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EARTH RESISTANCE METER
MRU-21

PN-EN 61557

Possible measurements:
- earth resistance measurment with 3-pole method,
- measurement of continuity of equipotential bondings and protective conductors with auto-zero function - with current 200mA,
- resistance measurement using 2-pole method.

Standard accessories of the meter MRU-21:

- Test lead with banana plug; 1,2m; blue	**WAPRZ1X2BUBB**
- Test lead with banana plug 2,2m; black	**WAPRZ2X2BLBB**
- Test lead on a reel with banana plugs; 30m; red	**WAPRZ030REBBSZ**
- Teast leand on a reel with banana plugs; 15m; blue	**WAPRZ015BUBBSZ**
- "Crocodile" clip K02; blue	**WAKROBU20K02**
- USB cable	**WAPRZUSB**
- Earth contact test probe (rod); 0,30m (2 pc.)	**WASONG30**
- Carrying case L4	**WAFUTL4**
- „Crocodile" clip K01; black	**WAKROBL20K01**
- Set of hanging straps	**WAPOZSZEKPL**
- Box for batteries	**WAPOJ1**
- Batteries package (4 pc.- LR14)	
- Calibration certificate issued by calibration laboratory	

Optional accessories of the meter MRU-21:

- Earth contact test probe (rod); 0,80m	**WASONG80**
- Carrying case L3	**WAFUTL3**
- Test lead on a reel with banana plugs; 25m; blue	**WAPRZ025BUBBSZ**
- Test lead on a reel with banana plugs; 50m yellow	**WAPRZ050YEBBSZ**
- Test wire reel	**WAPOZSZP1**
- Crocodile clip K02; red	**WAKRORE20K02**
- Cramp	**WAZACIMA1**
- Software for creation of documentation from electrical measurements „SONEL PE4"	**WAPROSONPE4**
- Hardware Adapter for Sonel PE program	**WAADAKEY1**

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MRU-21

EARTH RESISTANCE METER

- **It allows to take:**
  - earth resistance measurement using auxiliary probes with 3-pole method, measurements with max. resistance of auxiliary probes 50kΩ
  - resistance measurement using 2-pole 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 200mA.

- **Additionally:**
  - measurement of resistance of auxiliary electrodes R_S and R_H ,
  - measurement of interference voltage,
  - high immunity to interference voltage
  - selection of maximum measuring voltage (25V and 50V),
  - memory of 990 measurement results
  - data transmission to the computer (USB)
  - indication of battery state.

Electric security:

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

Rated operational conditions:

- operation temperature	-10...+55°C
- storage temperature	-20...+70°C
- humidity	20...80%

Other technical data:

- LCD display	segment, backlit
- interface	USB
- number of measurements carried out of set of batteries	> 1000 (5 Ω , 2 meas./min.)
- warranty	3 years
- dimentions	288x223x75mm
- weigth	1,4kg

Measurement of earthing resistance

measurement range to IEC61557-5: **0,50Ω…1,99kΩ for U_n=50V;**
0,68Ω…1,99kΩ for U_n=25V;

Range	Resolution	Accuracy
0,00...9,99Ω	0,01Ω	±(2% m.v. + 3 digits)
10,0...99,9Ω	0,1Ω	
100...999Ω	1Ω	
1,00k...1,99kΩ	0,01kΩ	

· measurement current: under short circuit >20mA,
· voltage on open terminals: selectable <25V AC or <50V AC,
· frequency of measurement current: 125Hz

Measurement of resistance of auxiliary electrodes R_H i R_S

Range	Resolution	Accuracy
0...999Ω	1Ω	±(5% (R_S+R_E+R_H) + 3 digits)
1,00k...9,99kΩ	0,01kΩ	
10,0k...50,0kΩ	0,1kΩ	

Measurement of interference voltage U_N (RMS)

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

· measurement for DC and AC 45…65 Hz

Measuremet of continuity of equipotential bondings and protective conductors

measurement range to IEC61557-4: **0,13Ω…199Ω**

Range	Resolution	Accuracy
0,00...9,99Ω	0,01Ω	±(2% m.v. + 3 digits)
10,0...99,9Ω	0,1Ω	
100...199Ω	1Ω	

- measuring method: technical 2-pole method,
· max. voltage on open terminals: 13V,
· measurement current: under short circuit >200mA,
· auto-zero function for measurement leads