

2.5 kV

maximal
measuring
voltage for R_{ISO}

Z_S R_E
 R_{ISO} E R_{CONT}

complex
measurements of
installations



IP54

CAT III

CAT IV

600 V

300 V

Focused on insulation resistance measurements

Features

The meter offers a **wide range** of functionalities. It combines the measuring capabilities of several devices, while ensuring equally good accuracy. The device can be used for all measurements for commissioning of electrical installations in accordance with applicable regulations:

- » short circuit loop impedance (also in circuits secured with RCDs),
- » RCD parameters,
- » insulation resistance,
- » earth resistance (3-pole method),
- » continuity of protective and equipotential bondings,
- » phase sequence test.

Additional functions

- Checking the correctness of PE connection using a contact electrode.
- Measurement of voltage (0 ... 500 V) and network frequency.
- Memory of 990 results.
- Wireless data transmission to a computer.





Testing the insulation with a voltage of 2.5 kV

The unique feature of the meter is the option of measuring the insulation resistance with a **voltage of 2500 V**. Moreover, with **AutoISO-2500** adapter, the user may check R_{ISO} of 3-, 4- or 5-wire conductors and cables.

The device has a built-in timer. It may be used to set three different periods for measurements and result read-outs (in the range of 1...600 s). It also automatically calculates two absorption coefficients.

In order to ensure safety of the user, after the measurement completion or interruption, the device automatically unloads the tested object.

Inspection of electrical safety

This device may be used to **inspect safety of electrical systems in households and industrial facilities**. Measurements can be easily automated with:

- auto mode of residual current devices (RCD) tests,
- AutoISO-2500 adapter for automatic insulation resistance test of 3-, 4- and 5-conductor cables, without switching.

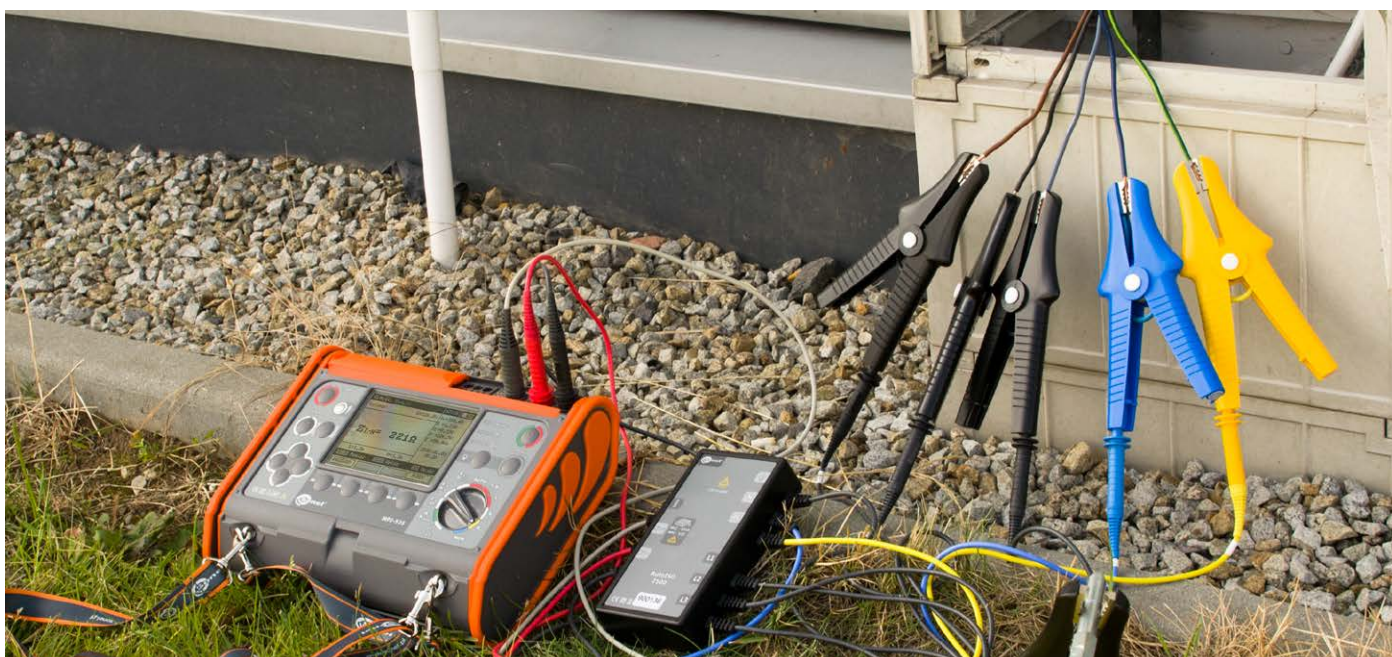


Increased resistance to environmental conditions

The meter will cope well in difficult environmental conditions. Protection against penetration of dust and water is ensured by a unique housing with a level of protection IP54. It is resistant to mechanical damage, and a special design allows you to easily protect the screen by shielding using the cover of the meter. In addition to the fact that it protects against damage, it also allows you to conveniently carry and use the device in different positions.

Communication and software

You can easily transfer measurement data to your computer via USB port or wireless communication. 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

Measurement functions	Measurement range	Display range	Resolution	Accuracy $\pm(\% \text{ m.v.} + \text{digits})$
Fault loop impedance				
Fault loop Z_{L-PE} , Z_{L-N} , Z_{L-L}	0,13 Ω ...1999,9 Ω acc. to IEC 61557	0,00 Ω ...1999 Ω	from 0,01 Ω	$\pm(5\% \text{ m.v.} + 3 \text{ digits})$
Fault loop Z_{L-PE} in RCD mode	from 0,50 Ω ...1999 Ω acc. to IEC 61557	0,00 Ω ...1999 Ω	from 0,01 Ω	from $\pm(6\% \text{ m.v.} + 5 \text{ digits})$
Measurements of RCD parameters				
RCD tripping test and measurement of tripping time t_A measuring current $0.5 I_{\Delta n}$, $1 I_{\Delta n}$, $2 I_{\Delta n}$, $5 I_{\Delta n}$				
general and short-time delay RCD	0 ms...300 ms	0 ms...300 ms	1 ms	$\pm(2\% \text{ m.v.} + 2 \text{ digits})$
selective RCD	0 ms...500 ms	0 ms...500 ms	1 ms	$\pm(2\% \text{ m.v.} + 2 \text{ digits})$
Measurement of RCD tripping current I_A measuring current $0.2 I_{\Delta n}$... $2.0 I_{\Delta n}$				
for sinusoidal residual current (AC type)	3,0 mA...1000 mA	3,0 mA...1000 mA	from 0,1 mA	$\pm 5\% I_{\Delta n}$
for unidirectional residual current and unidirectional with the 6 mA DC bias (type A)	3,5 mA...700 mA	3,5 mA...700 mA	from 0,1 mA	$\pm 10\% I_{\Delta n}$
for direct residual current (type B)	2,0 mA...1000 mA	2,0 mA...1000 mA	from 0,1 mA	$\pm 10\% I_{\Delta n}$
Earth resistance				
3-pole method	from 0,5 Ω ...1,99 k Ω acc. to IEC 61557-5	0,00 Ω ...1,99 k Ω	from 0,01 Ω	from $\pm(2\% \text{ m.v.} + 3 \text{ digits})$
Insulation resistance				
Measuring voltage 50 V	50 k Ω ...250 M Ω acc. to IEC 61557-2	0 k Ω ...250 M Ω	from 1 k Ω	$\pm(3\% \text{ m.v.} + 8 \text{ digits})$
Measuring voltage 100 V	100 k Ω ...500 M Ω acc. to IEC 61557-2	0 k Ω ...500 M Ω	from 1 k Ω	$\pm(3\% \text{ m.v.} + 8 \text{ digits})$
Measuring voltage 250 V	250 k Ω ...999 M Ω acc. to IEC 61557-2	0 k Ω ...999 M Ω	from 1 k Ω	$\pm(3\% \text{ m.v.} + 8 \text{ digits})$
Measuring voltage 500 V	500 k Ω ...2,00 G Ω acc. to IEC 61557-2	0 k Ω ...2,00 G Ω	from 1 k Ω	from $\pm(3\% \text{ m.v.} + 8 \text{ digits})$
Measuring voltage 1000 V	1000 k Ω ...3,00 G Ω acc. to IEC 61557-2	0 k Ω ...3,00 G Ω	from 1 k Ω	from $\pm(3\% \text{ m.v.} + 8 \text{ digits})$
Measuring voltage 2500 V	2,50 M Ω ...9,99 G Ω acc. to IEC 61557-2	0 k Ω ...9,99 G Ω	from 1 k Ω	from $\pm(3\% \text{ m.v.} + 8 \text{ digits})$
Resistance of protective conductors and equipotential bondings				
Measurement of resistance of protective conductors and equipotential bondings with ± 200 mA current	0,12 Ω ...400 Ω acc. to IEC 61557-4	0,00 Ω ...400 Ω	from 0,01 Ω	$\pm(2\% \text{ m.v.} + 3 \text{ digits})$
Measurement of resistance with low current	0,0 Ω ...1999 Ω	0,0 Ω ...1999 Ω	from 0,1 Ω	$\pm(3\% \text{ m.v.} + 3 \text{ digits})$
Phase sequence indication	in the same direction (correct). opposite direction (incorrect). U_{L-L} voltage: 95 V...500 V (45 Hz...65 Hz)			

"m.v." - measured value

Other technical data

Safety and work conditions

Measuring category according to EN 61010	IV 300 V, III 600 V
Ingress protection	IP54
Type of insulation according to EN 61010-1 and IEC 61557	double
Dimensions	288 x 223 x 75 mm 11.3" x 8.8" x 3.0"
Weight	ca. 2.2 kg 4.8 lbs
Operating temperature	0...+50°C 32...122°F
Storage temperature	-20...+70°C -4...158°F
Humidity	20...90%
Nominal temperature	23 ± 2°C
Reference humidity	40%...60%

Memory and communication

Memory of measurement results	990 cells, 57 500 records
Data transmission	USB 2.0, radio

Other information

Quality standard – development, design and production	ISO 9001
The product meets the EMC (emission for industrial environment) requirements according to standards	EN 61326-1 EN 61326-2-2

Standard accessories



**Test lead 1.2 m
(banana plugs)
red / blue / yellow**

WAPRZ1X2REBB
WAPRZ1X2BUBB
WAPRZ1X2YEBB



**Test lead 5 kV 1.8 m
(banana plugs)
black shielded / red**

WAPRZ1X8BLBB
WAPRZ1X8REBB



**Crocodile clip 1 kV
20 A black / yellow**

WAKROBL20K02
WAKROYE20K02



**Pin probe 1 kV
(banana socket)
red / blue / yellow**

WASONREOGB1
WASONBUOGB1
WASONYEOGB1



**Pin probe 5 kV
(banana socket) red**

WASONREOGB2



**Crocodile clip
11 kV 32 A black**

WAKROBL32K09



**Test lead (on a reel)
15 m / 30 m**

WAPRZ015BUBBSZ
WAPRZ030REBBSZ



**2x earth contact test
probe (rod), 30 cm**

WASONG30



USB cable

WAPRZUSB



Charging

**Z-7 power supply
+ mains cable
WAZASZ7US**



**Ni-MH battery 4.8 V 4.2 Ah
WAAKU07**



**L-2 hanging
straps (set)**

WAPZSZSEKPL



L-2 carrying case

WAFUTL2



**Factory calibra-
tion certificate**

Optional accessories



**EVSE-01 adapter
for testing vehicle
charging stations**

WAADAEVSE01



**AutoISO-1000C
adapter**

WAADAAISO10C



**WS-03 adapter with
START button with
UNI-Schuko plug**

WAADAWS03US

**WS-04 adapter
with UNI-SCHUKO
angular plug**

WAADAWS04US



**TWR-1J
RCD breaker
testing adapter**

WAADATWR1J



**Crocodile clip 1 kV
20 A red / blue**

WAKRORE20K02
WAKROBU20K02



**Crocodile clip 11
kV 32 A red**

WAKRORE32K09



**PRS-1 resistance
test probe**

WASONPRS1



**Foldable pin
probe, 1 kV, 2 m
(banana socket)**

WASONSP2M



**Pin probe 5 kV (ba-
nana socket) black**

WASONBLOGB2



**Test lead for fault
loop measurement
(banana plugs)
5 m / 10 m / 20 m**

WAPRZ005REBB
WAPRZ010REBB
WAPRZ020REBB



**Test lead for
earth resistance
measurement
25 m red / blue**

WAPRZ025REBBSZ
WAPRZ025BUBBSZ



**Test lead for earth
resistance mea-
surement 50 m**

WAPRZ050YEBBSZ



**Cramp with
banana socket**

WAZACIMA1



**Earth contact test
probe 80 cm**

WASONG80V2



**L-3 carrying
case (for 80 cm
test probes)**

WAFUTL3



**Industrial socket
adapter 16 A / 32 A**

WAADAAGT16T
WAADAAGT32T



**Three-phase socket
adapter 16 A / 32 A**

WAADAAGT16C
WAADAAGT32C



**Three-phase socket
adapter 16 A / 32 A**

WAADAAGT16P
WAADAAGT32P



**Three-phase socket
adapter 63 A**

WAADAAGT63P



CS-1 cable simulator

WAADACS1



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

WAADACS5KV



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

WAPRZLAD12SAM



Battery pack 4xLR14

WAPOJ1



**OR-1 USB wireless
receiver**

WAADAUSBOR1



Test wire reel

WAPOZSZP1



**Calibration certificate
with accreditation**