

# INSULATION RESISTANCE METERS

## MIC-10 and MIC-30



- **Insulation resistance measurement:**

- selected test voltage: 50, 100, 250, 500, 1000V (MIC-10) or any voltage in the 50...1000V range with 10V step (MIC-30),
- automatic measurement in sockets with the UNI-Schuko adapter (MIC-30) with possibility of configuring pairs of measured cables,
- continuous indication of insulation resistance or leakage current,
- automatic discharge of capacitance of tested object after the insulation resistance measurement,
- acoustic signalling of five-second periods to facilitate obtaining time characteristics,
- measured test times T1, T2 i T3 to measure one or two absorption coefficients in the 1... 600 sec. range (only MIC-30),
- indication of actual test voltage during the measurement,
- protection against measuring live objects,
- three-lead measurement.

- **Continuity measurement of protective and equipotential conductors according to EN 61557-4 with the >200mA current**

- **Low-voltage circuit continuity and resistance measurement:**

- circuit resistance measurement (<1999 Ω) with the <15mA current,
- quick sound signal if circuit resistance is below 30 Ω.

- **Leakage current measurement (only MIC-30).**

- **Capacitance measurement during the R<sub>iso</sub> measurement**

- **Measurement of alternating and direct voltages in the 0...600V range.**

- **990 memory cells and wireless data transmission to a computer using Bluetooth (only MIC-30).**

- **Power supply: 4 AA disposable or rechargeable batteries, monitoring of power supply voltage.**

- **Meters conform to EN 61557.**

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# MIC-10 i MIC-30

## Insulation resistance measurement

Measuring range according to EN 61557-2 for  $U_i=50V$ : 50k $\Omega$ ...250,0M $\Omega$

Range	Resolution	Accuracy
0,0...999,9k $\Omega$	0,1k $\Omega$	$\pm(3\% \text{ m.v.} + 8 \text{ digits})$ $[\pm(5\% \text{ m.v.} + 8 \text{ digits})]^*$
1,000...9,999M $\Omega$	0,001M $\Omega$	
10,0...99,99M $\Omega$	0,01M $\Omega$	
100,0...250,0M $\Omega$	0,1M $\Omega$	

\*- for the WS-04 lead (MIC-30)

Measuring range according to EN 61557-2 for  $U_i=100V$ : 100k $\Omega$ ...500,0M $\Omega$

Range	Resolution	Accuracy
0,0...999,9k $\Omega$	0,1k $\Omega$	$\pm(3\% \text{ m.v.} + 8 \text{ digits})$ $[\pm(5\% \text{ m.v.} + 8 \text{ digits})]^*$
1,000...9,999M $\Omega$	0,001M $\Omega$	
10,00...99,99M $\Omega$	0,01M $\Omega$	
100,0...500,0M $\Omega$	0,1M $\Omega$	

\*- for the WS-04 lead (MIC-30)

Measuring range according to EN 61557-2 for  $U_i=250V$ : 250k $\Omega$ ...2,000G $\Omega$

Range	Resolution	Accuracy
0,0...999,9k $\Omega$	0,1k $\Omega$	$\pm(3\% \text{ m.v.} + 8 \text{ digits})$ $[\pm(5\% \text{ m.v.} + 8 \text{ digits})]^*$
1,000...9,999M $\Omega$	0,001M $\Omega$	
10,00...99,99M $\Omega$	0,01M $\Omega$	
100,0...999,0M $\Omega$	0,1M $\Omega$	
1,000...2,000G $\Omega$	0,001G $\Omega$	

\*- for the WS-04 lead (MIC-30)

Measuring range according to PN-EN 61557-2 for  $U_i=500V$ :

- 500k $\Omega$ ...5,00G $\Omega$  (MIC-10)
- 500k $\Omega$ ...20,00G $\Omega$  (MIC-30)

Range	Resolution	Accuracy	
0,0...999,9k $\Omega$	0,1k $\Omega$	$\pm(3\% \text{ m.v.} + 8 \text{ digits})$ $[\pm(5\% \text{ m.v.} + 8 \text{ digits})]^*$	
1,000...9,999M $\Omega$	0,001M $\Omega$		
10,00...99,99M $\Omega$	0,01M $\Omega$		
100,0...999,0M $\Omega$	0,1M $\Omega$		
1,000...5,000G $\Omega$	0,001G $\Omega$	$\pm(4\% \text{ m.v.} + 6 \text{ digits})$	MIC-10
1,000...9,999G $\Omega$	0,001G $\Omega$	$\pm(4\% \text{ m.v.} + 6 \text{ digits})$	
10,00...20,00G $\Omega$ **	0,01G $\Omega$	$[\pm(6\% \text{ m.v.} + 6 \text{ digits})]^*$	MIC-30

\*- for the WS-04 lead (MIC-30)

\*\* - for the WS-04 lead – range to 10G $\Omega$

Measuring range according to EN 61557-2 for  $U_i=1000V$ :

- 1000k $\Omega$ ...10,00G $\Omega$  (MIC-10)
- 1000k $\Omega$ ...100,00G $\Omega$  (MIC-30)

Range	Resolution	Accuracy	
0,0...999,9k $\Omega$	0,1k $\Omega$	$\pm(3\% \text{ m.v.} + 8 \text{ digits})$	
1,000...9,999M $\Omega$	0,001M $\Omega$		
10,00...99,99M $\Omega$	0,01M $\Omega$		
100,0...999,0M $\Omega$	0,1M $\Omega$		
1,000...5,000G $\Omega$	0,001G $\Omega$	$\pm(4\% \text{ m.v.} + 6 \text{ digits})$	MIC-10
5,00...10,00G $\Omega$	0,01G $\Omega$		MIC-10
1,000...9,999G $\Omega$	0,001G $\Omega$		MIC-30
10,00...99,99G $\Omega$	0,01G $\Omega$		MIC-30
100,0G $\Omega$	0,1G $\Omega$		MIC-30

„m.v.” measured value.

Continuity measurement of protective and equipotential conductors with the 200mA current  
Measuring range according to EN 61557-4: 0,10...1999 $\Omega$

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 $\Omega$	
2000...1999 $\Omega$	1 $\Omega$	$\pm(4\% \text{ m.v.} + 3 \text{ digits})$

- Voltage on open terminals: <8V
- Output current at  $R < 2\Omega$ :  $I_{sc} > 200\text{mA}$ ;  $I_{sc} > 200\text{mA}$
- Compensation of test leads' resistance
- MIC-30 – bidirectional current flow, average resistance value is displayed
- MMIC-10 – unidirectional current flow

## Low-voltage and resistance measurement

Range	Resolution	Accuracy
0,0...199,9 $\Omega$	0,1 $\Omega$	$\pm(3\% \text{ m.v.} + 3 \text{ digits})$
200...1999 $\Omega$	1 $\Omega$	

- Voltage on open terminals: <8V
- Current for closed terminals 5mA < ISC < 15mA
- Sound signal and green LED on when measured resistance < 30 $\Omega$   $\pm$  50%
- Compensation of test leads' resistance,

## Capacitance measurements

Range	Resolution	Accuracy
1...999nF	1nF	$\pm(5\% \text{ m.v.} + 5 \text{ digits})$
1,00...9,99 $\mu$ F	0,01 $\mu$ F	

- Capacitance value displayed during the  $R_{iso}$  measurement
- For test voltages below 100V and measured resistance below 10M $\Omega$ , unspecified capacitance measurement error

## Measurement of alternating and direct voltage

Range	Resolution	Accuracy
0,0...299,9V	0,1V	$\pm(2\% \text{ m.v.} + 6 \text{ digits})$
300...600V	1V	$\pm(2\% \text{ m.v.} + 2 \text{ digits})$

- Frequency range: 45...65Hz

### Standard accessories:

- MIC-30 Test lead with banana plug; 1,2m; red
- MIC-30 Test lead with banana plug; 1,2m; blue
- MIC-30 Shielded test lead with banana plug; 1,2m; black
- MIC-30 "Crocodile" clip K02; blue
- MIC-10 Test lead with banana plug; 1,2m; black
- MIC-10 Test lead with banana plug; 1,2m; red
- MIC-10 "Crocodile" clip K01; black
- Pin probe with banana connector; black
- Pin probe with banana connector; red
- Carrying case M6
- Hanging straps
- Handle to suspend the meter
- Certificate calibration
- Battery set

WAPRZ1X2REBB  
WAPRZ1X2BUBB  
WAPRZ1X2BLBBE  
WAKROBU20K02  
WAPRZ1X2BLBB  
WAPRZ1X2REBB  
WAKROBLK01  
WASONBLOGB1  
WASONRE0GB1  
WAFUTM6  
WAP0ZSZE4  
WAP0ZUCH1

### Additional accessories:

- Test lead with banana plug 5m; red
- Test lead with banana plug 5m; blue
- Shielded test lead with banana plug; 5m; black
- Test lead with banana plug 1,2m; blue
- "Crocodile" clip K02; red
- "Crocodile" clip K01; black
- "Crocodile" clip K02; blue
- Pin probe with banana connector; blue
- Adapter WS-04 with UNI-Schuko
- MIC-30 Software for creation of documentation from electrical measurements "SONEL Reports"

WAPRZ005REBB  
WAPRZ005BUBB  
WAPRZ005BLBBE  
WAPRZ1X2BUBB  
WAKRORE20K02  
WAKROBL20K01  
WAKROBU20K02  
WASONBU0GB1  
WAADAW0S4  
WAPROSONPE4

### Electric safety:

- type of insulation double, according to EN 61010-1 and IEC 61557
- measurement category IV 600V (III 1000V) according to EN 61010-1
- protection class acc. to EN 60529 Ip67

### Other technical data:

- power supply 4 alkaline batteries or or battery package Ni-MH
- weight ~0,6 kg
- dimensions 220 x 100 x 60 mm
- humidity 20%...90%