

# INSULATION RESISTANCE METER MIC-2510



**INSULATION  
RESISTANCE  
MEASUREMENT  
UP TO  
2TΩ  
IN ACCORDANCE  
WITH IEC 61557-2**



**°C FULL CAPTURE  
AND RECORDING  
OF MEASUREMENT  
CONDITIONS**

! **Insulation resistance measurement:**

- selectable measurement voltage 100, 250, 500, 1000 V or any in the range of 50...2500 V at 10 V resolution,
- continuous indication of measured insulation resistance or leakage current,
- automatic discharge of measured object capacitive voltage after the completion of insulation resistance measurement,
- acoustic signaling of 5 seconds intervals to facilitate capturing time characteristics,
- metered  $T_1$ ,  $T_2$  and  $T_3$  test times for measuring one or two absorption coefficients from the range of 1...600 s,
- capability of automatic measurement of multi-wire cables with the optional AutoISO-2500 adapter,
- indication of actual test voltage during measurement,
- protection against measuring live objects.

! **Continuity measurement of protective connections and equipotential bonding in accordance with PN-EN 61557-4 with current > 200 mA.**

! **Circuit continuity and resistance measurement at low voltage.**

- circuit resistance measurement ( $< 999 \Omega$ ) with current  $< 15$  mA,
- quick acoustic signaling for a circuit of resistance lower than  $10 \Omega$
- compensation (automatic zero) of test lead resistance.

! **Measurement of leakage current during insulation resistance testing.**

! **Measurement of capacity during the measurement of  $R_{iso}$ .**

! **Continuous measurement of surrounding temperature with the capability of recording results in memory.**

! **DC and AC voltage measurement in the range of 0...600 V.**

! **990 cells of memory (11880 records) with the capability of data transmission to a PC through a USB cable.**

! **Power supply from battery packs.**

! **The instruments meet the requirements of the PN-EN 61557 standard.**

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# MIC-2510

## Insulation resistance measurement (two-lead)

Measurement range acc. to IEC 61557-2 for  $R_{ISOmin}=U_{ISOmin}/I_{ISOmax} \dots 2T\Omega$  ( $I_{ISOmax}=1mA$ )

Range	Resolution	Accuracy
0.0...999.9k $\Omega$	0.1k $\Omega$	$\pm(3\% \text{ w.m.} + 20 \text{ digits})$
1.000...9.999M $\Omega$	0.001M $\Omega$	
10.00...99.99M $\Omega$	0.01M $\Omega$	
100.0...999.9M $\Omega$	0.1M $\Omega$	
1.000...9.999G $\Omega$	0.001G $\Omega$	
10.00...99.99G $\Omega$	0.01G $\Omega$	
100.0...999.9G $\Omega$	0.1G $\Omega$	
1.000...2.000T $\Omega$	0.001T $\Omega$	

Values of measured resistance depending on measurement voltage

Voltage $U_{ISO}$	Measurement range
50V	50G $\Omega$
100V	100G $\Omega$
250V	250G $\Omega$
500V	500G $\Omega$
1000V	1.00T $\Omega$
2500V	2.00T $\Omega$

## Measurement of insulation resistance with the AutoISO-2500 adapter

Range	Resolution	Accuracy
0.0...999.9k $\Omega$	0.1k $\Omega$	$\pm(3\% \text{ w.m.} + 20 \text{ digits})$ of the meter + max 1% of AutoISO-2500 uncertainty
1.000...9.999M $\Omega$	0.001M $\Omega$	
10.00...99.99M $\Omega$	0.01M $\Omega$	
100.0...999.9M $\Omega$	0.1M $\Omega$	
1.000...9.999G $\Omega$	0.001G $\Omega$	
10.00...99.99G $\Omega$	0.01G $\Omega$	$\pm(3\% \text{ w.m.} + 20 \text{ digits})$ of the meter + max 5% of AutoISO-2500 uncertainty
100.0...400.0G $\Omega$	0.1G $\Omega$	

Values of measured resistance depending on measurement voltage

Voltage $U_{ISO}$	Measurement range
100V	100G $\Omega$
250V	250G $\Omega$
500V, 1000V, 2500V	400G $\Omega$

## Continuity measurement of protective connections and equipotential bonding with 200 mA current

Measurement range acc. to EN 61557-4: 0.10...999 $\Omega$

Range	Resolution	Accuracy
0.00...19.99 $\Omega$	0.01 $\Omega$	$\pm(2\% \text{ w.m.} + 3 \text{ digits})$
20.0...199.9 $\Omega$	0.1 $\Omega$	
200...999 $\Omega$	1 $\Omega$	$\pm(4\% \text{ w.m.} + 3 \text{ digits})$

- #Voltage on open terminals: 8...16V
- #Output current at  $R < 2\Omega$ :  $I_{sc} > 200mA$
- #Compensation of test lead resistance
- #Current flowing in both directions, mean value of resistance is displayed

## Resistance measurement with low current

Range	Resolution	Accuracy
0.0...199.9 $\Omega$	0.1 $\Omega$	$\pm(2\% \text{ w.m.} + 3 \text{ digits})$
200...999 $\Omega$	1 $\Omega$	$\pm(4\% \text{ w.m.} + 4 \text{ digits})$

- #Voltage on open terminals: 8...16V
- #Output current  $> 10mA$
- #Acoustic signal for measured  $< 10\Omega \pm 10\%$
- #Compensation of test lead resistance

## Capacity measurement

Display range	Resolution	Accuracy
1...999nF	1nF	$\pm(5\% \text{ w.m.} + 10 \text{ digits})$
1.00...9.99 $\mu$ F	0.01 $\mu$ F	

- #Capacity measurement result is displayed after the  $R_{ISO}$  measurement

## Temperature measurement

Range	Resolution	Accuracy
-40.0...99.9 $^{\circ}$ C	0.1 $^{\circ}$ C	$\pm(3\% \text{ w.m.} + 8 \text{ digits})$
-40.0...221.8 $^{\circ}$ F	0.1 $^{\circ}$ F	$\pm(3\% \text{ w.m.} + 16 \text{ digits})$

- #Measurement with the use of an external probe

## DC and AC voltage measurement

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

- #Frequency range : 45...65Hz



## Standard accessories:

- NiMH 9.6V 2.5Ah battery pack
- carrying case L4
- "crocodile" clip 11kV 32A; black
- "crocodile" clip 11kV 32A; red
- "crocodile" clip 11kV 32A; blue
- test lead banana plug; 1.8m; 5kV; red
- test lead banana plug; 1.8m; 5kV; blue
- test lead banana plug; 1.8m; 5kV; black
- USB cable
- mains cable with IEC C7 plug (wtyk IEC C7)
- pin probe 5kV with banana connector; black
- pin probe 5kV with banana connector; red
- meter harness
- power supply adaptor Z7
- calibration certificate issued by an accredited laboratory (no accreditation)

- WAAKU10
- WAFUTL4
- WAKROBL32K09
- WAKRORE32K09
- WAKROBU32K09
- WAPRZ1X8REBB
- WAPRZ1X8BUBB
- WAPRZ1X8BLBB
- WAPRZUSB
- WAPRZLAD230
- WASONBLOGB2
- WASONREOGB2
- WAPZSZE2
- WAZASZ7

## Optional accessories:

- Sonele Reader software (reading data from memory)
- Sonele AutoISO-2500 adapter (adapter for multi-core cables)

- WAPROREADER
- WADAISO25

## Electrical safety:

- type of insulation double, in acc. with EN 61010-1 and IEC 61557
- measurement category IV 600V (III 1000V) in acc. with EN 61010-1
- case protection rating in acc. with EN 60529 Ip54

## Other technical specifications:

- power supply of the meter SONEL L-1 NiMH 9.6V battery pack
- weight of the meter approx. 1.3kg
- dimensions 260 x 190 x 60 mm
- display LCD segment display
- measurement results memory 990 cells, 11880 records
- transmission of measurement results USB
- humidity 20%...90%

The acronym "m.v." stands for a "measured reference value".