

INSULATION RESISTANCE METER

MIC-2500



Insulation resistance measurement

Leakage current indication

Low-voltage resistance measurement

Measurement of AC/DC voltage

Main features of MIC-2500:

- test voltages between 50...2500V in 10V steps,
- insulation resistance measurement up to 1100GΩ,
- low-voltage resistance measurement,
- leakage current indication,
- automatic selection of measuring ranges,
- direct measurement of insulation absorption coefficient and resistance for time intervals adjustable from 1s to 600s,
- direct measurement of absorption coefficients,
- Polarization Index (PI),
- Dielectric Absorption Ratio DAR,
- saving measurement values of test voltages and times,
- memory for 999 measurement results,
- ability to transfer the data to a PC,
- automatic discharge of tested object after measurement,
- acoustic determination of 5 second time intervals that facilitates to take time characteristics during measurement,
- built-in power supply adaptor for automatic battery charging,
- ergonomic operation.

The MIC-2500 is a small, portable meter for measuring the insulation resistance of electrical and telecommunication installations, cables, transformers, motors, machines and other devices. The instrument can measure the insulation resistance in a very wide range 50kΩ...1,1TΩ and the leakage current of the insulation. Input of the meter are electronically protected from overloading, e.g. due to incorrect connection to the circuit being tested or incorrect use of input terminals.

Standard Accessories

- Ni-Cd battery package 8ECF1800CS 9,6V 1,8Ah (WAAKU02)
- Power supply adaptor Z series; pin 3,5mm (WAZAS3X5Z_)
- Cable with the quadruple plug 2,5kV, 1kV (WAPRZMIC2500)
- Test lead with banana plug 1,2m; black (WAPRZ1X2BLBB)
- "Crocodile" clip K02; yellow (WAKROYE20K02)
- "Crocodile" clip K01; black (WAKROBL20K01)
- Carrying case M2 (WAFUTM2)
- User Manual
- Calibration Certificate
- Sonel CD - technical data and software

Optional Accessories

- OPTO-RS serial transmission cable (WAPRZOPTORS)
- Adapter - converter USB1.1/RS232 (WAADAUSBR5232)
- Calibration Certificate issued by Calibration Laboratory (LSWGBMIC2500)
- Sonel PE3 - software for creation of documentation from electrical measurements for PC (WAPROPE3EN)
- Sonel PE3 + Sonel Schematic - software for creation drawings and diagrams for PC computers (WAPROPE3SEN)

2 year warranty

Nominal operating conditions

- test voltages intervals 50...1000V with 10V step
- test voltage accuracy $R_{obc} [\Omega] \geq 1000 * U_N [V] : -0 +10 \%$ of the setting
- maximum measurement current: 1,2 mA \pm 0,2 mA
- measurement T_1, T_2 and T_3 test times for absorption measurement: three, selected from the range between 1... 600 seconds accuracy \pm 1s

Electrical Safety
Other technical data

- power supply: Ni-Cd battery set type "SONEL" 8ECF1800CS
- dimensions: 230 x 67 x 68 mm
- weight (incl. batteries): approx. 850g
- AUTO-OFF time:
 - R_{ISO}/I_L mode: depending on programmed time T_2 or T_3 ($T_2/T_3 + 300$ seconds)
 - other modes: 300 seconds
- frequency of measurements in R_{ISO} mode: approx. 1 measurement/sec
- display: LCD, 4 digits, 14mm high
- operating temperature: $-10^\circ\text{C}..+40^\circ\text{C}$
- storage temperature: $-20^\circ\text{C}..+60^\circ\text{C}$

- type of insulation: double, PN-EN 61010-1 and IEC 61557 compliant
- measurement category: CAT. III 300V, PN-EN 61010-1 compliant
- protection class: IP40

DC voltages

Range	Resolution	Accuracy
0...600V	1 V	$\pm(3\% \text{ m.v.} \pm 2 \text{ digits})$

AC current 50-60 Hz

Range	Resolution	Accuracy
0...600V	1 V	$\pm(3\% \text{ m.v.} \pm 2 \text{ digits})$

sine waveform with harmonics contents < 2 %

Insulation resistance measurement (2500V)

Range	Resolution	Accuracy
50,00...99,90k Ω	0,01k Ω	$\pm(3\% \text{ m.v.} \pm 20 \text{ digits})$
100,0...999,0k Ω	0,1k Ω	
1,000...9,990M Ω	0,001M Ω	
10,00...99,90M Ω	0,01M Ω	
100,0...999,0M Ω	0,1M Ω	
1,000...9,990G Ω	0,001G Ω	
10,00...99,90G Ω	0,01G Ω	
100,0...999,0G Ω	0,1G Ω	
1000...1100G Ω	1G Ω	

Leakage current reading

Range	Resolution	Accuracy
0... I_{pmax}	Depending from range	$-\Delta I_-, +\Delta I_+$

where: I_{pmax} - maximum converter's current equal to 1,2 \pm 0,2mA
 $-\Delta I_-, +\Delta I_+$ - basic current reading errors calculated from the resistance reading using the formulas:

$$\Delta I_- = U_{ISO} \left(\frac{1}{R} - \frac{1}{R + |\Delta R|} \right) \quad \Delta I_+ = U_{ISO} \left(\frac{1}{R - |\Delta R|} - \frac{1}{R} \right)$$

U_{iso} - test voltage
 R - displayed value of the insulation resistance
 ΔR - basic resistance measurement error defined for the measurement

Low voltage resistance measurement

Range	Resolution	Accuracy
0,0...99,9 Ω	0,1 Ω	$\pm(2\% \text{ m.v.} \pm 3 \text{ digits})$
100,0...399,9 Ω	0,1 Ω	$\pm(4\% \text{ m.v.} \pm 3 \text{ digits})$

- sound signalling for resistances less than approx. 35 \pm 25 Ω
- maximum voltage at separate terminals – 9,6V
- maximum current at shorted terminals – 100mA

☞ „m.v.“ in the definition of accuracy denotes the measured value