

## SPD

testing surge  
protecting  
devices

## EPA

measurements  
in EPA areas

## 1500 V

upper limit  
of voltage  
measurement



CAT IV

600 V

CAT III

1000 V

IP65

Li-Ion  
BATTERY

TOUCH  
SCREEN


For measure-  
ment of wiring  
in houses



For measure-  
ment of wires  
and cables



For measure-  
ment of pole  
transformer  
substations



For measure-  
ment of  
street lighting  
power cables



For measure-  
ment of tele-  
phone wiring



For measure-  
ments of pre-in-  
sulated pipes



For measure-  
ments of PV  
installations



For measure-  
ments in  
EPA areas

## Measure insulation resistance up to 2 TΩ

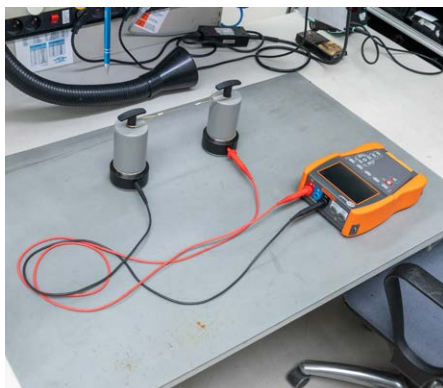
### Features

- Measurement voltage within the range of **10...2500 V**: selected from 10 V, 25 V, 100 V, 250 V, 500 V, 1000 V, 2500 V or 10...2500 V selected in steps of 10 V
- Insulation resistance measurements with a voltage of 10 V of the supervisory loop of fire alarm systems
- Testing surge protecting devices (SPD)
- **Charts plotted on display during measurements**
- Measurements in electrostatic protected areas (EPA)
- **Correction of insulation resistance result to reference temperature**
- Continuous reading of measured insulation resistance or leakage current
- Automatic discharge of the measured object's capacitance upon completion of insulation resistance measurement
- Sound signaling of five-second time intervals, facilitating capture of time characteristics
- Timing of measurement times  $T_1$ ,  $T_2$  and  $T_3$  for measurement of one or two absorption coefficients (Ab1, Ab2 or DAR, PI) within the range of 1... 600 s
- Automatic measurement of all resistance combinations of 3-, 4- and 5-core cords and power cords by means of the optional **AutoISO-2511** adapter
- Reading of actual measurement voltage during measurement
- Measurement current **≤ 2 mA**
- Protection against measurement of live objects
- Two- or three-lead method of insulation resistance measurement



## Sonel MeasureEffect™

The meter is a part of the **Sonel MeasureEffect™** platform. It is a comprehensive system that enables you to take measurements, store and manage data, and provides multi-level control of your instruments.



## Additional features

- Measurement of leakage current during measurement of  $R_{ISO}$
- Capacitance measurement during measurement of  $R_{ISO}$
- Low-voltage measurement of circuit continuity and resistance
- **Temperature measurement (with the use of the optional ST-1 temperature probe)**
- Measurement of direct and alternating voltages within the range of 0...1500 V
- 9999-entry memory, data transmission to PC via USB cable
- Power supplied by rechargeable battery
- Backlit keyboard
- The instrument meets the requirements laid down by standard EN IEC 61557

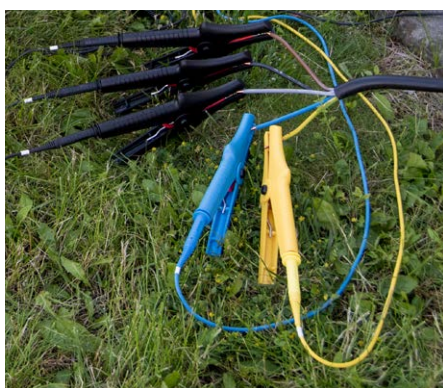


## Application

This insulation resistance meter is a device with a wide range of applications. It may be successfully operated both in residential construction industry and for inspecting industrial systems or traction networks. Due to its characteristics – excellent performance, low power consumption from batteries, the option of charging during measurements, convenience of use and a high ingress protection level – it is often used by electricians working in maintenance teams, testing motors, cables, street lighting or at the construction and maintenance of photovoltaic systems. The device perfectly matches the needs of installers of telecommunications networks and operators of district heating networks, where the inspection of alarm system on insulated pipes is necessary.

## Features

The meter may be used to measure the insulation resistance using test voltage up to 2500 V. When testing cables, it automatically discharges their load at the moment of completing the measurement. Together with the **PRZ-2 (kit for measuring resistance in zones with ESD protection)**, it is a comprehensive tool for technicians dealing with the protection of plants against static electricity.



The device allows safety control of **residential, commercial and industrial electrical installations**. Measurements can be easily automated with **AutoISO-2511** adapter for automatic insulation resistance test of 3-, 4- and 5-conductor cables, without switching.

MIC-2511 allows user to measure the continuity of protective conductors and equipotential bondings with current exceeding 200 mA in both directions. The meter has a built-in voltmeter of AC and DC voltages in the range of up to **1500 V**.

Extensive memory allows the device to record and send to a computer nearly **10,000 measurement results**.



## Communication and software

You can easily transfer measurement data to your computer via USB port. In order to generate a report on measurements for electric shock protection, use **Sonel Reports PLUS** software. Saving the downloaded data to the simplest formats and printing is provided by free **Sonel Reader** software.

# Specifications

## Insulation resistance measurement

Measurement range acc. to EN IEC 61557-2  
for  $R_{ISOmin} = U_{ISOnom} / I_{ISOnom} \leq 2 \text{ T}\Omega$  ( $I_{ISO} = 1.6 \text{ mA}$ )

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	
1.000...2.000 TΩ	0.001 TΩ	

Values of measured resistance depending on measurement voltage

Voltage $U_n$	Measurement range
10 V	10 GΩ
25 V	20 GΩ
50 V	50 GΩ
100 V	100 GΩ
250 V	250 GΩ
500 V	500 GΩ
1000 V	1.00 TΩ
2500 V	2.00 TΩ

## Insulation resistance measurement in EPA areas

Range for $U_n = 10 \text{ V}$	Resolution	Accuracy
0.0...999.9 kΩ	0.1 kΩ	±(8% m.v. + 20 digits)
1.0...9.999 MΩ	0.001 MΩ	
10.00...99.99 MΩ	0.01 MΩ	
100.0...999.9 MΩ	0.1 MΩ	
1.0...10.0 GΩ	0.1 GΩ	

Range for $U_n = 100 \text{ V}$	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	±(8% m.v. + 20 digits)
100.0...200.0 GΩ	0.1 GΩ	

Range for $U_n = 500 \text{ V}$	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	±(8% m.v. + 20 digits)
100.0...999.9 GΩ	0.1 GΩ	
1000 GΩ	1 GΩ	

„m.v.“ - measured value

## DC and AC voltage measurement

Range	Resolution	Accuracy
0...1500 V	1 V	±(3% m.v. + 2 digits)

• frequency range: 45...65 Hz

## Capacitance measurement

Range	Resolution	Accuracy
0...999 nF	1 nF	±(5% m.v. + 5 digits)
1.00...9.99 μF	0.01 μF	

## Continuity test with current 200 mA

Measurement range acc. to EN IEC 61557-2: 0.10...999 Ω

Range	Resolution	Accuracy
0.00...19.99 Ω	0.01 Ω	±(2% m.v. + 3 digits)
20.0...199.9 Ω	0.1 Ω	
200...999 Ω	1 Ω	±(4% m.v. + 3 digits)


















## Temperature measurement

Range	Resolution	Accuracy
-40.0...99.9°C	0.1°C	±(3% m.v. + 8 digits)
-40.0...211.8°F	0.1°F	±(3% m.v. + 16 digits)

## Other technical data

type of insulation acc. to EN 61010-1 and EN IEC 61557	double
measurement category acc. to EN IEC 61010-2-030	
rated operating altitude ≤2000 m	CAT IV 600 V
rated operating altitude ≤3000 m	CAT III 600 V
degree of housing protection acc. to EN 60529	IP65
power supply of the meter	Li-Ion 10.8 V 3.5 Ah rechargeable battery
dimensions	234 x 169 x 71 mm 9.2" x 6.6" x 2.8"
meter weight	ca. 1.3 kg   ca. 2.9 lbs
storage temperature	-25°C...+70°C   -13°F...+158°F
operating temperature	-20°C...+50°C   -4°F...+122°F
humidity	20%...90%
reference temperature	+23°C ± 2°C
reference humidity	40%...60%
display	graphical 5" LCD
number of $R_{ISO}$ measurements acc. to EN IEC 61557-2 with battery power supply	min. 600
memory of measurement results	9999 results
data transmission	USB
quality standard for design, construction and manufacturing compliant with	ISO 9001 ISO 14001, ISO 45001
the device meets the requirements of	EN 61010-1, EN IEC 61557 EN IEC 61010-2-030
the product meets EMC requirements (immunity for industrial environment) according to the following standards	EN IEC 61326-1 EN IEC 61326-2-2

## Standard accessories

		MIC-2511 EPA	MIC-2511
		WMPLMIC2511EPA	WMPLMIC2511
	<b>Kit for measuring resistance in zones with ESD protection with space for meter</b> WASONPRZ2MIC	1	
	<b>Shielded test lead with banana plugs, 5 kV, 1.8 m, black</b> WAPRZ1X8BLBB	1	1
	<b>Test lead with banana plugs, 5 kV, 1.8 m, red</b> WAPRZ1X8REBB	1	1
	<b>Test lead with banana plugs, 5 kV, 1.8 m, blue</b> WAPRZ1X8BUBB	1	1
	<b>Black "crocodile" clip 11 kV 32 A</b> WAKROBL32K09	1	1
	<b>Red "crocodile" clip 11 kV 32 A</b> WAKRORE32K09	1	1
	<b>Blue "crocodile" clip 11 kV 32 A</b> WAKROBU32K09	1	1
	<b>Test probe with banana socket; 5 kV; black</b> WASONBLOGB2	1	1
	<b>Test probe with banana socket; 5 kV; red</b> WASONREOGB2	1	1
	<b>USB cable type C</b> WAPRZUSBC	1	1
	<b>Li-Ion 10.8 V 3.5 Ah rechargeable battery</b> WAAKU29	1	1
	<b>230 V mains cable with IEC C7 plug</b> WAPRZLAD230	1	1
	<b>Z-32 power supply</b> WAZASZ32	1	1
	<b>USB-A/USB-C adapter</b> WAADAUSBAUSBC	1	1
	<b>M-6 carrying case</b> WAFUTM6		1
	<b>Strap</b> WAPOZPAS6	1	1
	<b>Factory calibration certificate</b>	1	1



## Optional accessories



**AutoISO-2511  
adapter**

WAADAAISO2511



**CS-1 cable simulator**

WAADACS1



**CS-5kV cali-  
bration box**

WAADACS5KV



**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

### MIC-2511



**Probe for measuring  
resistance in zones  
with ESD protection**

WASONPRS2



**L-7 carrying case**

WAWALL7



**PRS-1 resistance  
test probe**

WASONPRS1



**Probe for measuring  
resistance in zones  
with ESD protec-  
tion with a case**

WASONPRS2KIT



**Kit for measuring resistance in  
zones with ESD protection**

WASONPRZ2



**MIC-2511 | Kit for  
measuring resis-  
tance in zones with  
ESD protection with  
space for meter**

WASONPRZ2MIC



**MIC-2511 EPA | M-6  
carrying case**

WAFUTM6

**M-15 carrying case**

WAFUTM15



**Hanging strap**

WAPOZSZE5

**ST-1 temperature  
probe**

WASONT1



**Sonel Reader  
PC software**

WAPROREADER



**Sonel Reports  
PLUS software**

WAPROREPORTSPUS



**Calibration  
certificate  
with accreditation**

