

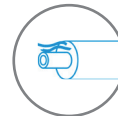

CAT IV
600 V
CAT III
1000 V
 **IP65**

 For measurement
of wiring in houses

 For measurement
of wires and cables

 For measurement
of pole transformer
substations

 For measurement
of street lighting
power cables

 For measurement
of telephone wiring

 For measurements
of pre-insulated
pipes

Measure insulation resistance with the MIC-5001 Insulation Resistance Meter

Product features

- measurement voltage selected within the range of 50...500 V with steps of 50 V and from 500 to 5000 V with steps of 100 V
- continuous reading of measured insulation resistance or leakage current
- automatic discharge of the measured object's capacitance upon completion of insulation resistance measurement
- sound signalling of five-second time intervals, facilitating capture of time characteristics
- timing of measurement time T_1 , T_2 and T_3 for measurement of dielectric absorption ratio (DAR) and polarization index (PI)
- reading of actual measurement voltage during measurement
- protection against measurement of live objects
- two- or three-lead method of insulation resistance measurement
- insulation resistance measurement according to the RampTest method and breakdown voltage measurement with ramping rate up to ~ 1 kV/s
- measurement of direct and alternating voltages within the range of 0...750 V
- 990-cell memory (11,880 entries), data transmission to PC via USB cable
- power supplied by accumulator
- instruments meet the requirements laid down by standard EN 61557
- the meter can be powered and charged from an external power adapter or from a car lighter socket



Application

Insulation resistance meter with adjustable testing voltage - up to 5 kV. It is a great tool for assessing the condition of electrical insulation in residential buildings, industry, railways and other facilities of general use. Due to its parameters - excellent performance, low power consumption from batteries, the option of charging them during measurements, convenience of use and a high ingress protection level - it is perfect for maintenance teams, testing motors, cables, street lighting or at the construction and maintenance of photovoltaic systems. The meter may be recommended to installers working on telecommunications and electric power systems that require the inspection of the insulation sleeve/sheath resistance ($U_N \leq 30 \text{ kV}$) to the voltage of 5 kV applied for 5 minutes.



Features

The meter may be used to measure the insulation resistance using the adjustable test voltage up to 5000 V. When testing the cables, it automatically discharges their load at the moment of completing the measurement.

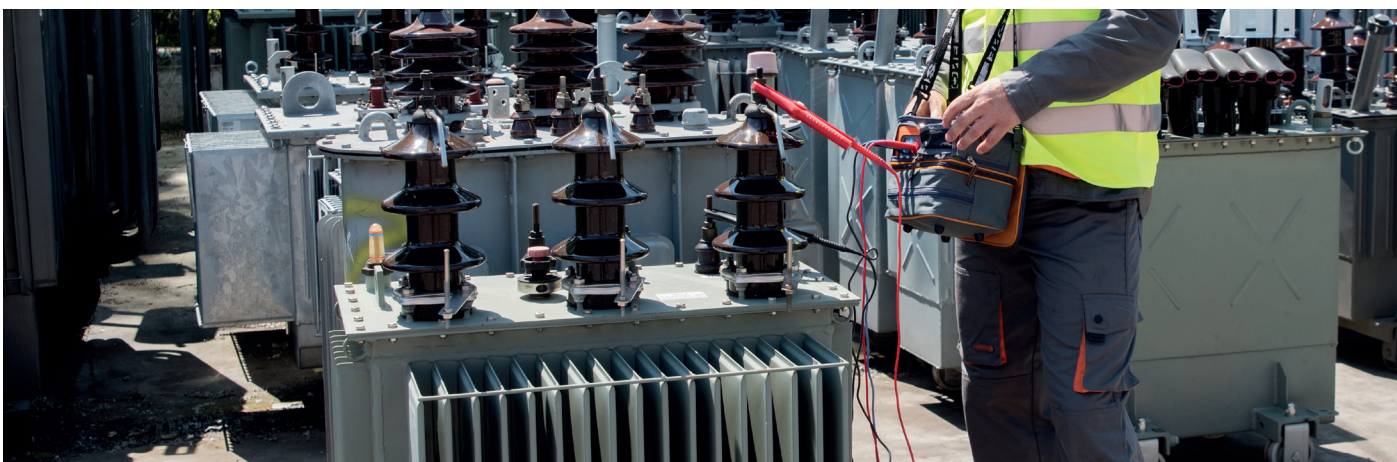
MIC-5001 allows the user to determine the insulation resistance by applying linearly increasing voltage with the slope of 1 kV/s, according to standard EEE Std 95TM-2002. This functionality is called RampTest.

In contrast the maximum test voltage, this slow and uniform method of applying test voltage protects the insulation against sudden "electrical stress". This process may reveal defects that cannot be observed in classic R_{ISO} resistance measurement. If the tested insulation is weakened or defective, RampTest will enable the user to determine its maximum withstand voltage. In addition, this functionality is particularly useful in testing rotating machines or surge arresters.

The meter has a built-in voltmeter of AC and DC voltages in the range of up to 750 V. Extensive memory allows the device to record and send to a computer nearly 12,000 measurement results. Download Sonel Reader software from manufacturer's website to analyse the measurement results and present them in graphic form, e.g. current or resistance values shown in a function of time.

Capabilities

An important advantage of the device is its ability to a sufficiently long operation after one recharging of batteries. Electricians performing tests on repetitive objects or at short intervals do not have to worry about batteries discharging before completing the task. In addition, during the measurement work, the user may recharge device from an external power source, e.g. a powerbank of 12 V/2 Ah.



Insulation resistance measurement

Measurement range acc. to IEC 61557-2 for $R_{ISOmin} = U_{ISOnom} / I_{ISOnom} \dots 5 \text{ T}\Omega$

| Range | Resolution | Accuracy |
|------------------|------------|-------------------------|
| 0.0...999.9 kΩ | 0.1 kΩ | ± (3% m.v. + 20 digits) |
| 1.000...9.999 MΩ | 0.001 MΩ | |
| 10.00...99.99 MΩ | 0.01 MΩ | |
| 100.0...999.9 MΩ | 0.1 MΩ | |
| 1.000...9.999 GΩ | 0.001 GΩ | |
| 10.00...99.99 GΩ | 0.01 GΩ | |
| 100.0...999.9 GΩ | 0.1 GΩ | ± (4% m.v. + 50 digits) |
| 1.000...5.000 TΩ | 0.001 TΩ | |

• max. short-circuit current I_{sc} : up to 1.5 mA

Values of measured resistance depending on measuring voltage

| Voltage U_{ISO} | Measurement range |
|-------------------|-------------------|
| up to 100 V | 50 GΩ |
| 200 V...400 V | 100 GΩ |
| 500 V...900 V | 250 GΩ |
| 1000 V...2400 V | 500 GΩ |
| 2500 V | 2500 GΩ |
| 5000 V | 5000 GΩ |

RampTest insulation resistance measurement

| Range | Resolution | Accuracy |
|------------------|------------|------------------------|
| 0.0...999.9 kΩ | 0.1 kΩ | ±(5% m.v. + 40 digits) |
| 1.000...9.999 MΩ | 0.001 MΩ | |
| 10.00...99.99 MΩ | 0.01 MΩ | |
| 100.0...999.9 MΩ | 0.1 MΩ | |
| 1.000...9.999 GΩ | 0.001 GΩ | |
| 10.00...99.99 GΩ | 0.01 GΩ | |
| 100.0...999.9 GΩ | 0.1 GΩ | |
| 1.000...4.999 TΩ | 0.001 TΩ | |

The measurement of breakdown voltage in RampTest mode

| Range | Resolution | Chosen U_{ISO} | Accuracy |
|-------------------|------------|------------------|-------------------------|
| 25.0 V...99.0 V | 0.1 V | ≤600 V | ± (5% m.v. + 10 digits) |
| 100 V...600 V | 1 V | ≤600 V | ± (5% m.v. + 4 digits) |
| 25 V...999 V | 1 V | >600 V | ± (5% m.v. + 5 digits) |
| 1.00 kV...5.00 kV | 10 V | >600 V | ± (5% m.v. + 4 digits) |

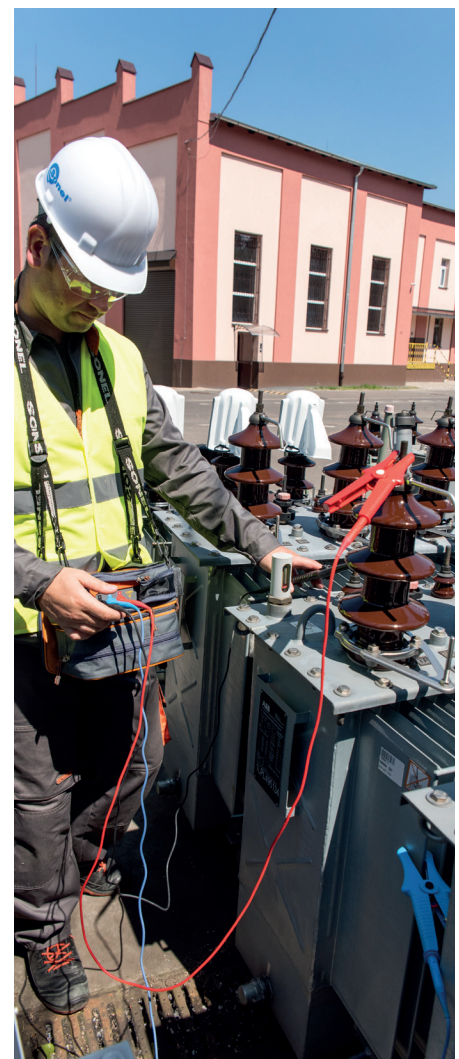
DC and AC voltage measurement

| Range | Resolution | Accuracy |
|-------------|------------|-----------------------|
| 0...299.9 V | 0.1 V | ±(3% m.v. + 2 digits) |
| 300...750 V | 1 V | |

• frequency range: 45...65 Hz

Technical specification

| | |
|---|--|
| type of insulation | double, according to EN 61010-1 and EN 61557 |
| measurement category | CAT III 600 V (CAT IV 300 V) according to EN 61010-1 |
| degree of housing protection acc. to EN 60529 | IP65 |
| power supply of the meter | SONEL battery pack NiMH 9.6 V 2 Ah |
| battery charging time | usually 4 h, max. 10 h |
| parameters of the external power supply adapter | 90 V...264 V, 50 Hz...60 Hz |
| dimensions | 200 x 150 x 75 mm |
| meter weight | approx. 1.0 kg |
| operating temperature | -15...+40°C |
| number of R_{ISO} measurements acc. to EN 61557-2 | approx. 800 |
| display | modular LCD |
| memory of measurement results | 990 cells |
| data transmission | USB |
| quality standard for design, construction and manufacturing compliant with | ISO 9001 ISO 14001 PN-N-18001 |
| the device meets the requirements of | EN 61557 standard |
| the product meets EMC requirements (immunity for industrial environment) according to the following standards | EN 61326-1 EN 61326-2-2 |



Abbreviation „m.v.“ used in the specification of measurement means a measured value.

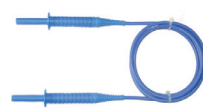
Standard accessories



shielded test lead with banana plugs; 5 kV; 1.8 m; black
WAPRZ1X8BLBB



test lead with banana plugs; 5 kV; 1.8 m; red
WAPRZ1X8REBB



test lead with banana plugs; 5 kV; 1.8 m; blue
WAPRZ1X8BUBB



black "crocodile" clip 11 kV 32 A
WAKROBL32K09



red "crocodile" clip 11 kV 32 A
WAKRORE32K09



blue "crocodile" clip 11 kV 32 A
WAKROBU32K09



test probe with banana socket; 5 kV; black
WASONBLOGB2



test probe with banana socket; 5 kV; red
WASONREOGB2



USB cable
WAPRZUSB



meter power adapter (type Z7)
WAZASZ7



230 V power cord (IEC C7 plug)
WAPRZLAD230



Sonel Reader PC software
WAPROREADER



M-8 carrying case
WAFUTM8



Calibration certificate

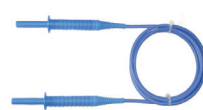
Additional accessories



test lead 5 m / 10 m, black, 5 kV (banana plugs, shielded)
WAPRZ005BLBBE5K
WAPRZ010BLBBE5K



test lead 5 m / 10 m, red, 5 kV (banana plugs, shielded)
WAPRZ005REBB5K
WAPRZ010REBB5K



test lead 5 m / 10 m, blue, 5 kV (banana plugs, shielded)
WAPRZ005BUBB5K
WAPRZ010BUBB5K



Cable for battery charging from car cigarette lighter socket (12 V)
WAPRZLAD12SAM



PRS-1 resistance test probe
WASONPRS1GB



CS-5kV calibration box
WAADACS5KV



Calibration certificate with accreditation