



Winding Ohmmeter & Tap Changer Test Set RMO100TD

- Test current 5 mA – 100 A DC
- Dynamic resistance measurement
- Rapid automatic demagnetization
- AC Current monitoring channel
- Measuring range 0,1 $\mu\Omega$ - 2 k Ω
- Two voltage sense channels
- Extremely quick measurement
- Automatic discharge circuit
- Built-in Tap Changer Control Unit



High DC current resistance meter for transformers & tap changer test set

Description

The Winding Ohmmeter & Tap Changer Test Set RMO100TD is designed for on-load tap changer analysis and resistance measurement of inductive test objects. RMO100TD generates true DC ripple free current. Both injection of current and discharge of energy from the inductance are automatically regulated.

RMO100TD injects current with a voltage as high as 60 V. This ensures that the duration of test is as short as possible, and that the desired test current is reached faster. Two independent channels enable testing of two series windings, or primary and secondary windings. There is enough memory within RMO100TD instrument to store 500 measurements. All measurements are time and date stamped.

The set is equipped with thermal and overcurrent protection. The RMO100TD 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 RMO100TD 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, by the magnitude of the current ripple and also by the transition time. Malfunctioning behaviour of Tap Changer will result in much higher current ripple value and by changed transition time than a properly functioning Tap Changer.

Demagnetization Feature

After a DC current test, such as a winding resistance measurement, the magnetic core of a power or instrument transformer may be magnetized (remanent magnetism). Also, when disconnecting a transformer from service, some amount of magnetic flux trapped in the core could be present.

The remanent magnetism can cause various problems such as erroneous diagnostic electrical measurements on a transformer, or an Inrush current at start-up of power transformer, or incorrect operation of protective relays due to magnetized CT cores.

To eliminate this source of potential problems, demagnetization should be performed. When a discharging process has terminated, the RMO100TD can perform fully automatic demagnetization.

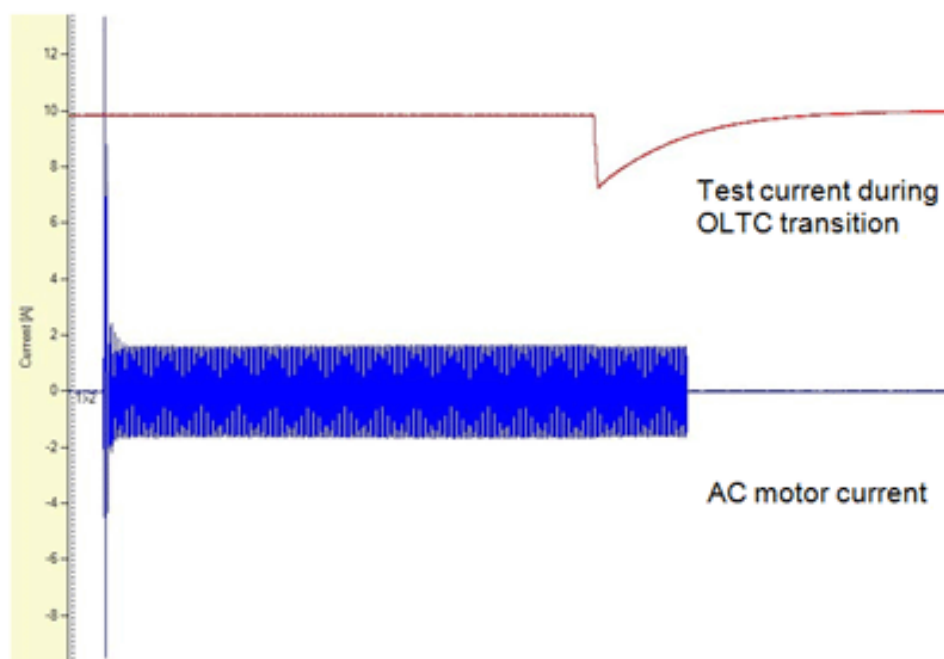
Demagnetizing magnetic core of a transformer requires alternating current applied with decreasing magnitude down to zero. The RMO100TD provides this alternating current by internally changing the polarity of a controlled DC current. During the demagnetization process the RMO100TD supplies current at decreasing magnitude for each step, following a proprietary developed program.

DV Win

Using DV Win software, tests could be performed from a PC, and results can be obtained directly at a PC. The DV Win software allows results to be arranged in an Excel spreadsheet, which can be shown later as a diagram and printed for a report, or ASCII format. This software can control the RMO-T instrument, allowing a condition assessment of OLTC (tap changer) analyzing the graph which represents dynamic resistance during the tap change. Using DV Win and RMO100TD it is possible to perform heat run test on distribution and power transformers.

AC Current monitoring channel

AC current monitoring channel is intended for monitoring and recording the OLTC mechanical-drive motor-current during tap changer operation. The motor current waveform is also printed on the DV Win generated graph, and can help in detecting OLTC mechanical problems. An AC current clamp is provided.



Typical application

Typical application of RMO100TD is measuring the resistance of:

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

Accessories

Included

- ✓ DV-Win PC software
- ✓ Mains power cable
- ✓ Ground (PE) cable

Recommended

- ✓ Current cables 2 x 10 m 10 mm² and Sense cables 2 x 10 m with TTA clamps
- ✓ Current connection cable 1 x 5 m 10 mm² with TTA clamps
- ✓ Sense cables 2 x 10 m with TTA clamps
- ✓ Current clamp 30/300 A + cable set 5 m
- ✓ Cable bag

Optional

- ✓ Built-in thermal printer (in bigger plastic case)
- ✓ Test shunt 150 A / 150 mV
- ✓ Current cables 2 x 15 m 16 mm² with TTA clamps
- ✓ Sense cables 2 x 2 x 15 m with TTA clamps
- ✓ Cable plastic case

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|--|---|---------------------------------|
| | | |
| <p>Current cables and sense cables with TTA clamps</p> | <p>Voltage sense cables with TTA clamps</p> | <p>Current connection cable</p> |
| | | |
| <p>Current clamp</p> | <p>Shunt</p> | <p>Cable bag</p> |

Technical data

1 – Mains Power Supply

- Connection according to IEC/EN60320-1; C320
- Voltage 90 V – 264 V AC, 50 / 60 Hz, single-phase
- Fuse 15 A / 250 V, type F

2 – Output data

- Test current 5 mA DC – 100 A DC
- Measuring range / Resolution

| | |
|-------------------------------------|-----------------|
| 0,1 $\mu\Omega$ - 999,9 $\mu\Omega$ | 0,1 $\mu\Omega$ |
| 1,000 m Ω - 9,999 m Ω | 1 $\mu\Omega$ |
| 10,00 m Ω - 99,99 m Ω | 10 $\mu\Omega$ |
| 100,0 m Ω - 999,9 m Ω | 0,1 m Ω |
| 1,000 Ω - 99,99 Ω | 10 m Ω |
| 100,0 Ω - 999,9 Ω | 0,1 Ω |
| 1000 Ω - 2000 Ω | 1 Ω |
- Typical accuracy \pm (0,1 % rdg + 0,1 % FS)

3 – AC Current monitoring channel

- Current monitoring resolution: 0,1 ms
- Amplitude resolution: 16 bit

4 – Environmental conditions

- Operating temperature -10 °C - +55 °C / 14 F - +131 F
- Storage and transportation -25 °C - +70 °C / -13 F - +158 F
- Humidity 5 % - 95 % relative humidity, non condensing

5 – Dimensions and Weight

- Dimensions 482,6 mm x 177 mm x 440 mm
19 in x 6,9 in x 17,3 in
(W x H x D)
- Weight 15,5 kg / 34,26 lb

6 – Warranty

three years

7 – Applicable Standards

- Installation/overvoltage: category II
- Pollution: degree 2
- Safety LVD 2006/95/EC, (CE Conform)
Standard EN 61010-1
- EMC Directive 2004/108/EC (CE Conform)
Standard EN 61326:2006

*All specifications herein are valid at ambient temperature of + 25 °C and standard accessories.

*Specifications are subject to change without notice.