

# METRISO<sup>®</sup> 1000A Insulation tester

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- **Nominal voltages:**  
50 V, 100 V, 250 V, 500 V und 1000 V
- **Quick testing with signal lamp**
- **Low impedance measurement 0 ... 4 Ω**
- **Voltage measurement up to 1000 V**



## Nominal voltages 50 V, 100 V, 250 V, 500 V and 1000 V

This instrument is suited for measurement of insulation resistance at voltage-free devices and systems with nominal voltages of up to 1000 V, and for the insulation testing of earth conductors, protective conductors and bonding conductors, including junctions and connections.

## Quick testing with signal lamp

The signal lamp in the test prod serves to illuminate the work area, and also indicates an evaluation of the insulation resistance as OK or Failure. As long as this lamp is lit, the minimum values for insulation resistance per VDE 0100 have been met.

## Low impedance measurement 0 ... 4 Ω

Low impedance measurement in accordance with VDE 0413, Part 4 is also possible.

## Voltage measurement to 1000 V

The instrument is also equipped with a 1000 V measuring range for direct and alternating current. This is especially advantageous for the testing of devices for the absence of voltage, and the discharge of capacitive devices under test.

## Minimal use of batteries

Measurement only occurs when the ON/OFF button is depressed. This provides for long service life of the batteries.

## Dial gauge with signal lamp

The condition of the batteries is indicated by the color of the signal lamp at the left side of the dial gauge. This lamp also serves to indicate that the instrument is switched on.

## Applicable regulations and standards

IEC 61010-1 EN 61010-1 VDE 0411-1	Safety regulations for electrical measuring, C&I and laboratory equipment
EN 61557 VDE 0413 Part 1 Part 2 Part 4	Measuring and monitoring instruments for the testing of electrical safety in systems with nominal voltages of up to 1000 V AC and 1500 V DC General requirements Insulation resistance measuring instruments Resistance measuring instruments
IEC/EN 61326-1	Generic standard for interference emission; Electrical equipment for measurement, control and laboratory use
IEC/EN 61326/A1	Generic standard for interference immunity; Electrical equipment for measurement, control and laboratory use
EN 60529 DIN VDE 0470 Part 1	Test instruments and test procedures – Degree of protection provided by enclosures (IP code)
DIN EN 60051	Direct-acting and direct-display electrical measuring instruments and their accessories

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## Insulation tester

### Technical Data

Measuring Function	Measuring Range	Inherent Deviation at Reference Conditions <sup>1)</sup>	Measuring Error <sup>2)</sup>	Nominal Voltage $U_N$	Nominal/Measuring Current	Open-circuit Voltage $U_o$	Frequency/Short-circuit Current $I_k$	Internal Resistance $R_i$	Switching Value for Resistance	Overload Capacity	
										Value	Duration
1000 V $\approx$	0 ... 1000 V $\approx$	$\pm 2.5\%$	—	—	—	—	DC / 40 ... 200 Hz	900 k $\Omega$	—	1200 V $\approx$	continuous
R1, R2, R3 $U_N = 50$ V	0 ... 40 k $\Omega$	$\pm 1.5\%$	$\pm 25\%$ rdg.	50 V		60 V		30 k $\Omega$	> 100 k $\Omega$	1200 V $\approx$	max. 10 s
	20 k $\Omega$ ... 1 M $\Omega$							10 k $\Omega$			
	200 k $\Omega$ ... 20 M $\Omega$							40 k $\Omega$			
R1, R2, R3 $U_N = 100$ V	0 ... 80 k $\Omega$	$\pm 1.5\%$	$\pm 25\%$ rdg.	100 V		120 V		60 k $\Omega$	> 200 k $\Omega$	1200 V $\approx$	max. 10 s
	40 k $\Omega$ ... 2 M $\Omega$							20 k $\Omega$			
	400 k $\Omega$ ... 40 M $\Omega$							80 k $\Omega$			
R1, R2, R3 $U_N = 250$ V	0 ... 200 k $\Omega$	$\pm 1.5\%$	$\pm 25\%$ rdg.	250 V	$I_m \geq 1.0$ mA	300 V	< 12 mA	150 k $\Omega$	> 500 k $\Omega$	1200 V $\approx$	max. 10 s
	100 k $\Omega$ ... 5 M $\Omega$							50 k $\Omega$			
	1 M $\Omega$ ... 100 M $\Omega$							200 k $\Omega$			
R1, R2, R3 $U_N = 500$ V	0 ... 400 k $\Omega$	$\pm 1.5\%$	$\pm 25\%$ rdg.	500 V		600 V		300 k $\Omega$	> 1 M $\Omega$	1200 V $\approx$	max. 10 s
	200 k $\Omega$ ... 10 M $\Omega$							100 k $\Omega$			
	2 M $\Omega$ ... 200 M $\Omega$							400 k $\Omega$			
R1, R2, R3 $U_N = 1000$ V	0 ... 0.8 M $\Omega$	$\pm 1.5\%$	$\pm 25\%$ rdg.	1000 V		1200 V		600 k $\Omega$	> 2 M $\Omega$	1200 V $\approx$	max. 10 s
	400 k $\Omega$ ... 20 M $\Omega$							200 k $\Omega$			
	4 M $\Omega$ ... 400 M $\Omega$							800 k $\Omega$			
4 $\Omega$	0 ... 4 $\Omega$	$\pm 1.5\%$	$\pm 10\%$ rdg.	—	$I_m \geq 200$ mA	9 V	> 200 mA	—	—	0,315 A	continuous

<sup>1)</sup> As related to scale length

Scale lengths:  
 R1 l = 46 mm  
 R2 l = 71 mm  
 R3 l = 80 mm  
 $\Omega$  l = 67 mm  
 U l = 66 mm

<sup>2)</sup> Within the marked area of the respective scale (nominal range of use)

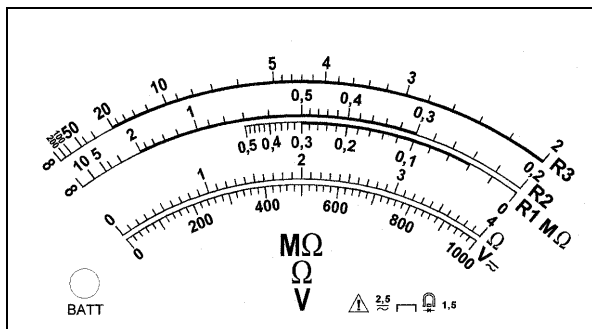
### Accuracy

Insulation resistance Class 1.5 in reference to scale length after electrical zero balance

Direct and alternating current class 2.5

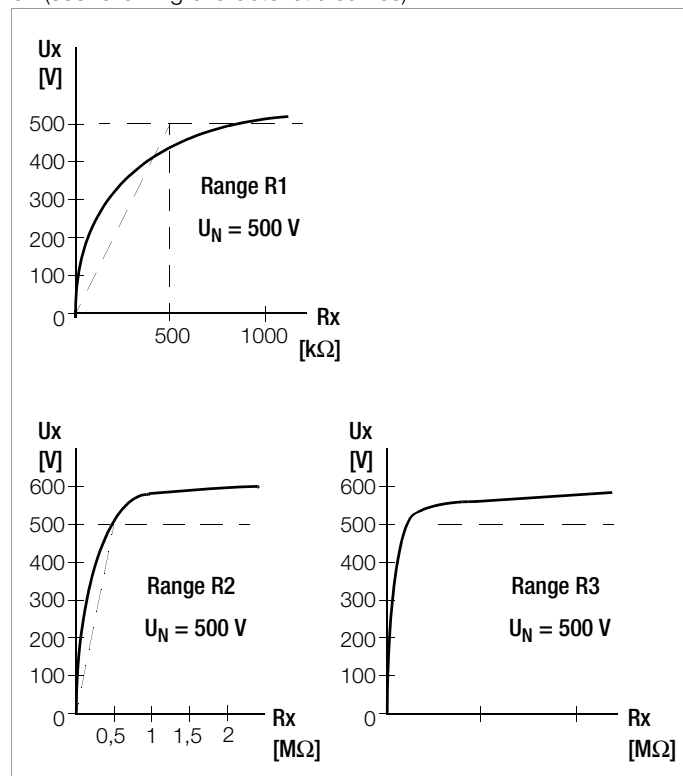
### Display

Movement Moving coil with core magnet



### Turn-on performance for insulation resistance measurement

An electronic voltage limiter prevents the voltage at the device under test from substantially exceeding nominal voltage at turn-on (see following characteristic curves).



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## Reference conditions

Position	horizontal
Ambient temperature	+23 °C ± 2 K
Relative humidity	45 ... 55 %
Frequency of quantity under measurement	45 ... 65 Hz (for voltage measurement)
Waveform of quantity under measurement	Sine
Deviation between effective and rectified value	< 0.5 %
Battery voltage	9 V ± 0,5 V

## Nominal conditions of use

Temperature	0 ... 40 °C
Positioning	horizontal or vertical
Battery voltage	7 ... 10 V

## Power supply

Batteries: 6 ea. 1.5 single cell (6 x D-Size)  
Zinc-carbon type R20 or alkaline-manganese type LR 20 as per IEC.

## Service Life

Number of possible measurements with 1 set of type R20 batteries (with lamp in test prod switched off): at least 3000 measurements of an insulation resistance of 1 MΩ (U<sub>N</sub> = 1000 V, 5 sec. measurement duration, switched off for 25 sec. etc.).

## Electrical safety

Protection class	II
Nominal voltage	1000 V
Test voltage	5.55 kV~
Overvoltage category	II
Contamination level	2

## Electromagnetic Compatibility (EMC)

Interference Emission	IEC/EN 61326-1
Interference Immunity	IEC/EN 61326/A1

## Mechanical design

Protection type	Housing: IP 52
Dimensions WxHxD	Tester: 165 mm x 110 mm x 125 mm Bag: 200 mm x 170 mm x 270 mm
Weight	1.6 kg with batteries

## Included equipment

- 1 insulation tester,
- 1 carrying bag,
- 1 operating instructions



## Accessories

### Kabelset KS24

4 m long single conductor extension cable with permanently mounted test prod and a contact-protected socket at opposite end, as well as two crocodile clips for plugging onto the test prod.

### ISO-Kalibrator

Calibration adapter for testing the accuracy of measuring instruments for insulation resistances and low-impedance resistances (according to VDE 0413, Part 1, 2 and Part 4).



## Order information

Designation	Type	Ident. number
Insulation tester 1000 V, battery-operated, compl. in carrying bag	METRISO®1000A	M540C
Cable set for insulation testers	KS24	GTZ 3201 000 R0001
Calibration adapter	ISO-Kalibrator	M662A

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## Insulation tester

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