



## Winding OhmMeter RMO40T

- Lightweight - only 8,5kg
- Test current 5mA - 40A DC
- Measuring range 0,1 $\mu\Omega$  - 2k $\Omega$
- Two voltage sense channels
- Extremely quick measurement
- Automatic discharge circuit



### High DC current resistance meter for transformers/motors

#### Description

The ohmmeter RMO40T is designed for resistance measurement of inductive test objects. RMO40T generates true, filtered DC current. Both injection of current and discharge of energy from the inductance are automatically regulated.

RMO40T injects current with a voltage as high as 60V. This ensures that the duration of test is as short as possible, and that the desired test current is reached as soon as possible. Two independent channels enable testing of two series windings, or primary and secondary windings. There is enough memory within RMO40T instrument to store 500 measurements. All measurements are time and date stamped.

The set is equipped with thermal and overcurrent protection. The RMO40T 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 appropriate hardware and software.

#### On Load Tap Changers

The RMO40T can be used to measure winding resistance of individual taps of a power transformer's tap changer. It can also check whether the on-load tap changer (OLTC) switches without an interruption. The moment a tap position is changed from one tap to another, the device detects a sudden, very short drop of the current. A properly working tap changer differs from a malfunctioning one. This is obvious from an interruption during the change, and by the magnitude of the ripple. An interruption will result in much higher ripple value than a properly functioning tap changer that operates without interruption.

#### RMOWin-T

Using RMOWin-T software, tests could be performed from a PC, and results can be obtained directly at a PC. Utilizing RMOWin-T software, results can be arranged in an Excel spreadsheet, which can be shown later as a diagram and printed for a report.

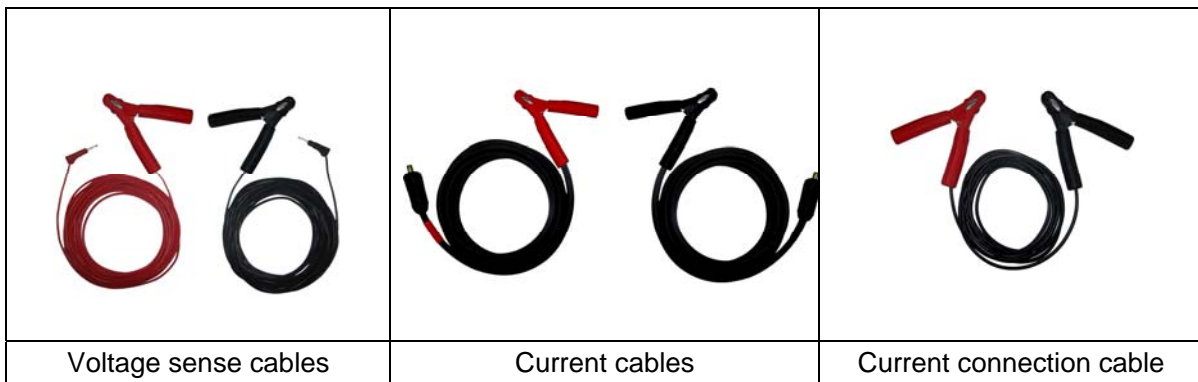
## Typical application

Typical application of RMO40T is measuring the resistance of:

- ✓ Power transformers
- ✓ On-Load Tap Changers
- ✓ Generators and electrical motors
- ✓ High-current busbar joints
- ✓ Cable splices

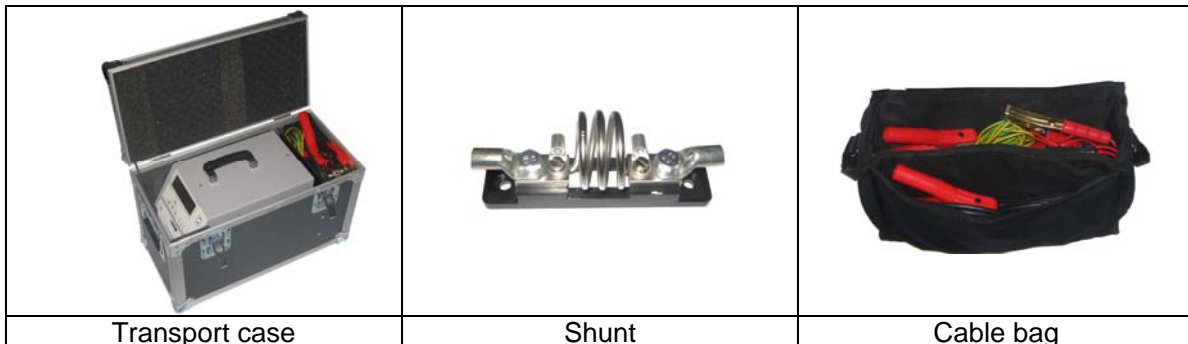
## Standard accessories

- ✓ RMOWin-V2 PC software including RS232 cable
- ✓ Current cables 2x10m 10mm<sup>2</sup>
- ✓ Sense cables 2x2x10m 2,5mm<sup>2</sup>
- ✓ Current connection cable 1x5m 6mm<sup>2</sup>
- ✓ Mains power cable
- ✓ Ground (PE) cable
- ✓ Transport case



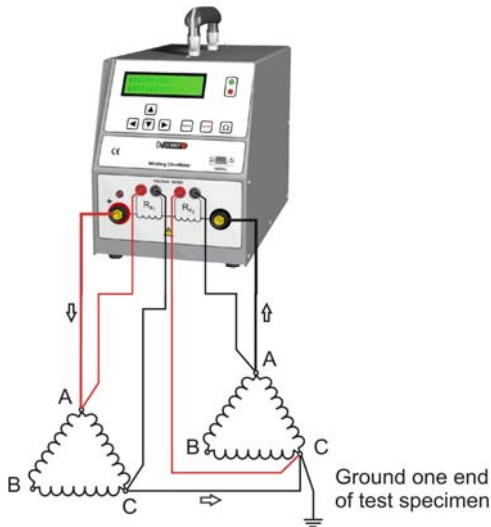
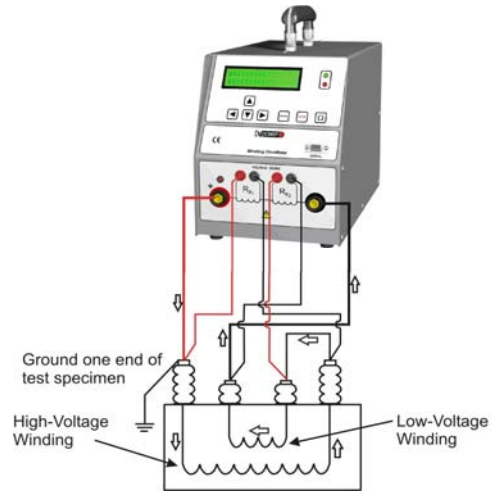
## Optional accessories

- ✓ Built-in thermal printer
- ✓ Test shunt 50A/100 mV
- ✓ Current cables 2x15m 10mm<sup>2</sup>
- ✓ Sense cables 2x2x15m 2,5mm<sup>2</sup>
- ✓ Cable bag



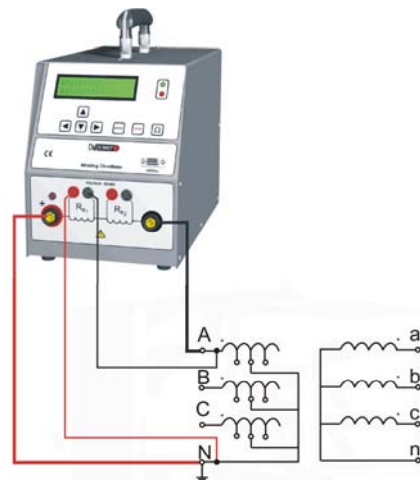
## Connecting a Test Object to RMO40T

The RMO40T should be turned off, connection between RMO40T and the test object is such that the measuring cables from the "Voltage Sense" sockets are attached as close as possible to the measured resistance, while they are connected between the current feeding cables. That way, resistance of cables and clamps is almost completely excluded from the resistance measured. The figure to the right shows simultaneous testing of both windings (high and low) on a single-phase transformer. In such a way, it is possible to speed up the measurement when two channels are used to test both windings of the transformer.



Testing of a Delta-delta winding resistance is usually a very time consuming procedure. This is because the two windings represent two closed loop inductors. When energy is brought into the inductors, this energy (in the form of D.C. current) continually circulates within each winding. To test this configuration quickly, both high and low sides should be connected in series with the current source of a Transformer Ohmmeter. By having these two windings in opposing polarity, the internal circulating currents settle very quickly to obtain a balance, and discharge with the same speed. Even if only one side of the transformer needs to be tested, connecting both high and low windings in series will speed up the test considerably.

Using RMO40T's TapChanger menu, the power transformer winding resistance of individual tap positions can be measured. Also, you can check whether the on-load tap changer switches without an interruption. The RMO40T current output injects a constant current into a power transformer. This current and voltage value is measured, and the winding resistance is calculated.



## Technical data

### 1 - Mains Power Supply

- Connection according to IEC/EN60320-1; UL498, CSA 22.2
- Voltage single phase 110 - 240V AC, +10% - -15%
- Frequency 50/60Hz

### 2 - Output data

- Test current 5mA DC - 40A DC
- Measuring range / Resolution
  - 0,1 $\mu\Omega$  - 999,9 $\mu\Omega$  0,1 $\mu\Omega$
  - 1,000m $\Omega$  - 9,999m $\Omega$  1 $\mu\Omega$
  - 10,00m $\Omega$  - 99,99m $\Omega$  10 $\mu\Omega$
  - 100,0m $\Omega$  - 999,9m $\Omega$  0,1m $\Omega$
  - 1,000 $\Omega$  - 99,99 $\Omega$  10 m $\Omega$
  - 100,0 $\Omega$  - 999,9 $\Omega$  0,1 $\Omega$
  - 1000 $\Omega$  - 2000 $\Omega$  1 $\Omega$
- Typical accuracy  $\pm(0,2\% \text{ rdg} + 0,2\% \text{ FS})$

### 3 – Environmental conditions

- Operating temperature -10 $^{\circ}\text{C}$  - +50 $^{\circ}\text{C}$  / 14 $^{\circ}\text{F}$  - +122 $^{\circ}\text{F}$
- Storage and transportation -25 $^{\circ}\text{C}$  - +70 $^{\circ}\text{C}$  / -13 $^{\circ}\text{F}$  - +158 $^{\circ}\text{F}$
- Humidity 5% - 95% relative humidity, non condensing

### 4 - Dimensions and Weight

- Dimensions 198 x 255 x 380mm  
7,8 x 10 x 15in  
(W x H x D) without handle
- Weight 8,5 kg/18,7lb

### 5– Safety Standards

- European standards EN 61010-1
- International standards IEC 61010-1

### 6 – Electromagnetic Compatibility (EMC)

- CE conformity EMC standard 89/336/EEC
- Emission EN 50081-2, EN 61000-3-2/3
- Interference Immunity EN 50082-2

Specifications are subject to change without notice.



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