

AMRU-200 GPS

Earth tester with built-in GPS



All earth-resistance measurement methods in a single meter, with coordinates and time stamped on every reading

AMRU-200 GPS

Earth resistance and resistivity meter with built-in GPS

amperis

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Earth tester with built-in GPS that brings together every earth-resistance and resistivity measurement method in a single portable meter.

Overview



Field measurement, with the reading shown on the display

Every method in a single meter

The AMRU-200 GPS measures earth resistance by the 2, 3 or 4-pole technical method, by the pulse method with three pulse slopes (4/10 μ s, 8/20 μ s and 10/350 μ s) and with a double clamp with no auxiliary electrodes needed. It also measures soil resistivity by Wenner's method, current with clamps -including leakage current- and the continuity of compensating and protective connections with a self-neutralising function.

Measurement in the presence of disturbance voltage

The meter measures with disturbance voltage present on the network at 16 2/3 Hz, 50 Hz, 60 Hz or 400 Hz, with automatic or manual frequency selection, and the maximum measuring voltage can be set to 24 V or 50 V.

Auxiliary electrodes

- Measurement of the resistance of the RH and RS auxiliary electrodes, read on the right-hand side of the display, separate from the main result.
- Entry of the distance between electrodes for resistivity, in metres (m) or feet (ft).
- Calibration of the clamps used for each measurement.



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Multiple-earth measurement without auxiliary electrodes, and satellite location for every point measured.

Multiple earths, double clamp and GPS positioning



Double-clamp measurement on an earth rod, without disconnecting the installation

Multiple earths with electrodes and clamps

The resistance of multiple earth connections is measured with auxiliary electrodes and clamps (3 wires + clamps), without needing to disconnect the earthing system being checked.

Double-clamp method

When auxiliary electrodes cannot be used, the AMRU-200 GPS measures earth resistance with two clamps placed on the same conductor, one for emission and one for reception, without disconnecting the installation.

Satellite positioning and real-time clock

The built-in GPS receiver stores the coordinates of each measurement in the meter's memory, together with the time stamp from the real-time clock (RTC). Every reading is therefore geo-located and dated automatically, which makes it easier to identify each electrode or rod on installations with many earthing points and to carry that information over into inspection reports without writing it down by hand.

Result memory

- Memory for 990 measurements, held in 10 banks of 99 cells.
- Battery energy indicator.
- Selection of the maximum measuring voltage between 24 V and 50 V.



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Transfer to a PC of the measurements stored in memory, with their time stamp and coordinates, over a USB cable.

Software and data transmission

Transmission to the computer

The meter connects to a computer with a USB cable to transfer the measurements stored in the 10 memory banks, each with the time stamp from the real-time clock and, when the GPS receiver has stored the position, its coordinates. An optional accessory program for creating documentation builds inspection reports from that data, without re-entering by hand the values measured on site.

On the meter

- Illuminated graphic LCD display and USB interface.
- Real-time clock (RTC) that dates every measurement.
- Battery energy indicator while data is transferred.



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Earth resistance: 3 or 4-pole method, and with clamps (multiple earths)

Measuring range according to IEC 61557-5: 0.30 Ω ...19.9 k Ω

Range	Resolution	Accuracy
0.00...3.999 Ω	0.001 Ω	$\pm 2\%$ m.v. +4 digits
4.0...39.99 Ω	0.01 Ω	$\pm 2\%$ m.v. +2 digits
40.0...399.9 Ω	0.1 Ω	
400...3999 Ω	1 Ω	
4.0...19.99 k Ω	10 Ω	$\pm 5\%$ m.v. +2 digits

With clamps: multiple earths (3 wires + clamps) – Measuring range according to IEC 61557-5: 0.12 Ω ...1999 Ω

Range	Resolution	Accuracy
0.00...3.99 Ω	0.001 Ω	$\pm 8\%$ m.v. +4 digits
4.0...39.99 Ω	0.01 Ω	$\pm 8\%$ m.v. +3 digits
40...399.9 Ω	0.1 Ω	
400...1999 Ω	1 Ω	



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Double-clamp method

Range	Resolution	Accuracy
0.00...19.99 Ω	0.01 Ω	$\pm 10\%$ m.v. +3 digits
20.0...149.9 Ω	0.1 Ω	$\pm 20\%$ m.v. +3 digits

Pulse method: dynamic earth resistance (4-pole)

Range	Resolution	Accuracy
0.00...99.9 Ω	0.1 Ω	$\pm 2.5\%$ m.v. +3 digits
100...200 Ω	1 Ω	

Available pulse slopes: 4/10 μs , 8/20 μs and 10/350 μs .



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Soil resistivity

Wenner method: $\rho = 2\pi LRE$

Range	Resolution	Accuracy
0.00...199.9 $\Omega\cdot m$	0.1 $\Omega\cdot m$	Depends on the base error of the RE measurement in the 4-wire system, but not less than ± 1 digit
200...1999 $\Omega\cdot m$	1 $\Omega\cdot m$	
2.00 k...19.99 k $\Omega\cdot m$	10 $\Omega\cdot m$	
20.0 k...99.9 k $\Omega\cdot m$	100 $\Omega\cdot m$	
100...999 k $\Omega\cdot m$	1 k $\Omega\cdot m$	

Alternating current measurement (with clamps)

Range	Resolution	Accuracy
0.1...99.9 mA	0.1 mA	$\pm 8\%$ m.v. +5 digits
100...999 mA	1 mA	$\pm 8\%$ m.v. +3 digits
1.00...4.99 A	0.001 A	$\pm 5\%$ m.v. +5 digits
5.0...9.99 A	0.01 A	$\pm 5\%$ m.v. +5 digits
10...99.9 A	0.1 A	
100...300 A	1 A	

With C-3 receiving clamps ($\varnothing$ 52 mm) or F-1 flexible clamps ($\varnothing$ 400 mm), depending on the range.



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Resistance of the auxiliary electrodes RH and RS

Range	Resolution	Accuracy
0.00...999 Ω	1 Ω	$\pm 5\%$ (RS+RE+RH) +8 digits
1.0 k...9.99 k Ω	10 Ω	
10.0 k...19.9 k Ω	100 Ω	

Continuity of compensating and protective connections – Measuring range according to IEC 61557-5: 0.24 Ω ...19.9 k Ω

Range	Resolution	Accuracy
0.00...3.99 Ω	0.001 Ω	$\pm 2\%$ m.v. +4 digits
4.0...39.9 Ω	0.01 Ω	$\pm 2\%$ m.v. +2 digits
40...399 Ω	0.1 Ω	
400...3999 Ω	1 Ω	
4.0...19.9 k Ω	10 Ω	$\pm 5\%$ m.v. +2 digits

The RH and RS values are read on the right-hand side of the display, separate from the main result.



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General specifications, power supply and standards

Type of insulation	Double, according to EN 61010-1 and IEC 61557
Measurement category	CAT III 600 V according to EN 61010-1
Protection class	IP54 according to EN 60529
Display	Illuminated graphic LCD
Interface	USB
Memory	990 measurements (10 banks of 99 cells)
Battery set life	More than 300 measurements
Warranty	36 months
Operating temperature	-10...+50 °C
Storage temperature	-20...+70 °C
Humidity	20...80%

Disturbance voltage and frequency

Quantity	Range	Resolution	Accuracy
Disturbance voltage (r.m.s.)	0...100 V	1 V	±2% m.v. +3 digits
Disturbance frequency	15...450 Hz	1 Hz	±1% m.v. +2 digits

Standard accessories: 50 m, 25 m and 25 m earth cables on a reel; 1.2 m and 2.2 m cables with banana plug; USB cable; 12 V car charger; four 30 cm earth probes; L2 case; K01 and K02 crocodile clips; Ni-MH 4.8 V 4.2 Ah battery set; power supply cable and charger; carrying harness; calibration certificate and user's manual.

Optional accessories: software for creating documentation; 80 cm probe; N-1 emission and C-3 receiving clamps (Ø 52 mm); 2 m two-wire cable; LR14 battery case; L3 cover for the 80 cm probe; F-1 spring (Rogowski coil) clamps.

"m.v." = measured value.



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