



200 mA

measurement
current



soil resistivity
without manual
conversion



CAT IV

300 V



IP67

closed case



IP54

open case

Armored meter for earth resistance and soil resistivity

Measurement methods

- **3- and 4-wire method** – measurement of earthing systems using auxiliary probes
- **3-wire method with clamps** – 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 and compensatory conductors** measured using current ≥ 200 mA with auto-zero function – meets the requirements of EN 61557-4

Additional features

- **Outstanding resistance to harsh environmental conditions** – the suit-case housing protects against the ingress of dust and water and protects against the effects of falls
- 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 or 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-120HD 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.



Transport and security

It doesn't matter if you take measurements while wading in the mud or if you act in the sand amongst clouds of dust. The MRU-120HD meter is ready and will not disappoint. **IP67** protection degree when the cover is closed ensures dust-tightness and prevents water ingress – even when the housing is immersed briefly! When measuring, the tightness is still high (IP54), providing protection against dust and water splashes from any direction.



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 four-lead 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 the continuity** of protective connections and equipotential bondings 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.



Technical data

Measurement functions	Measurement range	Display range	Resolution	Accuracy ±(% m.v. + digits)
Interference voltage	0 V...100 V	0 V...100 V	1 V	±(2% m.v. + 3 digits)
Connection and equipotential bonding resistance	0.24 Ω...19.9 kΩ acc. to EN 61557-4	0.00 Ω...19.9 kΩ	from 0.01 Ω	from ±(2% m.v. + 2 digits)
Earth resistance				
3- and 4-wire method	0.30 Ω...19.9 kΩ acc. to EN 61557-5	0.00 Ω...19.9 kΩ	from 0.01 Ω	from ±(2% m.v. + 2 digits)
3-wire + clamp method	0.44 Ω...1999 Ω acc. to EN 61557-5	0.00 Ω...1999 Ω	from 0.01 Ω	±(8% m.v. + 3 digits)
two-clamp method	0.00 Ω...149.9 Ω	0.00 Ω...149.9 Ω	from 0.01 Ω	from ±(10% m.v. + 3 digits)
auxiliary electrodes resistance	0 Ω...19.9 kΩ	0 Ω...19.9 kΩ	from 1 Ω	±(5% (R _E +R _H +R _S) + 8 digits), but ≥10% R _E
Earth resistivity	0.0 Ωm...999 kΩm	0.0 Ωm...999 kΩm	from 0.1 Ωm	Depends on the accuracy of the R _E 4p measurement, but not less than ±1 digit
Safety and work conditions				
Measuring category according to EN 61010				
≤2000 m a.s.l.			IV 300 V	
≤3000 m a.s.l.			IV 255 V	
Ingress protection				
closed case			IP67	
open case			IP54	
Type of insulation according to EN 61010-1 and IEC 61557			double	
Dimensions			390 x 310 x 180 mm	
Weight			ca. 4 kg	
Operating temperature			-10...+50°C	
Storage temperature			-20...+80°C	
Humidity			20...85%	
Nominal temperature			23...±2°C	
Reference humidity			40%...60%	
Memory and communication				
Memory of measurement results			990 results	
Data transmission			USB, 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 4 m (banana plugs) black / blue

WAPRZ004BLBB
WAPRZ004BUBB



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



4x earth contact test probe (30 cm)

WASONG30



2x clamp with banana socket

WAZACIMA1



W1 hanging straps

WAPOZSZE5



USB cable

WAPRZUSB



230 V mains power cable (IEC C7 plug)

WAPRZLAD230



Z7 Power supply adapter

WAZASZ7



L-4 carrying case

WAFUTL4



Calibration certificate issued by an accredited laboratory (no accreditation)

Optional accessories



ERP-1 adapter

WAADAERP1



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

WACEGFS20KR



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

WACEGFSX30KR



C-3 current clamps (Ø 52 mm)

WACEGC30KR



N-1 transmitting clamps (Ø 52 mm, incl. 2-wire cable)

WACEGN1BB



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

WAPRZ002DZBB



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

WASONBUOGB1
WASONREOGB1
WASONBLOGB1
WASONYEGB1



Test lead 1.2 m (banana plugs) black / blue / yellow

WAPRZ1X2REBB
WAPRZ1X2BUBB
WAPRZ1X2YEBB



Crocodile clip 1 kV 20 A black / red / blue / yellow

WAKROBL20K01
WAKRORE20K02
WAKROBU20K02
WAKROYE20K02



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

WAPRZ075REBBSZ
WAPRZ100REBBSZ
WAPRZ200REBBSZ



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

WAPRZ075BUBBSZ
WAPRZ100BUBBSZ
WAPRZ200BUBBSZ



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

WAPRZ075YEBBSZ
WAPRZ100YEBBSZ
WAPRZ200YEBBSZ



Earth contact test probe (25 cm)

WASONG25



Earth contact test probe (80 cm)

WASONG80



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

WAFUTL3



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

WAPRZLAD12SAM



Calibration certificate with accreditation