GOSSEN METRAWATT

METRISO PRIME
High-Voltage Insulation Tester for battery or hand crank generator operation

3-349-819-03
3/6.18

- Broad measuring range from 10 kΩ to 1 TΩ
- Easy to read logarithmic display
- Test voltages:
  100 V, 250 V, 500 V, 1000 V, 1500 V, 2000 V, 2500 V, 5000 V
- Measurement to 2000 V in accordance with DIN VDE 0413
- Measuring range: 100 kΩ to 100 MΩ (1000 V)
- Voltage measurement to 2000 V ⎓, ~
- Guard terminal eliminates surface current
- 5 m extension cable as accessory equipment
- Power supply with batteries or hand crank generator (optional)

MADE IN GERMANY

CE

Applications

Insulation measurement for cables, motors etc.

Features

Test Voltages to 5000 V

This instrument is suited for the non-destructive measurement of insulation resistance in electrical systems, at machines and transformers and in cables, as well as within the electrical equipment of, for example, locomotives, tram systems and ocean going vessels, with eight selectable test voltages up to 5 kV.

Voltage Measurement to 2000 V

With the voltage measuring ranges, test objects can be checked for the absence of voltage in networks of up to 2 kV. This is important for insulation resistance measurement, because extraneous voltages distort measurement results.

Discharge of Capacitive Devices Under Test

Capacitive devices under test such as cables and coils, which might be discharged to test voltage, are discharged by the measuring instrument. The drop in voltage can be observed at the needle gauge.

Measurements in accordance with EN 61557 part 1 and 2 (VDE 0413)

Measuring current is equal to 1 mA at a test voltage of 100 V, 250 V, 500 V and 1000 V.

Measurement Cables with Heavy-Duty Insulation

The measurement cables with heavy-duty insulation are permanently connected for safety and technical reasons. Possible danger caused by the unintentional removal of cables is thus avoided, for example when charging occurs due to capacitive test objects.

Needle Gauge with LEDs

Three LEDs arranged within the needle gauge make reading easier. The lamp lights up which is located next to the scale, which is assigned to the selected measuring range. During the measurement sequence, the green LED indicates whether or not the battery charge is sufficient for the measurement.

Applicable Regulations and Standards

IEC 61010-1:2010 **DIN EN 61010-1:2011** **VDE 0411-1:2011**	Safety regulations for electrical measurement, control, regulation and lab devices – General requirements
IEC 61010-031: 2015 **DIN EN 61010-031: 2016** **VDE 0411-031:2016**	Safety requirements for electrical equipment for measurement, control and laboratory use. Part 031. Safety requirements for hand-held probe assemblies for electrical measurement and test
IEC 61010-2-030:2010 **DIN EN 61010-2-030:2011** **VDE 0411-2-030:2011**	Safety requirements for electrical equipment for measurement, control and laboratory use. Part 2-030: Particular requirements for testing and measuring circuits
IEC 61557 **DIN EN 61557** **-1:2007** **-2:2008** **VDE 0413** **-1:2007** **-2:2008**	Measuring and monitoring facilities for testing the electrical safety in lines with nominal voltages up to AC 1000 V and DC 1500 V Part 1 – General Part 2 – Insulation resistance measuring devices
IEC 61326-1:2012 **DIN EN 61326-1:2013** **VDE 0843-20-1:2013**	Generic Emission Standard; Electrical equipment for measurement, control and laboratory use – EMC requirements Part 1 – General requirements
DIN EN 60529:2014 **VDE 0470-1:2014**	Test instruments and test procedures – degree of protection provided by enclosures (IP code)

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Measuring Ranges

Insulation Resistance

Scale/ Standard	Measuring Range	Nominal Range of Use	Nominal/Test Voltage U_N / U_T	Nom./Test Current I_N / I_T	Intrinsic Uncertainty [1]	Measuring Uncertainty
1 VDE0413	100 kΩ ... 100 MΩ	100 kΩ ... 10 MΩ	100 V 250 V 500 V 1000 V	1 mA	± 2.5%	±30% of measured value
2	10 kΩ ... 1 TΩ	100 kΩ ... 100 GΩ	100/1500 V 250/2000 V 500/2500 V 1000/5000 V	1 mA/0.7 mA 1 mA/0.5 mA 1 mA/0.4 mA 1 mA/0.1 mA	± 5%	

ShortCircuit Current I_K 1.3 mA

Making Capacity for Insulation Resistance Measurement

Response Time < 100 GΩ: < 3 s; > 100 GΩ: < 8 s
also valid for test voltage or measuring range changes

Direct and Alternating Voltage

Measuring range	Frequency	Internal resistance	Max. allowable voltage	Intrinsic error [1]
0 ... 2000 V AC/DC	15 ... 500 Hz	5 MΩ	2200 V AC/DC max. 10 s	±5%

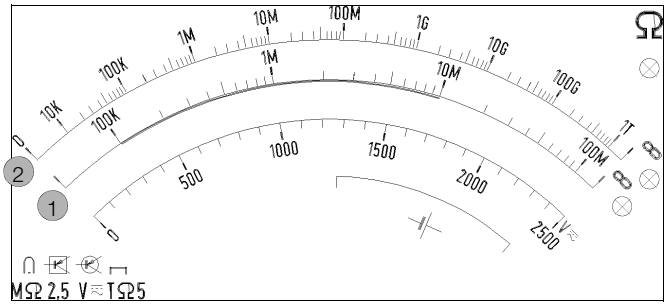
Protective Devices

Terminal	Internal Resistance	Max. Allowable Voltage	Protective Device
–Measurement cable	—	to +meas. cable/ to Guard cable: 2000 V DC/AC max. 10 s	via grounded damping diodes
+Measurement cable Insulation measurement	—	to –meas. cable/ to Guard cable: 2000 V DC/AC max. 10 s	Diodes in high-voltage cascade, PTC thermistor [2] and series resistors
Guard cable	between Guard and meas. cables 90 kΩ	to meas. cable 2000 V DC/AC max. 10 s	PTC thermistor[2] and series resistors
Battery	—	10 V	Pole protection with diodes voltage limiting in battery charger (optional)

[1] with reference to scale length 97.5 mm (100 MΩ range) or 109.8 mm (1 TΩ range)
[2] PTC resistor cool-down period until start of new measurement: at least 2 minutes must be observed!

Display

Movement Core-magnet moving-coil mechanism
Scale length 111.5 mm (longest scale)



Reference Conditions

Ambient Temperature +23 °C ±2 K
Relative Humidity 40 ... 60%
Meas. Quantity Frequency 50 Hz ±10 Hz (for voltage measurements)
Line Voltage Waveform Sine, deviation between effective and rectified value < 1%
Battery voltage 8 V ±1%
Operating position Horizontal

Power Supply

Standard or Storage Battery 6 ea. 1.5 V single cell per IEC R20 (6 x D-Size)
Working Range 6 V ... 10 V
Battery Service Life 7500 measurements for test voltage of 1000 V with meas. resistance of 1 MΩ, 15000 measurements for test voltage of 500 V with meas. resist. of 500 kΩ, measurement of 5 s – pause 25 s
Crank Generator (optional) 2 to 3 r.p.s. with moderate strength, the LED Ω signals sufficient crank frequency and consequently the validity of measuring values
Nominal Voltage 7.5 V (at approx. 2.5 r.p.s.)
Nominal Power 4 W (at approx. 2.5 r.p.s.)

Ambient Conditions

Operating Temperature 0 °C ... + 40 °C
Storage Temperature –20 °C ... + 60 °C (without batteries)
Relative Humidity max. 75%, condensation must be avoided
Elevation up to 2000 m

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Electrical Safety

Protection Class	II
Test Voltage	8.5 kV~
Measuring Category	1000 V CAT II, 600 V CAT III, 300 V CAT IV
Nominal Voltage	1000 V
Open Circuit Voltage	5000 V
Contamination Degree	2

Using the test probes

Maximum rated voltage	**300 V**	**600 V**	**1000 V**	**5000 V**
Measuring category	**CAT IV**	**CAT III**	**CAT II**	**—**
With safety cap attached	•	•	—	—
Without safety cap	—	—	•	•

Electromagnetic Compatibility (EMC)

Product standard DIN EN 61326-1:2013

Interference Emission		Class
EN 55022		B
Interference Immunity	Test Value	Performance Feature
EN 61000-4-2	Contact/Air - 4 kV/8 kV	B
EN 61000-4-3	10 V/m	B

Mechanical Design

Dimensions	W x D x H: 290 mm x 250 mm x 140 mm
Weight	3.4 kg with batteries
Protection	IP 52

Extract from table on the meaning of IP codes

IP XY (1^{st} digit X)	Protection against foreign object entry	IP XY (2^{nd} digit Y)	Protection against the penetration of water
0	not protected	0	not protected
1	≥ 50.0 mm dia.	1	vertically falling drops
2	≥ 12.5 mm dia.	2	vertically falling drops with enclosure tilted 15°
3	≥ 2.5 mm dia.	3	spraying water
4	≥ 1.0 mm dia.	4	splashing water
5	dust protected	5	water jets

Equipment METRISO PRIME (battery operation)

1 high-voltage insulation tester with permanently connected measurement cables and test prods, 2 crocodile clips (5 kV version)
and plug-in battery module including batteries
1 carrying strap
1 operating instructions

Equipment METRISO PRIME (hand crank generator operation)

1 high-voltage insulation tester with permanently connected measurement cables and test prods, 2 crocodile clips (5 kV version)
and hand crank generator
1 carrying strap
1 operating instructions

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Accessories

Hand Crank Generator for retrofit

Carrying Bag F2000

The test instrument, replacement batteries, guard cable, etc., can all be conveniently strored and transported with the F2000 carrying bag.

ISO-Kalibrator 1

Calibration adapter for testing the accuracy of measurement instruments for insulation resistances and low impedance resistances for test voltages **up to 1000 V**.

Order Information

Designation	Type	Article Number
High-voltage insulation tester **for battery operation**	METRISO PRIME	M550T
High-voltage insulation tester **for hand crank generator operation**	METRISO PRIME	M550U
Universal carrying bag for METRISO PRIME	F2000 [D]	Z700D
2 alligator clips 1000 V CAT III / 5000 V CAT I 16 A	KY 5000A	Z580B
1 guard cable with plug and crocodile clip	Guard 5000A	Z580C
5 m extension cable	Leadex 5000	Z580D
Hand crank generator for retrofitting METRISO PRIME to hand crank generator operation	Z580A	Z580A
Set consisting of: METRISO PRIME **for battery operation**, F2000, KY 5000A and 5000A guard	METRISO PRIME-Set	M551T
Set consisting of: METRISO PRIME **for hand crank generator operation**, F2000, KY 5000A and 5000A guard	METRISO PRIME-Set	M551U
Calibration adapter for test voltages **up to 1000 V**	ISO-Kalibrator 1	M662A

[D] Data sheet available

For additional information on accessories, please refer to

- our „Measuring Instruments and Testers“ catalog
- our website www.gossenmetrawatt.com

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