GOSSEN METRAWATT

METRISO®C
Insulation and Resistance Measuring Instrument

3-349-086-03
11/11.10

Battery powered insulation resistance measuring instrument in accordance with DIN VDE 0413, parts 2 and 4 for measurement in systems with nominal voltages of up to 500 V

Insulation resistance measurement

- Measuring range 0 … 100 GΩ
  Variable test voltage: adjustable from 50 to 1000 V

Low-resistance measurement

- Measuring range 0 … 100 Ω

Temperature and humidity measurement

via IrDa interface with additional adapter

Contact current measurement

- Measuring range 0 … 10 mA

QUALITY MANAGEMENT SYSTEM

DQS certified per
DIN EN ISO 9001:2000
Reg.-No.1262

Special features for insulation resistance measurement

- Quick testing with limit value and signal lamp
- Auto-ranging for insulation resistance measurement over the entire scale range for quick determination of the measured insulation value

Special features for resistance measurement (low-resistance)

- Quick testing with limit value and signal lamp
- Automatic polarity reversal for recognition of interference voltage

Special instrument features

- Hold function: the measured value is frozen at the display after the measurement key is released.
- Measured values can be stored to memory with reference to electrical circuits, distribution cabinets and other objects thanks to alphanumeric entry.
- Data interface for transmission of measured values, and for software updates
- Convenient report generating software, can be expanded to a comprehensive database

Display

The LCD window consists of a backlit dot matrix which is used to display menus, configuration options and measurement results, as well as online help. Various user interface languages can be selected, depending upon the country in which the test instrument is used.

Operation

The instrument is very easy to operate. A multifunction key allows for one-handed operation when selecting menus and starting measurements. Basic functions and sub-functions are selected with the help of four softkeys.

Battery Charge Level Indicator and Device Self-Test

A battery symbol in the main menu with 5 segments ranging from depleted to fully charged keeps the user continuously informed concerning battery charge level.
The test instrument is switched off automatically if the batteries are depleted, and it includes a charge control circuit for safe charging of rechargeable NiMH or NiCd batteries.
Test patterns can be queried one after the other in the self-test mode, and display LEDs and relays can be tested.

Sturdy Housing for Rugged Use

Soft plastic jacketing protects the instrument against impacts, or if it is inadvertently dropped.

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Signal Lamps

The device recognizes errors in the electrical system automatically, which are indicated with four lamps, (see following table).

Lamp	Status	Function
	red	Potential difference between finger contact and measurement input is greater than 150 V
Netz Mains	blinks red	Mains voltage is present at the measurement inputs, insulation resistance measurement is disabled
LIMIT	red	– Measured insulation resistance is below the allowable limit value. – Measured low resistance has exceeded the allowable limit value. – Measured contact current has exceeded the allowable limit value.
U>25V	red	A voltage of greater than 25 V is present at the measurement inputs. Discharging in not yet complete.

Data Interface

Measurement data can be read out to a printer or a PC via the integrated IRDA interface, providing the user with 3 advantages.

- Transmission of stored data to a PC for processing and archiving, or for the generation of official reports
- Immediate print-out of all measurement data (via adapter)

Software Updates

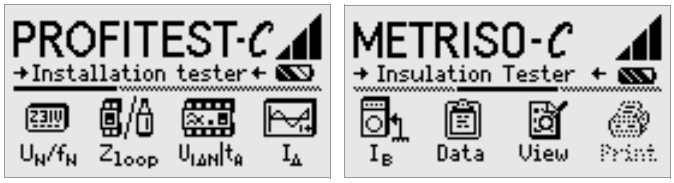
The test instrument will never become obsolete thanks to software updates which can be installed via the IRDA interface. Updates can be performed by our service department as part of our re-calibration service, or by the user himself.

Applicable Regulations and Standards

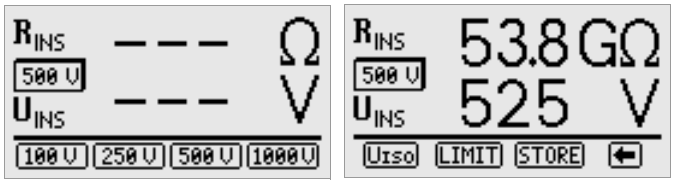
DIN EN 61557/ VDE 0413	Part 1: 1998-05 Part 2: 1998-05 Part 4: 1998-05	General requirements Insulation resistance measuring instruments Instruments for the measurement of resistance at earthing conductors, protective conductors and bonding conductors
VDE 0106 Part 1	Protection against electric shock, classification of electric and electronic equipment	
DIN EN 60529 VDE 0470-1	Test instruments and test procedures, 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	
EN 1081	Testing floor coverings in explosive atmospheres for electrostatic discharge capacity	

Sample Displays

Main Menus

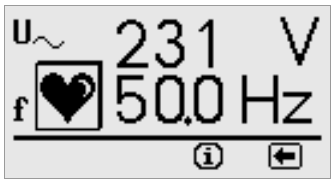


Insulation Resistance Measurement

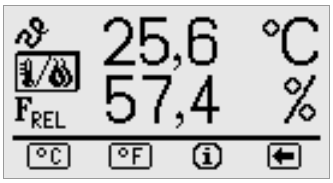


Low-Resistance Measurement

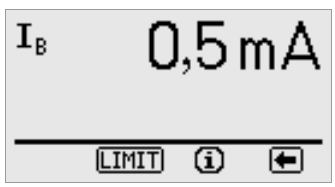
Voltage Measurement



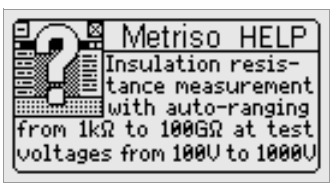
Temperature and Humidity Measurement



Contact Current Measurement



Online Help



Characteristic Values

Measured Quantity	Display Range	Test Current	Measuring Range	Nominal Values Impedance	Intrinsic Uncertainty	Measuring Uncertainty
R_{ISO}	000 kΩ … 99.9 GΩ	1 mA [3]	20 kΩ … 10.0 GΩ	U_N = 100 V [2]	±(5% rdg. + 3 d)	±(7% rdg. + 3 d)
			0.20 MΩ … 10.0 GΩ	U_N = 250/500/1000 V [2]	±(5% rdg. + 3 d)	±(7% rdg. + 3 d)
			> 10.0 GΩ … 99.9 GΩ	U_N = 100/250/500/ 1000 V [2]	±(8% rdg. + 3 d)	±(10% rdg. + 3 d)
U_{ISO}	000 V … 1.20 kV		50 … 1.00 kV	5 MΩ	±(2.5% rdg. + 3 d)	±(5% rdg. + 3 d)
U~	00.0 V … 500 V		10 … 500 V	5 MΩ	±(2.5% rdg. + 3 d)	±(5% rdg. + 3 d)
f	15.0 … 400 Hz		45 … 200 Hz	5 MΩ	±(0.5% rdg. + 2 d)	±(1% rdg. + 2 d)
R_{LO}	0.00 … 9.99 Ω	I_N = 200 mA	0.15 … 10 Ω	U_0 = 4.5 V	±(2.5% rdg. + 3 d)	±(5% rdg. + 3 d)
	> 10.0 … 99.9 Ω		> 10 … 100 Ω		±(8% rdg. + 3 d)	±(10% rdg. + 3 d)
I_B	0.00 … 9.99 mA		0.1 … 10 mA AC	2 kΩ	±(5% rdg. + 3 d)	±(6% rdg. + 3 d)
T [1]	−10.0 … +50.0 °C		0 … +40 °C		±2 °C	
F_{rel} [1]	10.0 … 90.0%		20 … 80%		±5%	
Phase Test	LED PE > 100 V		100 … 500 V	> 100 MΩ/50 Hz		

[1] With external adapter (Z541A) as accessory
[2] Nominal DC voltage = U_N + (0 … 15%)
[3] At nominal resistance of R_N = 1000 Ω/V

Reference Conditions

Ambient Temperature	+ 23 °C ±2 K
Relative Humidity	40 … 60%
Battery Voltage	5.5 V ± 1%
Measured Qty. Frequency	50 Hz ±0.2 Hz
Line Voltage Waveshape	sine, deviation between effective and rectified values < 1%

Power Supply

Batteries	4 ea. 1.5 V baby cells (4 x C-Size) (alkaline-manganese per IEC LR14) or 4 ea. NiCd rechargeable batteries
Nominal Range of Use	4.6 … 6.5 V
Battery Test	Symbolic display
Battery Saving Circuit	Display illumination can be deactivated. The test instrument is switched off automatically 10 to 60 seconds after the last key operation. ON-time can be selected by the user.
Service Life	for R_{ISO} (1000 V/1 MΩ), R_{LO} with 20 sec. on-time and a measurement duration of 5 sec. each – with one set of batteries (alkali-manganese): (1,600 measurements – with one set of storage batteries (2200 mAh): 1,000 measurements
Safety Shutdown	The instrument is switched off if supply voltage drops to below the specified level, or it cannot be switched on.
Charging Socket	Rechargeable batteries can be recharged inside the instrument by connecting the NA102 charger to the charging socket.

Overload Capacity

R_{LO} und I_B	Electronic protection prevents the device from being switched on if interference voltage is present .
U~	500 V~ continuous

Electrical Safety

VDE Requirement	VDE 0411 Part 1, 1994-03
Safety Class	II per IEC 61010-1/EN 61010-1/ VDE 0411-1
Pollution degree	2
Measuring Category	Insulation measurement –1000 V DC – no overvoltage Voltage measurement – 500 V – CAT II

Electromagnetic Compatibility EMC

Interference Emission	EN 61326:2002 Class B
Interference Immunity	EN 61326:2002 EN 61000-4-2: 1995/A1: 1998 Feature A EN 61000-4-3: 1995/A1: 1998 Feature B

Ambient Conditions

Nominal Service Temp.	0 ... +40 °C
Operating Temperature	−10 ... +50 °C
Storage Temperature	−20 ... +60 °C (without batteries)
Relative Humidity	max. 85%, no condensation allowed
Elevation	max. 2000 m
Deployment	indoors; outdoors: only under specified ambient conditions

METRISO®*C*
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Mechanical Design

Display	multiple dot matrix display, 128 x 64 pixels (65 mm x 38 mm), illuminated
Protection	housing: IP 52 per DIN VDE 0470, part 1/EN 60529
Dimensions	275 mm x 140 mm x 65 mm
Weight	approx. 1.2 kg with batteries

Data Interface

Type	infrared interface (SIR/IrDa) bidirectional, half-duplex
Format	9600 baud, 1 start bit, 1 stop bit, 8 data bits, no parity, no handshake
Range	max. 10 cm recommended distance: < 4 cm

Standard Equipment

1 METRISO®C test instrument
1 carrying strap
1 set of batteries
1 pair of measurement cables
1 proprietary calibration certificate
1 operating instructions
The free-of-charge PC starter program WinProfi is used for communication with METRISO®*C*.
WinProfi is available on our homepage with the following content and functions:
(see under section Order Information for the web address)

- up-to-date test instrument software
  – for loading other languages for the user interface
  – for loading updated firmware versions
- Transmission of measured data from test instrument to PC

Accessories

Floor Probe

The 1081 floor probe allows for the measurement of resistance at insulating floor coverings in accordance with DIN VDE 0100, part 610, and EN 1081.

Order Information

Designation	Type	Article Number
Basic Instrument/Instrument Set		
Digital insulation and resistance measurement instrument	METRISO®*C*	M541A
Set consisting of PROFITEST C, METRISO C, 3-pole adapter, IrDa 0100 adapter cable and meaurement cables KS17 in carrying case HC 40	Set PROFITEST C/ METRISO C	M508A
Expansions		
Sensor for temperature and relative humidity for METRISO®*C* and Profitest 0100S-II (as from Software AH)	T/F Sensor	Z541A
IR interface for connection to a USB PC port for transmission of data between the PC and the METRISO®*C*, e.g. for software updates at the test instrument or for visualization of measured values at the PC	IrDa-USB Converter	Z501J
Accessories		
Charger for recharging batteries while inside the METRISO®*C*	NA102	Z501N
Cable set consisting of measurement cable and high-resistance measurement cable for METRISO®*C* for measurements in the GΩ range	KS-C	Z541F
Hard-shell case with blister insert for 1 series C instrument and accessories	HC30-C	Z541C
Hard-shell case with blister insert for 2 series C instruments and accessories	HC40	Z541D
Triangular probe for floor measurements in accordance with EN 1081 and DIN VDE 0100	1081 Probe	GTZ 3196 000 R0001
Calibration adapter for testing the accuracy of measuring instruments for insulation resistance and low-value resistors	ISO-Calibrator 1	M662A
PC Evaluation Software		

http://www.gossenmetrawatt.com
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or

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