# **MEASURING EQUIPMENT**

# Earth resistance and resistivity tester MRU-105

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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<sub>µ</sub> i R<sub>s</sub> and battery state/
- 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

# Standard equipment

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

# **Optional Equipment**

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

# German Cathodic Protection





#### Electric security

- type of insulation
- measurement category
- protection class

### Other technical data:

- power supply
- charge power supply
- display

# Rated operational conditions:

- operating temperature
- max. interference voltage AC + DC at which the measurement is still 24V (68V<sub>P-P</sub>)
- performed test current for resistance
- value =< 100  $\Omega$ max. measured voltage
- test current frequency
- (WAPRZ050YEBBSZ) (WAPRZ025REBBSZ)
- (WAPRZ1X2YEBB)
- (WAPRZ2X2BLBB)
- (WASONYEOGB1)
- (WAKROBL20K01)
- (WASONG30)
- (WAFUTL2)
- (WAPOZSZE1)

(WAPRZLAD230)

(WACEGC3OKR)

(WAADAUSBRS232)

(WAPOZSZP1)

(WASONG80)

(WAFUTL3) (WAZACIMA1)

(WAAKU05)

Earth resistance measurement (three-, four pole method)

Measurement range acc. to IEC 61557: 0.12  $\Omega$ ..20 k $\Omega$ 

double, acc. to EN 61010-1

IP 54

CAT III 300V acc. to EN61010-1

5 batteries LR14(C) or Ni-MH

battery package 100...250V, 50...60Hz

LCD, 20 mm high

0...+40°C

225mA

128Hz

40V

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	1Ω	±(2% m.v. + 2 digits)
1.09.99 kΩ	10 Ω	±(2% m.v. + 2 digits)
10.020.0 kΩ	100 Ω	±(2% m.v. + 2 digits)

### Earth resistance measurement using clamps Measurement range acc. to IEC 61557: $0.16\Omega..20k\Omega$

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	1Ω	±(8% m.v. + 2 digits)
1.09.99 kΩ	10 Ω	±(8% m.v. + 2 digits)
10.020.0 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	1Ω	±(2% m.v. + 2 digits)
1.09.99 kΩ	10 Ω	±(2% m.v. + 2 digits)
10.020.0 kΩ	.00 22	±(2% m.v. + 2 digits)
100999 kΩ	1 kΩ	±(2% m.v. + 2 digits)

=> m.v. = measured value