Handheld Micro Ohmmeter RMO200H

- Handheld – only 0,9 kg / 2.0 lbs
- Powerful – up to 220 A DC
- Battery supplied
- Measuring range 0,1 μΩ – 1000 mΩ
- Typical accuracy 0,2 %
- Testing under Both Sides Grounded conditions
- Rmax function

Description

RMO200H is a handheld Micro Ohmmeter based on a state of the art technology, using the most advanced switch mode technique available today. RMO200H is the battery supplied device, independent from the mains power supply. The ultra-capacitor enables generating a true DC ripple-free current up to 220 A. During a test the current is decreasing directly proportionally to instantaneous rate of ultra-capacitor voltage change, as per formula below:

$$i = C \times \frac{dv}{dt}$$

i - *Instantaneous current through the ultra-capacitor*

$\frac{dv}{dt}$ - *Instantaneous rate of ultra-capacitor voltage change*

C - *Capacitance in Farads*

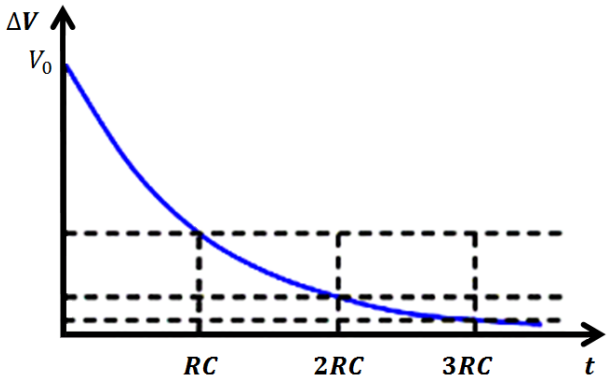
The RMO200H instrument can store internally up to 1 000 measurements. The results are saved on the micro SD card. All measurements are time and date stamped. DV-Win software enables download and analysis of the results, creating and exporting test reports in different formats, as well as full control of the test device. Communication between the RMO200H and a PC is through a USB cable.

The set is equipped with the thermal and overcurrent protection. The RMO200H has a very high ability to cancel electrostatic and electro-magnetic interference in HV electric fields. This is achieved by very efficient filtration utilizing a proprietary hardware and software.

The RMO200H instrument has three separate test modes, depending of the test duration:

- 0,1 s test mod
- 0,6 s test mode
- 3 s test mode

The 0,1 s test mode is recommended as the most practical test mode approach since it provides the largest number of measurements within one ultra-capacitor charge. This is because the longer testing time causes higher ultra-capacitor voltage drop. The graph below illustrates a pattern of an electric potential difference across the ultra-capacitor during its discharge:



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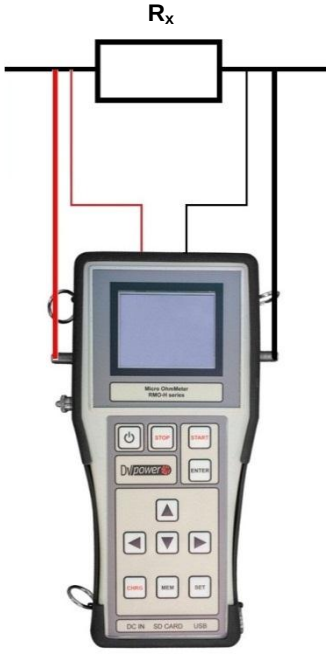
Application

Typical application is measuring a resistance of non-inductive test objects:

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

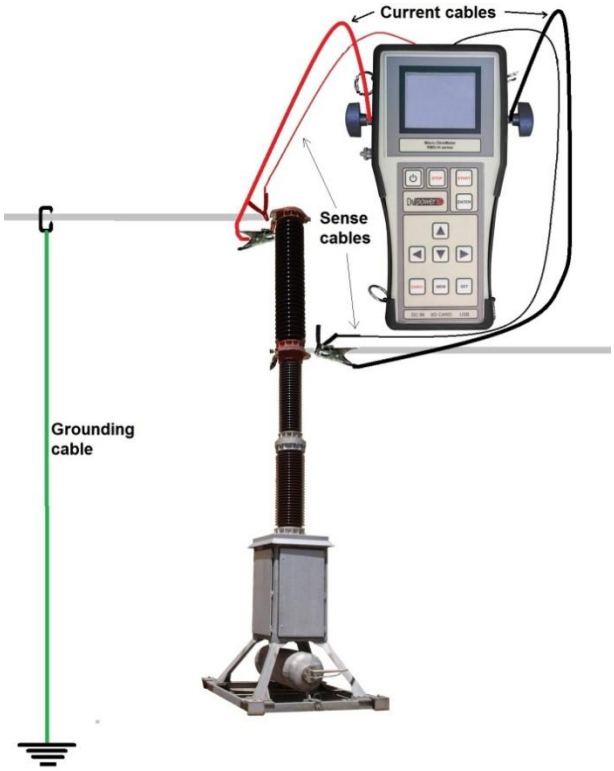
Connecting RMO200H to test object

When separate current and voltage sense cables are used, the RMO200H should be connected to the a test object (RX) in such a way that the measuring cables from the "Voltage Sense" sockets are attached as close as possible to the Rx, and inside the current feeding cables loop. In this way, resistances of both, cables and clamps are almost completely eliminated from the resistance measurement.



When testing circuit breakers with RMO200H a different cables length may be used. The short cable (red cable, 1,3 m) connects the RMO200H to the CB's bushing close to the test person and the device, while the long cable (black cable, 3 or 5 m) is connected to a further away positioned bushing on the other side of the breaking point.

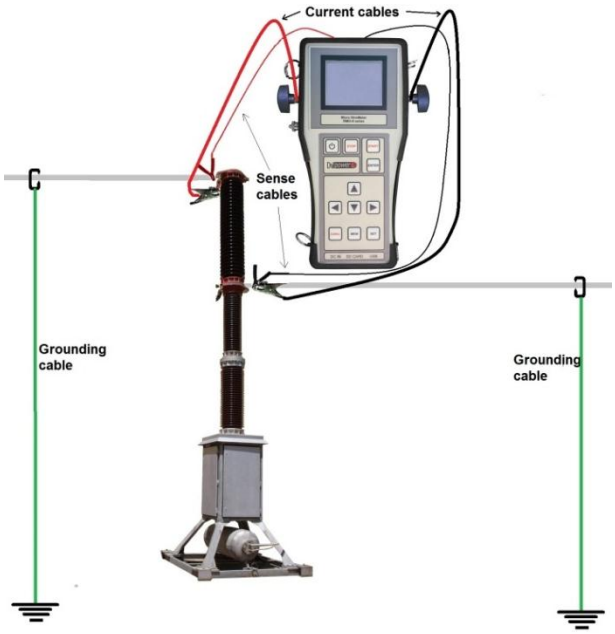
The connection diagram is illustrated in the figure below:



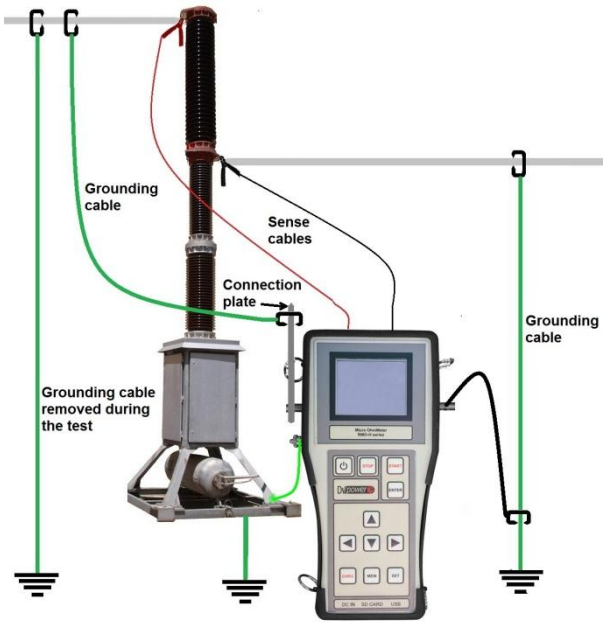
Both Sides Grounded Unit

The RMO200H device provides a safe measurement of circuit breakers with both terminals grounded.

There are two connection methods applicable for this type of a measurement. The first type of a connection is the same as for the one-side-grounded circuit breakers. This type of measurement could be less accurate comparing to a traditional one-side-grounding measurement, because of a small amount of the current that can flow through groundings.



The second connection method for the BSG measurement is a simple measurement approach using the existing circuit breaker grounding cables with no additional cable connections to the circuit breaker. Injection of the test current is done through the existing grounding cable (earthing). Optional cable kits and connection plate are needed for this type of a measurement.



Benefits and features

RMO200H is a stand-alone instrument with a very user-friendly interface. The user needs only a few clicks to set and start a preferred test. This is achieved with an intuitive keyboard and menu design.

RMO200H has built-in two lithium-ion batteries which charge the ultra-capacitor to the preferred voltage level and provides a true DC ripple-free current of up to 220 A.

Depending of the required test duration the three different test modes are available for testing: 0,1 sec, 0,6 sec and 3 sec. The minimal test current is automatically calculated from the ultra-capacitor voltage level and test duration information. It is represented with one of the two possible values: **I_{min} > 50 A** or **I_{min} > 100 A**.

The ultra-capacitor charging is automatically initiated after turning on the device. This measurement principle enables multiple measurements with no need for recovery time between the tests. When the ultra-capacitor is fully charged, around 65 consecutive 0,1 sec test measurements can be done until the minimal test current falls from 200 A to 50 A, with no rest time needed between tests. Approximately 1200 consecutive measurements with 0,1 sec duration can be done with only one batteries charging.

If the ultra-capacitor voltage is not at a sufficient level the ultra-capacitor will automatically start charging until the preferred level is reached. The user can also initiate the ultra-capacitor charging at any moment by pressing the CHARGE button.

The instrument has a very high typical accuracy with the best resolution of 1 μΩ.

The additional feature is the pass/fail criteria implemented through the Rmax function. When this function is turned ON, the RMO200H device displays information if the measured resistance is higher than the set Rmax resistance value.

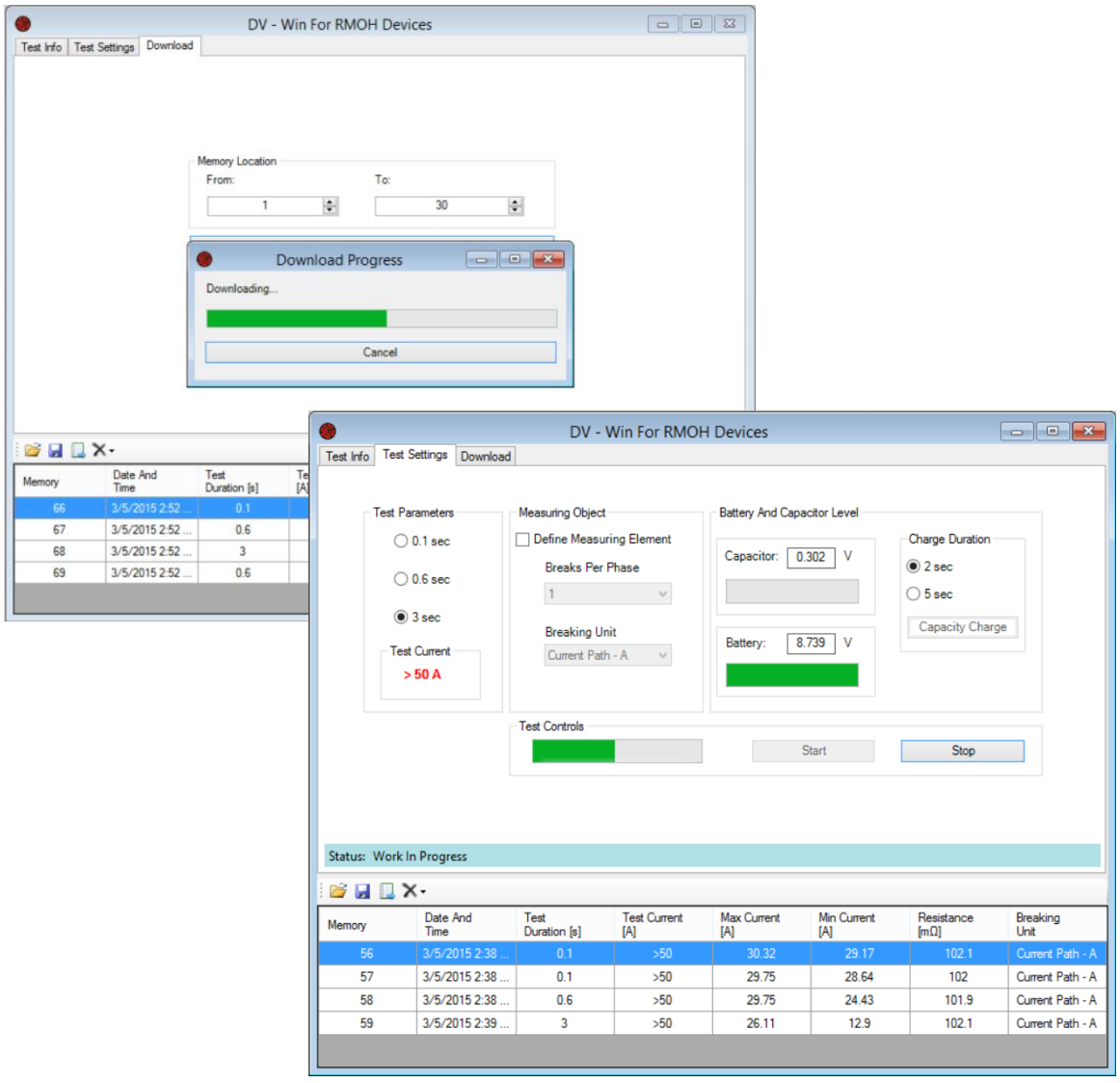
DV-Win software

*included in the purchase price

DV-Win Software for the RMO200H device is an application set of tools based on the Windows operating system. It enables the two-way communication between the RMO200H device and a standard PC over the USB connection.

The main features of the software are:

- Full control of the device in a test
- Analysis of the test results
- Saving the test results in different formats
- Test reports generation after the test
- Printing and exporting the test reports in different formats
- Several filters for results download to a PC



Technical data

Battery

- Type 2 Cell – 2600 mAh Li-Ion
- Voltage 3,7 V
- Charge time 6 hours

AC Adapter

- Input voltage 90 – 264 V AC, 50/60 Hz
- Output voltage 12 V DC
- Output current 0,5 A

Output data

- Test current: up to 220 A DC
- Test duration: 0,1 s; 0,6 s; 3 s (selectable)
- Typical number of measurements on fully charged ultra-capacitor with no rest time required:

  Typ. 65 at 210 A ≥ Imin ≥ 50 A; 0,1 s test

  Typ. 10 at 200 A ≥ Imin ≥ 50 A; 0,6 s test

  Typ. 3 at 120 A ≥ Imin ≥ 50 A; 3 s test
- Typical number of measurements on fully charged batteries:

  Typ. 1200 at 210 A ≥ Imin ≥ 50 A; 0,1 s test

  Typ. 250 at 210 A ≥ Imin ≥ 50 A; 0,6 s test

Measurement

- Resistance range 0 - 1000 mΩ
- Resolution

0 – 999,9 µΩ	0,1 µΩ
1,000 – 9,999 mΩ	0,001 mΩ
10,00 – 99,99 mΩ	0,01 mΩ
100,0 – 1000 mΩ	0,1 mΩ

- Typical accuracy ± (0,2 % rdg + 0,2 % FS);

Display

- Type: TFT LCD 3.1 in
- Viewing Area

  43,2 mm x 57,6 mm / 1.8 in x 2.3 in
- Resolution: 320 x 240 pixels

Interface

- USB: Device to PC connection
- optional: Bluetooth

Memory

- Internal: 2 GB SD Card
- RMO200H can store up to 1000 measurements

Real time clock

- Precision: ±5 seconds per month
- Calendar: 100 year with a leap year detection
- Time retention: 10+ years (battery removed)

Environment conditions

- Temperature -10 °C - +45 °C / 14 °F - +113 °F
- Maximum relative humidity 95 % for temperatures of up to 31 °C, decreasing linearly to 40 % relative humidity at 55 °C
- Pollution degree 2
- Insulation category II

Dimensions and Weight

- Dimensions (L x W x D):

  253 mm x 116 / 89 / 96 mm x 46 / 36 mm

  10 in x 4.6 / 3.5 / 3.8 in x 1.8 / 1.4 in
- Weight: 0,9 kg / 2.0 lbs.

Warranty

- Three years

Applicable Standards

- Installation/overvoltage: category II
- Pollution: degree 2
- Safety: LVD 2006/95/EC (CE Confirm)

  EN61010-1
- EMC: Directive 2004/108/EC (CE Confirm)

  Standard EN 61326-1:2006
- CAN/CSA-C22.2 No. 61010-1, 2nd edition, including Amendment1

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

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Current cables and Sense cables with TTA clamps (combined)

Current cables with battery clamps
Sense cables with alligator clamps

Transport case with included device accessories and cables

Carrying strap

Power supply adapter

Screws for current connectors

* Besides battery clamps, current cables are also available with C clamps or with alligator clamps (as option)
** Besides semi-isolated alligator (A1) clamps, sense cables are also available with isolated alligator (A2) clamps or with TTA clamps (as option)

Order info

Instrument with included accessories	Article No
Handheld Micro Ohmmeter RMO200H	RMO200H-N-00
DV-Win PC software including mini USB cable	
Transport case	
Rubber holster, Carrying strap and Belt clip	
Ground (PE) cable	

Recommended accessories	Article No
Current cables 1,3 m and 3 m 16 mm2 and Sense cables 1,3 m and 3 m with TTA clamps	CS-13-10CLWC
Power supply adapter	PWR-AD05A-EU

Optional accessories	Article No
Current cables 2 x 1,3 m 10 mm^2 and Sense cables 2 x 1,3 m with TTA clamps	CS-01-10CLWC
Current cables 1,3 m and 5 m 25 mm^2 and Sense cables 1,3 m and 5 m with TTA clamps	C-105-25CLWC
Current cables 2 x 1,3 m 10 mm2 with battery clamps (B1)	CS-01-10CLB1
Current cables 1,3 m and 3 m 16 mm2 with battery clamps (B1)	C-103-16CLB1
Current cables 1,3 m and 5 m 25 mm2 with battery clamps (B1)	C-105-25CLB1
Sense cables 2 x 1,3 m with alligator clamps (A1)	S2-01-02BPA1
Sense cables 1,3 m and 3 m with alligator clamps (A1)	S-103-02BPA1
Sense cables 1,3 m and 5 m with alligator clamps (A1)	S-105-02BPA1
Transport case	HARD-CASE-00
Test shunt 100 µΩ (600 A/60 mV)	SHUNT-600-MK

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