10 m cable

288x/TEMP Laser infrared, contact-less thermo / hygrometer. For determination of tank (oil) temperature, air temperature and air humidity.

2883/WE2
2883/WE3 Warranty extension to two years (WE2) or three years (WE3). Standard warranty is 1 year.

MIDAS Office Software for offline analysis of measurement data and creation of customized test sequences

2883/HOOK Hook for high voltage connection (instead of included clamp)



2883/HCB Set of flexible bands for hot collar tests or for guarding of leakage currents

2883/ALB Adapter cable for standard capacitors (Lemo3 – BNC), i.e. Tettex type 3370 NK

6835 Test cell for on-site measurements on liquid insulation samples, max. 10kV

Technical Data

Input and Output	
Output Voltage	25 .. 12'000 V $_{RMS}$ (@ 45 .. 70 Hz)
Output Frequency @ 5 kV	15 .. 400 Hz (Voltage ≤ 5 kV)
Output Current	180 mA $_{RMS}$
DUT Capacitance	max. 47 nF @ 12 kV $_{RMS}$ @ 50 Hz, max. 39 nF @ 12 kV $_{RMS}$ @ 60 Hz
Measuring Current	≤ 180 mA $_{RMS}$
Internal Reference	100 pF Reference Capacitance, tan δ < 0.00001 Temperature coefficient < 0.01 % / K, Capacitance ageing < 0.01 % / year

Measurement	Resolution	Accuracy
Dissipation / Power Factor tan δ/ cos φ	0.0001 0.01 %	± 0.5 % rdg ± 0.0001@ 50..60Hz ± 0.5 % rdg ± 0.01 % @ 50..60Hz
Capacitance	0.01 pF ± 0.3 % rdg ± 0.3 pF	0.01 pF ± 0.3 % rdg ± 0.3 pF
Test Voltage	1 V ± 0.3 % rdg ± 1V	1 V ± 0.3 % rdg ± 1V
Test Current	0.1 µA ± 0.3 % rdg ± 1 µA	0.1 µA ± 0.3 % rdg ± 1 µA
Watts / Power	0.1 mW, mVA, mVAR ± 0.8 % rdg ± 1 mW, mVA, mVAR	0.1 mW, mVA, mVAR ± 0.8 % rdg ± 1 mW, mVA, mVAR
Quality Factor	0.0001 ± 0.5 % rdg ±0.0001	0.0001 ± 0.5 % rdg ±0.0001

Control unit & Interfaces				
Display	7" TFT , 800 x 480, Colour Touch Screen			
Interfaces	USB 2.0 for Memory Stick, Ethernet, Thermal Printer			
Data Formats	XML, CSV			
Safety Features	Open Ground Detection Security handheld switch, foot switch (optional) internal warning indicator, external warning lamp (optional) audible warning signal			
Recorded Values	DF (tan δ) PF (cos φ) Capacitance Cx Test Current Ix Real Power P Ref Current In Phase-angle φ (Zx) Conditions Settings	DF (tan δ)@20°C PF (cos φ)@20°C Resistance Rx Mains frequency fm Reactive Power Q Capacitance Cn Voltage U_{RMS} Comments	DF%(tan δ) PF%(cos φ) Inductance Lx Noise frequency fn S/N Ratio Current Imag (Lp) Insulation Temp. Connection mode	DF%(tan δ)@20°C PF%(cos φ)@20°C Frequency f Apparent Power S Quality Factor QF Current Ife (Rp) Temp.Corr.Factor K Time/Date

Environmental, Mechanical and Power Supply	
Operating temperature	-10 .. 50°C (14..122° F)
Storage temperature	-20 .. 70°C (-4..158° F)
Humidity	5 .. 95 % r.h. non-condensing
Dimensions (W x D x H)	54.6 x 34.7 x 24.7 cm (21.5" x 13.66" x 9.72")
Weight	Instrument 24.9 kg (single case) (55 lb) Cable bag 16.2 kg (35.7 lb)
Power supply Spec.	90 .. 264 VAC 50/60 Hz, 800 W, active PFC (acc. IEC61000-3-2)

Applicable Standards			
Safety	IEC 61010-1 (2010)	EN 61010-1:2001(ZEK 01.4-08)	
EMC	EN 61000-3-2 (2006)	EN 61000-3-3 (2008)	EN 61000-4-2 (2009)
	EN 61000-4-3 (2010)	EN 61000-4-4 (2004)	EN 61000-4-5 (2006)
	EN 61000-4-6 (2007)	EN 61000-4-11(2004)	EN 55011 +A1(2009)
Transport Drop Shock & Vibration	IEC 60068-2-31 Edition 4.0 (face, corner, free fall) IEC 60068-2-6 IEC 60068-2-27 MIL-STD-810G IEC 60068-2-64 Edition 2.0		
Aging Cycle	MIL-T-28800		

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Current and voltage – our passion

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