



MRU-200-GPS

Indeks: WMGBMRU200GPS

Earth Resistance and Resistivity Meter

CAT IV

300V

CAT III

600V



BLUETOOTH



IP 54

Description

MRU-200-GPS is the only meter in the market which uses all measurement methods.

Possible measurements:

- earth resistance measurement with 2-pole, 3-pole, 4-pole method,
- impulse earth impedance measurement, three kinds of measuring impulse 4/10 μ s, 8/20 μ s, 10/350 μ s,
- earth resistance measurement without disconnecting measured earths (using clamp),
- two clamps earth resistance measurement without auxiliary test prods,
- earth resistivity measurement,
- continuity measurement,
- leakage current measurement.
- built in GPS,
- GPS coordinates of the measurement are stored in meter memory.

[Virtual instrument application of Sonel MRU-200-GPS](#)



Technical Specification

It allows to take the measurements of:

- earth resistance using auxiliary electrodes,
- earth resistance using auxiliary electrodes and clamp (for measurements of multiple earthing)
- earth resistance using double clamps for measuring multiple earthing without underground connections,
- impulse earth impedance (without disconnecting measured earthing),
- ground resistivity (Wenner method),
- current using the clamp (e.g. leakage) and flexible clamp (Rogowsky coil),
- measurement of continuity of equipotential bondings and protective conductors (meeting the requirements of IEC 60364 - 6 - 61:2000 section 6.12.2) with auto-zero function – with current 200 mA.

Additionally:

- measurement of resistance of auxiliary electrodes R_S and R_H ,
- measurement of interference voltage,
- measurement of interference frequency,
- measurement in the presence of interference voltage in the power network
with frequency 16 2/3 Hz, 50 Hz, 60 Hz and 400 Hz (with automatic selection of proper frequency of measuring signal or with manual selection),
- selection of maximum measuring voltage (25 V and 50 V)
- introducing the distance between the electrodes for the resistivity in metres (m) and feet (ft),
- memory of 990 measurements (10 banks of 99 cells each),
- calibration of clamp used,
- real time clock (RTC),
- data transmission to the computer USB and Bluetooth*,
- indication of battery state.

*Bluetooth communication from serial number E40001

Electric security:

- type of insulation: double, according to EN 61010 - 1 and IEC 61557
- measurement category: CAT IV 300 V acc. to EN 61010 - 1
- protection class acc. to EN 60529: IP54

Rated operational conditions:

- operation temperature: -10...+50°C
- storage temperature: -20...+70°C
- humidity: 20...80%

Other technical data:

- LCD display: graphic, backlighted
- interface: USB
- number of measurements carried out of set of batteries: > 1200
- warranty: 24 months

Measurement of interference voltage

Range	Resolution	Accuracy
0...100 V	1 V	$\pm(2\% \text{ m.v.} + 3 \text{ digits})$

Measurement of interference frequency

Range	Resolution	Accuracy
15...450 Hz	1 Hz	$\pm(1\% \text{ m.v.} + 2 \text{ digits})$

Measurement of earthing resistance (method 3- and 4-pole)

measurement range to IEC61557 - 5: **0,100 Ω ...19,9 k Ω**

Range	Resolution	Accuracy
0,000...3,999 Ω	0,001 Ω	$\pm(2\% \text{ m.v.} + 4 \text{ digits})$
4,00...39,99 Ω	0,01 Ω	
40,0...399,9 Ω	0,1 Ω	$\pm(2\% \text{ m.v.} + 2 \text{ digits})$
400...3999 Ω	0,001 k Ω	
4,00k...19,99 k Ω	0,01 k Ω	$\pm(5\% \text{ m.v.} + 2 \text{ digits})$

Measurement of continuity of equipotential bondings and protective conductors (R_{cont})

measurement range to IEC61557 - 4: **0,045 Ω ...19,99 k Ω**

Range	Resolution	Accuracy
0,000...3,999 Ω	0,001 Ω	$\pm(2\% \text{ m.v.} + 4 \text{ digits})$
4,00...39,99 Ω	0,01 Ω	$\pm(2\% \text{ m.v.} + 2 \text{ digits})$
40,0...399,9 Ω	0,1 Ω	
400...3999 Ω	0,001 k Ω	$\pm(5\% \text{ m.v.} + 2 \text{ digits})$
4,00k...19,99 k Ω	0,01 k Ω	

Measurement of resistance of auxiliary electrodes R_H and R_S

Range	Range	Accuracy
0...999 Ω	1 Ω	$\pm(5\% (R_S + R_E + R_H) + 8 \text{ digits})$
1,00k...9,99 k Ω	0,01 k Ω	
10,0k...19,9 k Ω	0,1 k Ω	

Measurement of multiple earthing resistance with using the clamp and auxiliary electrodes (3p + clamp)

Range	Resolution	Accuracy

0,000...3,999 Ω*	0,01 Ω	±(8% m.v. + 4 digits)
10,0...99,9 Ω	0,01 Ω	±(8% m.v. + 3 digits)
100...999 Ω	0,1 Ω	
1,00k...1,99 kΩ	1 Ω	

* - in range 0,000...0,045 Ω the accuracy is not specified.

Measurement of multiple earthing resistance with using double clamps

Range	Resolution	Accuracy
0,00...19,99 Ω	0,1 Ω	±(10% m.v. + 3 digits)
20,0...149,9 Ω	0,1 Ω	±(20% m.v. + 3 digits)

Measurement of ground resistivity Measurement method: Wennera, $\rho=2\pi LR_E$

Range	Resolution	Accuracy
0,0...199,9 Ωm	0,1 Ωm	depending on measurement accuracy RE with 4p method, but not less than ±1 digit
200...1999 Ωm	1 Ωm	
2,00k...19,99 kΩm	0,01 kΩm	
20,0k...99,9 kΩm	0,1 kΩm	
100k...999 kΩm	1 kΩm	

L – distance between probes: 1...50 m

Measurement of AC current (leakage)

Range	Resolution	Accuracy
0,1...99,9 mA ¹	0,1 mA	±(8% m.v. + 5 digits)
100...999 mA ¹	1 mA	±(8% m.v. + 3 digits)
1,00...4,99 A ^{1,2}	0,01 A	±(5% m.v. + 5 digits) ¹ unspecified ²
5,00...9,99 A ^{1,2}	0,01 A	
10,0...99,9 A ^{1,2}	0,1 A	±(5% m.v. + 5 digits)
100...300 A ^{1,2}	1 A	

¹ – receiving clamp (diameter 52 mm) – C-3

² – flexible clamp (Rogowsky coil) with diameter 400 mm – F-1

Measurement of dynamic earthing resistance (R_D) with impulse wave method (4p)

Range	Resolution	Accuracy
0,0...99,9 Ω	0,1 Ω	±(2,5% m.v. + 3 digits)
100...199 Ω	1 Ω	

choice impulse edges: 4/10 μ s, 8/20 μ s, 10/350 μ s

„m.v.”- measured value

