

# Protective earth resistance meter

## RMO100E

- Lightweight – only 8 kg / 17.6 lbs
- Powerful 1 A – 100 A DC
- Measuring range 0,1  $\mu\Omega$  – 25,00  $\Omega$
- Resolution to 0,1  $\mu\Omega$
- SINGLE and CONTIN Modes
- Mechanical protection IP43



### Description

RMO100E is ideal for testing the protective bonding (grounding) of equipment following the standard 61010-1 IEC 2001. This standard specifies for plug connected equipment and for permanently connected equipment the following requirements:

The protective earth resistance should be below 0,1 $\Omega$  or voltage between the protective conductor terminal and each accessible conductive part for which protective bonding is required not to exceed 10 V.

Conformity is checked by applying a test current for 1 minute and then calculating impedance, or measuring the voltage between the protective conductor terminal and each accessible conductive part for which protective bonding is required.

The test current should be greater of 25 A or twice the rated current for plug connected equipment, or twice the value of the overcurrent protection for the permanently connected equipment.

For both of these applications RMO100E can provide the right tool for verification of the conformity. Applying current up to the value of 60A and the ability of RMO100E to provide in the

CONTIN menu (continuous operation) test current for the pre-set test duration (equal or exceeding 1 min) - gives an user possibility to easily check the protective bonding/grounding of the equipment. The full load voltage of 12V assures that the measurement is executed properly and that the result obtained (pass fail classification) is accurate.

RMO100E generates true DC current with automatically regulated test ramps. During the test RMO100E ramps with increasing current before measuring and decreasing current after the measurement. This eliminates magnetic transients. After the test current has been set, the automatic test procedure is started by pressing the *START* button.

The RMO100E instrument can store up to 500 measurements. All measurements are time and date stamped. Using DV-Win software a test can be performed from a PC, and the results can be obtained directly at a PC Communication

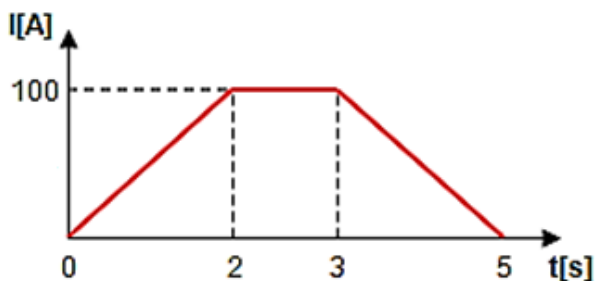
between RMO100E and PC is through USB or RS232 cable. Using DV-Win the result can be arranged as an Excel spreadsheet which can be later shown as a diagram and printed for a report.

The set is equipped with thermal and overcurrent protection. The RMO100E has very high ability to cancel electrostatic and electromagnetic interference in HV electric fields. It is achieved by very efficient filtration. The filtration is made utilizing proprietary hardware and software.

### Single Test

The RMO100E instrument generates a filtered (true ripple-free) DC current and output it in an automatically regulated current ramp. By sloping the current up and down, magnetic transients are virtually eliminated.

Below is an example of single test ramp for the 100 A current.



### Application

Typical application is measuring of protective earth resistance of equipment in compliance with IEC 61010-1 safety standard.

Other application is measuring resistance of:

- High, middle and low voltage circuit breakers
- High, middle and low voltage disconnecting switches
- High-current bus bar joints
- Cable splices
- Welding joints

### CONTIN Mode

RMO100E can generate a DC current continuously using the CONTIN menu. In this menu the current can be chosen the same way as in the SINGLE menu, but the duration of the test can be preset. The test is started pressing the *START*-button. During the test, a new result is shown on the display and stored into the PC (DV-Win) each second. Using DV-Win the result can be arranged as an Excel spreadsheet which can be later shown as a diagram and printed for a report.

### Output Ratings

The full output is available from the RMO100E at 230 V or 115 V Mains Supply.

Supply Voltage	Output Current	Full Load Voltage
230 V AC	100 A DC smoothed	12,0 V DC
115 V AC	100 A DC smoothed	12,0 V DC

Output current is filtered and has a ripple of less than 1 %.

## Technical data

### Mains power supply

- Connection according to IEC/EN60320-1; C320
- Mains supply: 90 V – 264 V AC
- Frequency: 50 / 60 Hz
- 12 A / 250 V, type F

### Output data

- Test current 1 A – 100 A DC
- Full Load Voltage: 12,0 V DC at 100 A  
\*At 230 V of supply voltage

### Measurement

- Resistance range 0,1  $\mu\Omega$  – 25,00  $\Omega$
- Resolution:
 

0,1 $\mu\Omega$ – 999,9 $\mu\Omega$	0,1 $\mu\Omega$
1,000 m $\Omega$ – 9,999 m $\Omega$	1,0 $\mu\Omega$
10,00 m $\Omega$ – 99,99 m $\Omega$	10 $\mu\Omega$
100,0 m $\Omega$ – 999,9 m $\Omega$	0,1 m $\Omega$
1,000 $\Omega$ – 9,999 $\Omega$	1 m $\Omega$
10,00 $\Omega$ – 25,00 $\Omega$	10 m $\Omega$
- Typical accuracy  $\pm$  (0,1 % rdg + 0,1 % FS)

### Display

- LCD screen 20 characters by 4 lines; LCD display with backlight, visible in bright sunlight

### Interface

- RMO100E is equipped with an USB port (optional: RS232) to connect to an external computer

### Test Result Storage

- RMO100E can store up to 500 measurements

### Printer (optional)

- Thermal printer
- Paper width 80 mm / 3.2 in

### NOTE

*The print density is guaranteed within the range 5°C to 40°C, 20 to 85% relative humidity, no condensation. The printer can operate from 0°C to 50°C.*

### Environmental conditions

- Operating temperature: -10 °C - +55 °C / +14 °F - +131 °F
- Storage & transportation: -40 °C - +70 °C / -40 °F - +158 °F
- Humidity 5 % - 95 % relative humidity

### Dimensions and weight

- Dimensions (W x H x D):  
198 mm x 255 mm x 380 mm  
7,8 in x 10 in x 15 in
- Weight: 8 kg / 17.6 lbs

### Environmental protection

- Ingress protection rating: IP43

### Warranty

- 3 Years

### Applicable Standards

- Installation/overvoltage: category II
- Pollution: degree 2
- Safety: Directive 2014/35/EU (CE conform)  
Applicable standards, for a class I instrument, pollution degree 2, Installation category II: IEC EN 61010-1
- EMC: Directive 2014/30/EU (CE conform)  
Applicable standard: EN 61326-1
- CAN/CSA-C22.2 No. 61010-1, 2nd edition, including Amendment 1

*All specifications herein are valid at ambient temperature of + 25 °C and recommended accessories. Specifications are subject to change without notice*



**Current cables**



**Extension current cables**



**Voltage sense cables**



**Test shunt**



**Transport case**



**Cable bag**

## Order info

Instrument with included accessories	Article No
<b>Micro Ohmmeter RMO100E</b>	<b>RMO100E-N-00</b>
DV-Win PC software	
Ground cable	
USB cable	

Recommended accessories	Article No
Current cables 2 x 5 m 16 mm <sup>2</sup> with battery clips	C2-05-16LMB1
Sense cables 2 x 5 m with alligator clips	S2-05-02BPA2
Transport case	HARD-CASE-ME

Optional	Article No
Cable bag	CABLE-BAG-00
Test shunt 100 μΩ (600 A/60 mV)	SHUNT-600-MK
Current cables 2 x 10 m, 16 mm <sup>2</sup> with battery clips	C2-10-16LMB1
Current cables 2 x 15 m, 25 mm <sup>2</sup> with battery clips	C2-15-25LMB1
Current extension cable 2 x 10 m, 16 mm <sup>2</sup>	E2-10-16LMLF
Sense cables, extension 2 x 10 m	E2-10-02BPBP
Sense cables 2 x 10 m with alligator clips	S2-10-02BPA2
Sense cables 2 x 15 m with alligator clips	S2-15-02BPA2
Built-in thermal printer	PRINT-080-00