

Earthing resistance and soil resistivity meter





Multifunctional earthing resistance meter

Measurement methods

- 3-pole and 4-wire method measurement of earthing systems using auxiliary probes
- 3-pole method with clamp measurement of earthing systems with multiple earth electrodes
- Two-clamp method measurement of earthing system when the auxiliary probes cannot be used
- Soil resistivity Wenner method
- Resistance of earth connection and equipotential bonding measured using current ≥200 mA with auto-zero function meets the requirements of EN 61557-4

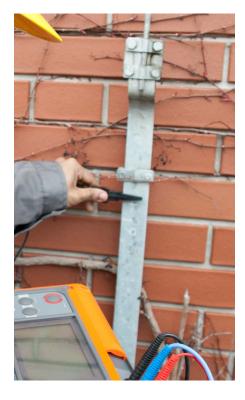
Additional features

- Measurement current of 200 mA facilitates earth resistance measurements in difficult areas (sand, stony soil)
- Measurement of resistance of auxiliary electrodes R_s and R_H
- Measurement of interference voltage
- Measurement in the presence of interference voltage generated by power networks with frequency of 50 Hz and 60 Hz
- Selection of maximum measuring voltage (25 V and 50 V)
- Automatic calculation of soil resistivity in ohm-meters (Ωm) and ohm-feet (Ωft)
- Memory of 990 measurement results (10 banks of 99 cells each)
- Calibration of clamp used
- Real time clock (RTC)
- Data transmission to the computer
- Battery indication











Application

MRU-120 meter was created for **the most difficult working conditions**. It generates a measuring current exceeding 200 mA, which provides effective measurements of grounding of energy objects such as transformer stations and power stations.

Thanks to the methods using clamps, it is **not necessary to disconnect the control connectors**, which is sometimes a very tedious operation. This plays a special role when performing works on objects exposed to weather conditions, where the connecting elements are sometimes corroded or tarnished.

The graphical user interface provides clear readings and explicit messages. This translates into quick, trouble-free service.

Protection and equipment

Housing of MRU-120 ensures safe operation in field conditions and inside buildings. Ingress protection rating of IP54 protects the device against water and solids in case of splashes or dusty conditions. Moreover, the design of the device provides very good protection during transport and handling. Extensive standard equipment allows user to perform most measurements without the need to purchase additional accessories. MRU-120 is a versatile solution that offers comprehensive testing of earthing systems.

Capabilities

The measuring methods available in the device allow for comprehensive control of working and protective grounding. The calibration function of the test leads eliminates the influence of their resistance on the result. However, this is just the beginning.

- The 4-wire method provides very accurate measurement of the expected small values of resistance eliminates the resistance of the test leads connecting the meter to grounding.
- **Measurement of resistance** of earth connection and equipotential bonding with a current exceeding 200 mA meets the requirements of EN 61557-4 standard.
- Before performing the measurement, the meter checks whether the tested object is a subject to excessive **interference voltage**, which may indicate additional problems.

Memory and results

The results can be saved to the device's memory. It is divided into **10 banks** of **99 cells**, each corresponding to one measurement. These results can be easily transferred to the **Sonel Reader** software for archiving or subsequent analysis and research.

Other useful functions

Built-in help function – auxiliary illustrations demonstrate how to properly perform the measurement for each method.

Correctness of connections – if the meter detects an error, which prevents a correct measurement, it will indicate this in the top of the screen using the appropriate test socket symbol.

Complete measurement data – in addition to earth resistance measurement, the device performs additional measurements on interference voltages and resistance of auxiliary probes. Their results are provided with information about the date and time of testing, which facilitates preparing test documentation.

Technical specifications

common opcomoutor				
Measurement functions	Measurement range	Display range	Resolution	Accuracy ±(% m.v. + digits)
Interference voltage	0 V100 V	0 V100 V	1 V	±(2% m.v. + 3 digits)
Resistance of earth connection	0.24 Ω19.9 kΩ acc. to EN 61557-4	0.00 Ω19.9 kΩ	from 0.01 Ω	from ±(2% m.v. + 2 digits)
and equipotential bonding Earth resistance	acc. to EN 01557-4			
3-pole and 4-wire method	0.30 Ω19.9 kΩ acc. to EN 61557-5	0.00 Ω19.9 kΩ	from 0.01 Ω	from ±(2% m.v. + 2 digits)
3-pole + clamp method	0.44 Ω1999 Ω acc. to EN 61557-5	0.00 Ω1999 Ω	from 0.01 Ω	±(8% m.v. + 3 digits)
two-clamp method	0.00 Ω149.9 Ω	0.00 Ω149.9 Ω	from 0.01 Ω	from ±(10% m.v. + 3 digits)
auxiliary electrodes resistance	0 Ω19.9 kΩ	0 Ω19.9 kΩ	from 1 Ω	±(5% (R _E +R _H +R _S) + 8 digits), bu ≥10% R _E
Earth resistivity	0.0 Ωm999 kΩm	0.0 Ωm999 kΩm	from 0.1 Ωm	Depends on the accuracy of th R _e 4p measurement. but not les than ±1 digit

Safety and work conditions

Measuring category according to EN 61010	III 600 V / IV 300 V		
Ingress protection	IP54		
Type of insulation according to EN 61010-1 and IEC 61557	double		
Dimensions	288 x 223 x 75 mm		
Weight	ca. 2 kg		
Operating temperature	-10+50°C		
Storage temperature	-20+80°C		
Humidity	2085%		
Nominal temperature	23 ± 2°C		
Reference humidity	40%60%		
Memory and communication			
Memory of measurement results	990 results		
Data transmission	USB		
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 2.2 m (banana plugs) black WAPRZ2X2BLBB



Test lead 1.2 m (banana plugs) red WAPRZ1X2REBB



Hanging straps

WAPOZSZEKPL



Crocodile clip 1 kV 20 A black



Pin probe 1 kV (banana socket) red

et) red



4x earth contact test probe (30 cm) WASONG30

Cramp with banana socket WAZACIMA1



Test lead 25 m for earth resistance measurements (on a reel, banana plugs) blue / red WAPRZ025BUBBSZ

WAPRZ025REBBSZ



Test lead 50 m for earth resistance measurements (on a reel, banana plugs) yellow WAPRZ050YEBBSZ



USB cable WAPRZUSB



NiMH battery 4.8 V 3.2 Ah WAAKU08



230 V mains power cable (IEC C7 plug) WAPRZLAD230

Calibration certificate issued by an accredited laboratory (no accreditation)

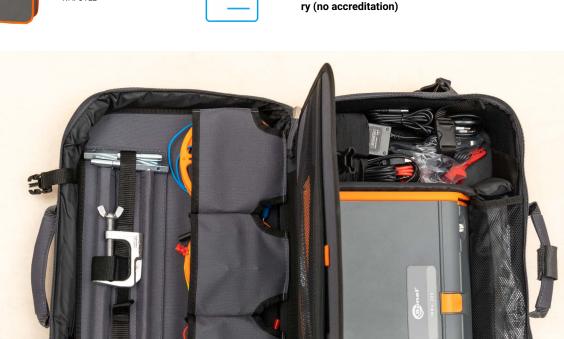






L-2 carrying case





Optional accessories



ERP-1 adapter WAADAERP1



F-1A flexible coil (Ø 360 mm) WACEGF1AOKR

C-3 current clamps

(Ø 52 mm)

WACEGC30KR



FS-2 flexible coil (Ø 1260 mm), output level 100 mV / 1 A WACEGFS20KR

F-2A flexible coil

N-1 transmitting

clamps (Ø 52 mm,

incl. 2-wire cable)

Test lead 1.2 m

(banana plugs)

WAPRZ1X2BLBB

WAPRZ1X2BUBB WAPRZ1X2YEBB

black / blue / yellow

WACEGN1BB

(Ø 235 mm)

WACEGF2AOKR



FSX-3 flexible coil (Ø 630 mm), output level 300 mV / 1 A

WACEGFSX30KR



F-3A flexible coil (Ø 120 mm)

WACEGF3AOKR



Double-wire test lead 2 m for N-1 clamps

Pin probe 1 kV

WASONBLOGB1

WASONBUOGB1

WASONYEOGB1

(banana socket)

black / blue / yellow

WAPRZ002DZBB



Crocodile clip 1 kV 20 A red / blue / yellow

WAKRORE20K02 WAKROBU20K02 WAKROYE20K02

probe 25 cm

Test lead on a

reel red 75 m /

100 m / 200 m

WAPRZ075REBBSZ

WAPRZ100REBBSZ

WAPRZ200REBBSZ

WASONG25

Earth contact test















NiMH batterv 4.8 V 4.2 Ah WAAKU07

XL3 carrying

case (MRU)

WAWALXL3





XL-8 carrying case (ERP-1)



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

WAFUTL3

Test lead on a reel yellow 75 m / 100 m / 200 m

WAPRZ075YEBBSZ WAPRZ100YEBBSZ WAPRZ200YEBBSZ

Test wire reel

WAPOZSZP1

Cable for battery



charging from car cigarette lighter socket (12 V)
WAPRZLAD12SAM

Calibration certificate with accreditation



probe 80 cm WASONG80

earth resistance measurements (banana plugs) blue

Battery pack 4xLR14

WAWALXL8





Earth contact test

Test lead on a reel blue 75 m / 100 m / 200 m

WAPRZ015BUBBSZ

WAPOJ1







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