MEASURING EQUIPMENT
Earth resistance and resistivity tester MRU-105

German Cathodic Protection

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General information

The MRU-105 is a portable meter for measuring earth resistance and resistivity (Wenner's method). The instrument can measure resistance with a 2, 3, or 4 poles method. The very high immunity for existing interference voltage AC + DC at which measurement is still performed: 24V (68V-p-p) but also measurement of existing interference voltage up to 40V is unique functionality of meters. Moreover meters measure the resistance of the probes and calculate automatically the error coming from probe`s resistances. The meter additionaly can be powered from Ni-MH batteries or standard C size, and the test results can be stored in the internal memory and transmitted to PC via USB-cable. Measurements can be simplified using current clamps.

- **Measurement of earthing resistance using a three- or four-pole technique**
  - selective earth resistance measurement with clamp (no influence from parallel earth; no opening of rusty junctions is needed)
  - supervision of the measurement conditions (eg. voltages, impact resistance measurement electrodes R_H i R_S and battery state/ monitor)
  - high immunity of interference voltage
- **Measurement of ground resistivity (Wenner´s method):**
  - the earth resistivity measurement with the possibility to introduce
  - the distancw between electrodes
  - automatic calculation and displaying the resistivity
- **Measurement of resistance using a two- or four-pole technique**
- **Built in battery charger**
- **Memory of 300 measurement results with the ability to transfer the data to a PC**
- **Meter meets the requirements of the standard EN61557**

- **Electric security**
  - type of insulation: double, acc. to EN 61010-1
  - measurement category: CAT III 300V acc. to EN61010-1
  - protection class: IP 54
- **Other technical data:**
  - power supply: 5 batteries LR14(C) or Ni-MH battery package
  - charge power supply: 100...250V, 50...60Hz
  - display: LCD, 20 mm high
- **Rated operational conditions:**
  - operating temperature: 0...+40°C
  - max. interference voltage AC + DC at which the measurement is still performed: 24V ($68V_{P-P}$)
  - test current for resistance value =< 100 Ω: 225mA
  - max. measured voltage: 40V
  - test current frequency: 128Hz

Standard equipment

- Test lead (length: 50 m) on the reel with banana plug yellow (WAPRZ050YEBBSZ)
- Test lead (length: 25 m) on the reel with banana plug, red (WAPRZ025REBBSZ)
- Test lead with banana plug 1,2m; yellow (WAPRZ1X2YEBB)
- Test lead with banana plugs 2,2m (WAPRZ2X2BLBB)
- Pin probe with banana connector;yellow (WASONYEOGB1)
- „Crocodile" clip K01; black (WAKROBL20K01)
- Earth contact test probe (rod) 0,3m (WASONG30)
- Carrying case L2 (WAFUTL2)
- Hanging straps (WAPOZSZE1)
- User Manual
- Calibration Certificate
- 5 batteries LR14

Optional Equipment

- Cable for battery charger (WAPRZLAD230)
- Test wire reel (WAPOZSZP1)
- Earth contact test probe (rod) 0.8 m (WASONG80)
- Carrying case L3 for Earth contact test probe (rod) 0.8 m (WAFUTL3)
- Cramp (WAZACIMA1)
- Current clamp C-3 (=52 mm) (WACEGC3OKR)
- Ni-MH battery package 7.2 V, 3 Ah (WAAKU05)
- USB 1.1/RS232 adaptor (WAADAUSBRS232)

Earth resistance measurement (three-, four pole method)

Measurement range acc. to IEC 61557: 0.12 Ω..20 kΩ

Range	Resolution	Accuracy
0.0.. 9.99 Ω	0.01 Ω	±(3% m.v. + 3 digits)
10.0.. 99.9 Ω	0.1 Ω	±(2% m.v. + 2 digits)
100.. 999 Ω	1 Ω	±(2% m.v. + 2 digits)
1.0..9.99 kΩ	10 Ω	±(2% m.v. + 2 digits)
10.0..20.0 kΩ	100 Ω	±(2% m.v. + 2 digits)

Earth resistance measurement using clamps

Measurement range acc. to IEC 61557: 0.16Ω..20kΩ

Range	Resolution	Accuracy
0.0.. 9.99 Ω	0.01 Ω	±(8% m.v. + 3 digits)
10.0.. 99.9 Ω	0.1 Ω	±(8% m.v. + 2 digits)
100.. 999 Ω	1 Ω	±(8% m.v. + 2 digits)
1.0..9.99 kΩ	10 Ω	±(8% m.v. + 2 digits)
10.0..20.0 kΩ	100 Ω	±(8% m.v. + 2 digits)

Ground resistivity measurement

Range	Resolution	Accuracy
0.0.. 9.99 Ω	0.01 Ω	±(3% m.v. + 3 digits)
10.0.. 99.9 Ω	0.1 Ω	±(2% m.v. + 2 digits)
100.. 999 Ω	1 Ω	±(2% m.v. + 2 digits)
1.0..9.99 kΩ	10 Ω	±(2% m.v. + 2 digits)
10.0..20.0 kΩ	100 Ω	±(2% m.v. + 2 digits)
100...999 kΩ	1 kΩ	±(2% m.v. + 2 digits)

=> m.v. = measured value