

# INSULATION RESISTANCE METER MIC-10k1 / MIC-5050

**INSULATION  
RESISTANCE  
MEASUREMENT UP TO  
40 TΩ  
IN ACCORDANCE  
WITH IEC 61557-2  
MIC-10k1**



**CAT III**  
1000V

**CAT IV**  
600V

**EN**  
61557-2

 **Bluetooth**

WIRELESS DATA TRANSMISSION

#### Insulation resistance measurement:

- up to 40 TΩ for MIC-10k,
- up to 20 TΩ for MIC-5050,
- measurement voltage any in the range of:
  - 50...5000 V for MIC-5050 (50...1000 V at 10 V and 1...5 kV at 25 V),
  - 50...10000 V for MIC-10k1 (50...1000 V at 10 V and 1...10 kV at 25 V),
- continuous indication of measured insulation resistance or leakage current,
- automatic discharge of measured object capacitance voltage after the end of insulation resistance measurement,
- acoustic signaling of 5 seconds intervals to facilitate capturing time characteristics,
- adjustable measuring time to 99'59",
- metered  $T_1$ ,  $T_2$  and  $T_3$  test times for measuring one or two absorption coefficients from the range of 1...600 s,
- polarization index (PI), absorption coefficients Ab1, Ab2 and dielectric absorption ratio (DAR) measurement,
- indication of actual test voltage during measurement,
- 1.2 mA, 3 mA and 5 mA test current,
- insulation resistance measurement using two- or three-wire method,
- measurements with test leads up to 20 m...
- protection against measuring live objects,
- automatic measurement of multiple core cables with the additional AutoISO-5000 adapter (for MIC-10k1 max. voltage 5 kV)
- measurement of capacitance during the measurement of  $R_{ISO}$ ,
- measurement of temperature (with additional probe - WASONT1),
- step voltage insulation resistance measurement (SV),
- Dielectric Discharge calculation (DD),
- location of damage (burnout),
- digital filters function for measurements in high noise environment,
- continuity measurement of protective connections and equipotential bonding in accordance with EN 61557-4 with current  $\geq 200$  mA,
- adjustable limits for measured resistance  $R_{ISO}$  and  $R_{CONT}$ ,
- measurement of leakage current during insulation resistance testing,
- DC and AC voltage measurement in the range of 0...750 V,
- drawing graphs on the display during measurement,
- innovative memory with possibility of description of: measurement points, facilities, names of customers.
- operating with mini Bluetooth keyboard (option),
- graphic LCD 5,6" backlit,
- keyboard backlit,
- power supply from main power line or battery packs,
- built-in fast charger,
- the instruments meet the requirements of the EN 61557 standard.

**NEW!**

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# MIC-10k1 / MIC-5050

## Insulation resistance measurement

Measurement range acc. to IEC 61557-2 for MIC-5050  $U_{iso} = 5000V: 5,00M\Omega \dots 20,0T\Omega$ , for MIC-10k1  $U_{iso} = 10000V: 10,0M\Omega \dots 40,0T\Omega$

Range	Resolution	Accuracy
0...999 k $\Omega$	1 k $\Omega$	$\pm(3\% \text{ m.v.} + 10 \text{ digits})$
1,00...9,99 M $\Omega$	0,01 M $\Omega$	
10,0...99,9 M $\Omega$	0,1 M $\Omega$	
100...999 M $\Omega$	1 M $\Omega$	
1,00...9,99 G $\Omega$	0,01 G $\Omega$	
10,0...99,9 G $\Omega$	0,1 G $\Omega$	$\pm(3,5\% \text{ m.v.} + 10 \text{ digits})$
100...999 G $\Omega$	1 G $\Omega$	
1,00...9,99 T $\Omega$	0,01 T $\Omega$	$\pm(7,5\% \text{ m.v.} + 10 \text{ digits})$
10,0...20,0 T $\Omega$	0,1 T $\Omega$	$\pm(12,5\% \text{ m.v.} + 10 \text{ digits})$
10,0...40,0 T $\Omega^*$		

\* - only for MIC-10k1,  $U_{iso} = 10 \text{ kV}$

Values of measured resistance depending on measurement voltage

Voltage $U_{iso}$	Measurement range	AutoISO-5000 measurement range
50 V	200 G $\Omega$	20,0 G $\Omega$
100 V	400 G $\Omega$	40,0 G $\Omega$
250 V	1,00 T $\Omega$	100 G $\Omega$
500 V	2,00 T $\Omega$	200 G $\Omega$
1000 V	4,00 T $\Omega$	400 G $\Omega$
2500 V	10,00 T $\Omega$	400 G $\Omega$
5000 V	20,0 T $\Omega$	400 G $\Omega$
10 000 V*	40,0 T $\Omega^*$	-

\* - only for MIC-10k1

## Step voltage insulation resistance measurement

Voltage $U_{iso}$	MIC-5050	MIC-10k1
50...1000 V	10 V	10 V
1000...5000 V	25 V	25 V
5000...10000 V	-	25 V

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

Measurement range acc. to EN 61557-4: 0,12...999  $\Omega$

Range	Resolution	Accuracy
0,00...19,99 $\Omega$	0,01 $\Omega$	$\pm(2\% \text{ m.v.} + 3 \text{ digits})$
20,0...199,9 $\Omega$	0,1 $\Omega$	
200...999 $\Omega$	1 $\Omega$	$\pm(4\% \text{ m.v.} + 3 \text{ digits})$

- Voltage on open terminals: 4...24 V
- Output current at  $R < 15 \Omega$ : min. 200 mA ( $I_{sc}$ : 200...250 mA)
- Compensation of test lead resistance
- Current flowing in both directions, mean value of resistance is displayed

## DC and AC voltage measurement

Range	Resolution	Accuracy
0,0...29,9 V	0,1 V	$\pm(2\% \text{ m.v.} + 20 \text{ digits})$
30,0...299,9 V	0,1 V	$\pm(2\% \text{ m.v.} + 6 \text{ digits})$
300...750 V	1 V	$\pm(2\% \text{ m.v.} + 2 \text{ digits})$

- Frequency range 45...65Hz

## Measurement of capacitance

Display range	Resolution	Accuracy
0...999 nF	1 nF	$\pm(5\% \text{ m.v.} + 5 \text{ digits})$
1,00...49,99 $\mu\text{F}$	0,01 $\mu\text{F}$	

- capacity measurement result is displayed after the  $R_{iso}$  measurement
- for measuring voltages under 100 V capacitance measurement accuracy not specified.

## Measurement of temperature

Display range	Resolution	Accuracy
-40,0...99,9 °C	1 °C	$\pm(3\% \text{ m.v.} + 8 \text{ digits})$
-40,0...211,8 °F	1 °F	$\pm(3\% \text{ m.v.} + 16 \text{ digits})$

## Standard accessories:

- test lead banana plug; 3 m; 10kV; red
- test lead „E“ banana plug; 3 m; 10 kV; blue
- test lead banana plug; 1,8 m; 10 kV; black; shielded
- USB cable
- "crocodile" clip 5,5 kV; black
- "crocodile" clip 5,5 kV; red
- "crocodile" clip 5,5 kV; blue
- pin probe 5,5 kV with banana connector; red
- pin probe 5,5 kV with banana connector; black
- carrying case L4 for accessories
- power cord
- temperature probe ST-1
- battery pack (built-in)
- "SONEL Reader" software
- calibration certificate

WAPRZ003REBB10K  
WAPRZ003BUBB10K  
WAPRZ003BLBBE10K  
WAPRZUSB  
WAKROBL32K07  
WAKRORE32K07  
WAKROBU32K07  
WASONREOG65X5  
WASONBLOG65X5  
WAFUTL4  
WAPRZ1X8BLIEC  
WASONT1

## Electrical safety:

- type of insulation double, EN 61010-1 and IEC 61557 compliant
- measurement category IV 600 V (III 1000 V) according to EN 61010-1
- degree of housing protection acc. to EN 60529 IP40 (IP67 for closed enclosure)

## Other technical specifications:

- power supply of the meter 12 V gel battery  
90 V  $\div$  260 V 50 Hz/60 Hz from the electric grid
- dimensions 390 mm x 310 mm x 180 mm
- meter weight approx. 7 kg
- storage temperature -25°C...+70°C
- working temperature -20°C...+50°C
- humidity 20%...80%
- altitude (above sea level)  $\leq 3000 \text{ m}$
- reference temperature +23 °C  $\pm$  2 °C
- reference humidity 40%...60%
- display LCD 5,6", segment-type
- transmission of measurement results USB or Bluetooth
- number of  $R_{iso}$  measurements, acc. to EN 61557-2 with battery power supply min. 1000
- quality standard design, construction and manufacturing are ISO 9001, ISO 14001, PN-N-18001 compliant
- the device meets the requirements of the EN 61010-1 and IEC 61557 standards
- the product meets EMC requirements (immunity for industrial environment) according to

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

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