

## AMRU-120

HIGHEST ACCURACY & LOWEST COST



## Earth Resistance Meter

## AMRU-120

Earth resistance measurement with 3-pole,4-pole method.

Earth resistance measurement without disconnecting measured earths (using clamp).


Continuity of equipotential bondings and protecting conductors.

Two clamps earth resistance measurement without auxiliary test probes.

Earth resistivity measurement.

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[www.amperis.com](http://www.amperis.com)

 AMPERIS PRODUCTS S.L  
Agricultura,34  
27003, Lugo, Spain

 Contact

+T [+34] 982 20 99 20 | F [+34] 982 20 99 11  
[info@amperis.com](mailto:info@amperis.com) | [www.amperis.com](http://www.amperis.com)

## It allows to take the measurements of:

- Earth resistance using auxiliary electrodes.
- Earth resistance using auxiliary electrodes and clamp (for measurements of multiple earth).
- Earth resistance using double clamps (for measurement of earthing when it is impossible to use auxiliary electrodes).
- Ground resistivity (Wenner method).
- 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  $R_n$ .
- Measurement of interference voltage.
- Measurement of interference frequency.
- Measurement in the presence of interference voltage in the power network with frequency 50 Hz, 60 Hz.
- Selection of maximum measuring voltage (25 V and 50 V).
- Introducing the distance between the electrodes for the resistivity in metres (m).
- Memory of 990 measurements (10 banks of 99 cells each).
- Calibration of clamp used.
- Real time clock (RTC).
- Data transmission to the computer (USB, wireless).
- Indication of battery state

## Measurement of interference voltage $U_N$ (RMS)

Range	Resolution	Accuracy
0...100V	1V	±(2% m.v. + 3 digits)

Singnalling overvoltage 24 V or 40 V rms.  
Measurement for DC and AC 45...65 Hz.

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

Measurement range to IEC61557-5: 0,24Ω...19,9kΩ

Range	Resolution	Accuracy
0,00...19,99Ω	0,01Ω	±(2% m.v. + 2 digits)
20,0...199,9Ω	0,1Ω	
200...1999Ω	1Ω	
2,00k...9,99kΩ	10Ω	±(5% m.v. + 2 digits)
10,0k...19,9kΩ	100Ω	

2-pole method.  
Voltage on open terminals: <24 Vrms but >4 Vrms.  
Measurement current: under short circuit >200 mA.  
Frequency of measurement current: 125 (for networks 50 Hz) or 150 Hz (for networks 60 Hz), possible choice of measurement frequency in menu.  
Auto-zero function measurement leads.

"m.v." – measured value

## Measurement of earth resistance (method 3- and 4-pole)

Measurement range to IEC61557-5: 0,30Ω...19,9kΩ

Range	Resolution	Accuracy
0,00...19,99Ω	0,01Ω	±(2% m.v. + 2 digits)
20,0...199,9Ω	0,1Ω	
200...1999Ω	1Ω	±(5% m.v. + 4 digits)
2,00k...9,99kΩ	10Ω	
10,0k...19,9kΩ	100Ω	

3-pole,4-pole method.  
Measurement current: under short circuit >200 mA.  
Voltage on open terminals: selectable <25 V AC or <50 V AC.  
Frequency of measurement current: 125 (for networks 50 Hz) or 150 Hz (for 60 Hz).

## Measurement of resistance of auxiliary electrodes $R_H$ and $R_S$

Range	Resolution	Accuracy
0...999Ω	1Ω	±(5% ( $R_s + R_e + R_H$ ) + 8 digits)
1,00kΩ...9,99kΩ	10Ω	
10,0kΩ...19,9kΩ	100Ω	

Reading of values measured for the electrode will be in the right side of display  $R_H$  and  $R_S$  (separated part of display).

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

Measurement range to IEC61557-5: 0,44Ω...1999Ω

Range	Resolution	Accuracy
0,00...19,99Ω	0,01Ω	±(8% m.v. + 3 digits)
20,0...199,9Ω	0,1Ω	
200...1999Ω	1Ω	

3-pole,4-pole method  
Measurement current: under short circuit >200 mA  
Voltage on open terminals: selectable <25 V AC or <50 V AC  
Frequency of measurement current: 125 (for networks 50 Hz) or 150 Hz (for 60 Hz)

## Measurement of ground resistivity. Measurement method: Wenner, $\rho = 2\pi LR_e$

Range	Resolution	Accuracy
0,00...199,9Ωm	0,1Ωm	Depending on measurement accuracy $R_e$ with 4p method, but not less than ±1 digit
200...1999Ωm	1Ωm	
2,00k...19,99kΩm	10Ωm	
20,0k...99,9kΩm	100Ωm	
100k...999kΩm	1kΩm	

L – distance between probes: 1...50m.

## Measurement of multiple earth resistance with using double clamps

Range	Resolution	Accuracy
0,00...19,99Ω	0,01Ω	±(10% m.v. + 3 digits)
20,0...149,9Ω	0,1Ω	±(20% m.v. + 3 digits)

Double clamps method.  
Frequency of measurement current: 125 (for networks 50 Hz) or 150 Hz (for 60 Hz).

## AMRU-120 Specifications

### Electric security:

Type of insulation	Double, according to EN 61010-1 and IEC 61557
Measurement category	CAT III 600V acc. to EN 61010-1
Protection class acc. to EN 60529	IP54

### Other technical data:

Display	LCD graphic, backlit
Interface	USB, wireless
Number of measurements carried out of set of batteries	> 500
Warranty	36 months

### Rated operational conditions:

Operation temperature	-10...+50°C
Storage temperature	-20...+70°C
Humidity	20...80%

### Standard accessories:

- Test lead on a reel; 50 m; yellow
- Test lead on a reel; 25 m; red
- Test lead on a reel; 25 m; blue
- Pin probe with banana connector; yellow
- Test lead with banana plug; 1,2m; yellow
- Test lead with banana plugs 2,2m; black
- Crocodile clip K01; black
- Earth contact test probe (rod); 0,30m - 4 pcs.
- Carrying case L2
- USB transmission cable
- Ni-MH battery package 4,8V 3Ah
- Power supply adaptor Z7
- Cable for battery charger
- Hanging straps
- Calibration certificate
- Operating manual

### Optional accessories:

- Software for creation of documentation
- Software for creation drawings and diagrams
- USB key for software
- Crocodile clip K02; black
- Earth contact test probe (rod); 0,80m
- Test2 wire lead with banana plug; 2m
- Carrying case L3
- Current clamps C-3(Ø=52mm)
- Current clamps N-1(Ø=52mm)
- Ni-MH battery package 4,8V 4,2Ah
- Cramp
- Battery case LR14 (size C)
- Charger for battery loading from the socket car lighter (12V)
- USB radio interface OR-1

