

METRISO G500/G1000 und METRISO G500MM

Insulation and Resistance Measuring Instruments

3-349-607-03
2/4.11

- Insulation measurement per EN 61557-2/VDE 0413, part 2
- Digital and analog display, backlit
- Indication of dangerous contact voltage
- **Overvoltage protection:**
Protects the instrument in the event of inadvertent connection to mains power
 - Fuse link for all resistance measuring ranges
 - Electronic fuse for resistance and low-resistance measuring ranges
- **METRISO G1000:**
Voltage testing and measurement up to 1000 V
- **METRISO G500/G1000:**
Low-resistance measurement per EN 61557-4/VDE 0413, part 4
- **Compact and rugged**
For service calls under harsh conditions and laboratory use



Applications

METRISO G500/G1000 as well as **METRISO G500MM** insulation and resistance measuring instruments allow for quick and effective testing of protective measures in accordance with DIN VDE 0100, ÖVE-EN 1 (Austria), SEV 3755 (Switzerland), and regulations specific to other countries as well. The instruments are equipped with a microprocessor and comply with IEC/EN 61557 / VDE 0413 regulations:

Part 1: General requirements

Part 2: Insulation resistance measuring instruments

Part 4: Instruments for measuring resistance at earthing conductors, protective conductors and equipotential bonding

Part 10: Combined measuring equipment for testing, measuring or monitoring protective measures

As well as requirements per VDE 0701-0702:

Repair, modification and testing of electrical devices

The insulation measuring instruments are suitable for the following tasks:

- Measurement of insulation resistance at voltage-free devices and systems, up to 1000 V depending upon variant
- Testing of the resistance of earthing conductors, protective conductors and equipotential bonding
- Checking of test objects for absence of voltage
- Testing of electrostatic discharge capacity at floor coverings (using shielded measurement cables) – EN 1081

Features Overview of Both Instrument Variants

METRISO	G1000	G500	G500MM
Article number	M550C	M550D	M550E
Measurements			
RISO U = 1000 V	✓	—	—
RISO U = 50, 100, 250, 500 V	✓	✓	✓
R 10 ... 10 kΩ	✓	✓	✓
RLO 0.01 ... 10 Ω	✓	✓	—
U 0 ... 1000 V	✓	—	—
U 0 ... 500 V	✓	✓	✓
Display Functions			
Backlit display	✓	✓	✓
Limit value LED (green/red) for: Additional acoustic signal, limit value per VDE 0100	R _{ISO} R _{LO}	R _{ISO} R _{LO}	R _{ISO}
LED for dangerous contact voltage (when switched off)	✓	✓	✓
LCD symbol for external voltage	✓	✓	✓
Battery level display	✓	✓	✓
Special Functions			
Discharge capacitive devices under test	✓	✓	✓
Safety shutdown (UBatt < 8 V)	✓	✓	✓
Features			
Measuring categories CAT II 1000 V / CAT III 600 V	✓	—	—
Measuring category CAT III 600 V	✓	✓	✓
10 MΩ test resistor	✓	✓	—
DKD calibration certificate	✓	✓	✓

METRISO G500/G1000 and METRISO G500MM Insulation and Resistance Measuring Instruments

Characteristic Values

Meas. Qty.	UiSO	Range	Measuring Range	Resolution	Test Current	Intrinsic Uncertainty	Measuring Uncertainty	Overload Capacity
RISO	50 V 100 V G500(MM): 250 V / 500 V G1000: 250 V / 500 V / 1000 V	100 k	10.0 kΩ ... 99.9 kΩ	0.1 k	$I_N = 1 \text{ mA}$ $I_K \leq 3.6 \text{ mA}$	$\pm(5\% \text{ rdg.} + 3 \text{ d})$	$\pm(7\% \text{ rdg.} + 3 \text{ d})$	METRISO G500(MM): 600 V AC/DC TRMS METRISO G1000: 1000 V AC/DC TRMS
		1 M	100 kΩ ... 999 kΩ	1 k				
		10 M	1.00 MΩ ... 9.99 MΩ	10 k				
		100 M	10.0 MΩ ... 99.9 MΩ	100 k				
		1 G	100 MΩ ... 999 MΩ	1 M				
		10 G	1.00 GΩ ... 9.99 GΩ	10 M				
		100 G	10.0 GΩ ... 99.9 GΩ	100 M				
		200 G	100 GΩ ... 199 GΩ	1 G				
U AC/DC	METRISO G500 METRISO G500MM	100 V	10.0 V ... 99.9 V	0.1 V		$\pm(2.5\% \text{ rdg.} + 3 \text{ d})$	$\pm(5\% \text{ rdg.} + 3 \text{ d})$	600 V AC/DC TRMS
		500 V	100 V ... 510 V ¹⁾	1 V				
	METRISO G1000	100 V	10.0 V ... 99.9 V	0.1 V		$\pm(2.5\% \text{ rdg.} + 3 \text{ d})$	$\pm(5\% \text{ rdg.} + 3 \text{ d})$	1000 V AC/DC TRMS
		1000 V	100 V ... 999 V ²⁾	1 V				
RLO	METRISO G500 METRISO G1000	10 Ω	0.17 ... 9.99 Ω	0.01 Ω	$I_N \geq 200 \text{ mA}$	$\pm(2.5\% \text{ rdg.} + 3 \text{ d})$	$\pm(5\% \text{ rdg.} + 3 \text{ d})$	METRISO G1000: 1000 V AC/DC TRMS METRISO G500: 600 V AC/DC TRMS
R	Display range as of 01.0 Ω	100 Ω	10.0 ... 99.9 Ω	0.1 Ω	$I_N \geq 1 \text{ mA}$	$\pm(2.5\% \text{ rdg.} + 3 \text{ d})$	$\pm(5\% \text{ rdg.} + 3 \text{ d})$	METRISO G1000: 1000 V AC/DC TRMS METRISO G500(MM): 600 V AC/DC TRMS
		1 kΩ	100 ... 999 Ω	1 Ω				
		10 kΩ	1.00 ... 9.99 kΩ	10 Ω				

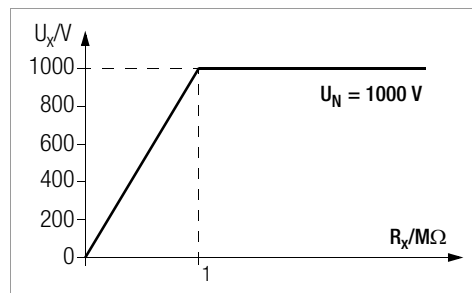
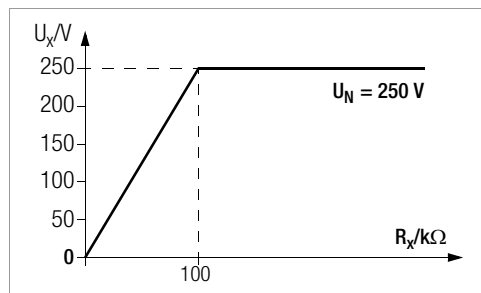
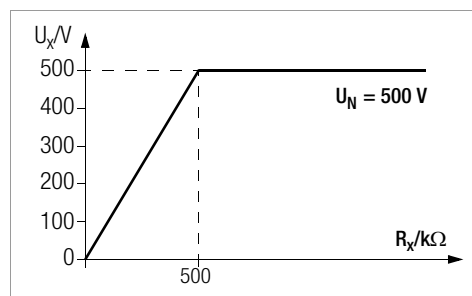
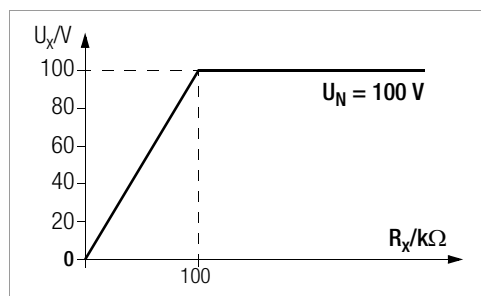
¹⁾ Display range up to 600 V

²⁾ Display range up to 1.2 kV

³⁾ the indicated accuracy is only achieved with the shielded high-resistance measuring cable KS-C (article no. Z541F)*

Voltage at Device Under Test During Insulation Resistance Measurement

Measuring voltage U_x at the device under test depending upon its resistance R_x at nominal voltages of 100, 250, 500 and 1000 V:



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Reference Conditions

Reference temperature	+ 23 °C ±3 K
Relative humidity	40 ... 75 %
Measured quantity frequency	45 Hz ... 65 Hz
Measured quantity waveshape	Sine, deviation between TRMS and rectified value < 1 %
Battery voltage	9.5 V ±0.1 V
Test resistor	10 MΩ ±1 %

Electrical Safety

Standard	
VDE regulation	VDE 0411, part 1, 1994-03
Protection class	II
Pollution degree	2
Measuring category	G1000: CAT II 1000 V / CAT III 600 V G500/G500MM: CAT III 600 V
Fuses	
Fuse link	FF315mA/1000V, effective in all resistance measuring ranges, 1 additional replacement fuse in the battery compartment

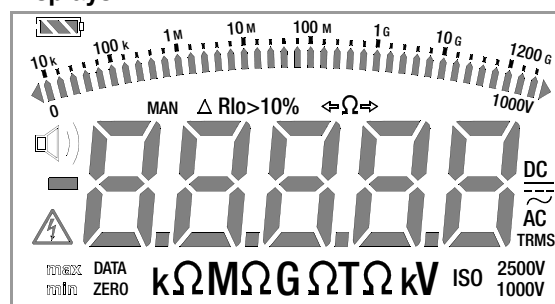
Ambient Conditions

Accuracy	
temperature range	0 ... +40 °C
Operating temperature	-10 ... +50 °C
Storage temp. range	-25 ... +70 °C (without batteries)
Relative humidity	Up to 75% (max. 85% during storage/transport), no condensation allowed
Elevation	Max. 2000 m
Calibration interval	1 year (recommended)

Electromagnetic Compatibility (EMC)

Interference emission	EN 61326-1:2006 class B
Interference immunity	EN 61326-1:2006

Displays



Digital Display

With additional bar graphs or pointer depending on selection with *R.d*, *5P* parameter, backlit (transflective); leading zeros can be suppressed at the digital display depending on selection with *0.d*, *5P* parameter; overranging indicated with *OL* at display; dimensions: 65 x 36 mm

Cable resistance

If measurement results for the two directions of current flow (polarity reversal) differ by more than 10% (this corresponds to typical measuring error for the instruments), both measured values are displayed next to each other with reduced resolution.

Limit LED

LED lights up red to indicate an exceeded limit value

LED lights up green to indicate adherence to the limit value



LED

LED lights up red to indicate the presence of an external voltage or a residual voltage after insulation testing ($U > 50$ V), in both cases with the device switched off



at LCD

Detection of external voltage at the LCD with the device switched on where $U_{DC} > 50$ V and $U_{AC} > 40$ V (50 Hz) for all measuring functions

Mechanical Design

Dimensions	225 x 130 x 140 mm
Weight	Approx. 1.4 kg with batteries
Protection	Housing: IP 52, measurement cables and connectors: IP 40 per DIN VDE 0470, part 1 / EN 60529, housing category 2

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 Penetration by Water
2	≥ 12.5 mm dia.	2	Dripping (at 15° angle)
3	≥ 2.5 mm dia.	3	Spraying water
4	≥ 1.0 mm dia.	4	Splashing water
5	Dust protected	5	Jet-water
6	Dust-proof	6	Powerful water jets

METRISO G500/G1000 and METRISO G500MM

Insulation and Resistance Measuring Instruments

Power Supply

Batteries	8 ea. 1.5 V mignon cell (8 ea. size AA) (alkaline manganese per IEC LR14) or 8 rechargeable NiMH batteries (must be recharged externally)
Nominal range of use	8.5 ... 12 V
Battery test	Battery capacity display with battery symbol in 4 segments:  . Querying of momentary battery voltage via menu function.
Battery saver circuit	Automatic shutdown of display illumination after 15 seconds (after the last time the rotary switch is actuated) can be set via the bL , GHE parameter. The test instrument is automatically switched to the standby mode* when the measured value remains unchanged and none of the controls are activated during this time. * Specified time "RPoFF" (entered in minutes) adjustable via SETUP menu (default setting approx. 10 min).
Service life	For R_{INS} (1000 V / 1 M Ω) and RLO with 20 seconds on-time and 1 measurement each for a duration of 5 seconds: – With batteries (alkaline manganese): 900 measurements – With rechargeable batteries (2200 mAh): 850 measurements
Safety shutdown	If supply voltage is too low, the instrument is switched off, or cannot be switched on. When the rotary switch is set to the OFF position, the instrument is completely disconnected from the batteries (after approximately 10 seconds).

Scope of delivery:

- 1 Insulation and resistance measuring instrument
- 1 DKD calibration certificate
- 1 Set batteries
- 1 Carrying strap
- 1 Alligator clip
- 1 KS17-4 cable set
- 1 Condensed operating instructions
- 1 CD ROM with the following content:
 - Comprehensive operating instructions (English and German)
 - Data sheet

Order Information

Description	Type	Article number
Insulation measuring instrument for DIN VDE 0100, ÖVE-EN 1 (Austria) and SEV 3755 (Switzerland), complies with IEC/EN 61 557/VDE 0413, parts 1, 2, 4 and 10		
Test voltages to 1000 V, voltage measurement to 1000 V, including low-resistance measurement	METRISO G1000	M550C
Test voltages to 500 V, voltage measurement to 500 V, including low-resistance measurement	METRISO G500	M550D
Test voltage up to 500 V, voltage measurement up to 500 V	METRISO G500MM	M550E
Accessories (not included)		
Calibration adapter for testing the accuracy of instruments used for measuring insulation resistance and low-resistance for test voltages of up to 1000 V (per VDE 0413, parts 1, 2 and 4).	ISO calibrator 1	M662A
Cable set consisting of measurement cable and shielded high-resistance measurement cable for measurements in the G Ω range	KS-C	Z541F
Triangular probe for floor measurements per EN 1081, DIN VDE 0100-600 (Standing-Surface Insulation)	1081 probe	GTZ3196000R0001
Cable set consisting of a 4 m long extension cable with a permanently attached test probe at one end and a contact protected socket at the other end, and 2 alligator clips which can be plugged onto the test probe	KS24	GTZ3201000R0001
Telescoping rod for PE measurement	Telearm 1	GTZ3232000R0001
Reel with 25 m measurement cable	TR25 reel	GTZ3303000R0001
Drum with 50 m measurement cable	TR50 drum	GTY1040014E34
Test probe with a key for triggering measurement, and an additional key for illuminating the measuring point, including shielded cable	Z550A ¹	Z550A ¹

¹ Available as of 2nd quarter of 2011

For additional information regarding accessories please refer to

- The data sheet for the respective device or our Measuring Instruments and Testers catalogue.
- www.gossenmetrawatt.com

Applicable Regulations and Standards

IEC 61010-1 / EN 61010-1 / VDE 0411-1	Safety requirements for electrical equipment for measurement, control and laboratory use – General requirements
DIN EN 61557 / VDE0413	Part 1:2007-12 General requirements Part 2:2008-02 Insulation resistance measuring instruments Part 4:2007-12 Instruments for measuring resistance at earthing conductors, protective conductors and equipotential bonding Part 10: 2001-12 Combined measuring equipment for testing, measuring or monitoring protective measures
EN 1081	Testing of electrostatic discharge capacity for floor coverings in potentially explosive atmospheres
EN 60529 VDE 0470, part 1	Test instruments and test procedures Degrees of protection provided by enclosures (IP code)
DIN EN 61326-1 VDE 0843-20-1	Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 1: General requirements

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