

SCOPE

TRM 103
TRM 104

Transformer Winding
Resistance Meter



Fast and accurate winding resistance values...
... directly on TRM

The Product

TRM 10 SERIES TRANSFORMER RESISTANCE METERS

Two models of TRM 10 Series namely TRM103 and TRM 104 are portable winding resistance meters, designed to work in live EHV switchyards.

Winding resistance values of large transformers upto 500 MVA and rotating machines are directly displayed.

The meters are protected against the back emf offered by large inductive windings.

A backlit 4 line LCD with a user-friendly menu sets up the instrument for the test. Winding resistances and safety messages are also shown on this display.

It is possible to measure the resistance of two windings simultaneously.

The meter contains a special power source for rapid stabilisation of test results.

A 30V DC, 10 Amp power source, controlled strategically by digital means passes the selected current through the windings. Precision instrumentation amplifiers read voltage developed across the windings and the ohmic values are directly displayed.

Use of the classical Kelvin's 4-wire method ensures reliable measurement.

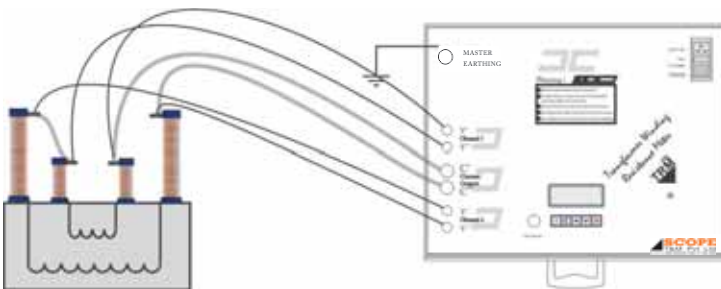
Specially designed thermal management of power source enables measurement over longer periods, when delta connected generator transformers are tested.

The TRM is capable of identifying the interruption of injected current during tap change of OLTC.

A beeper alarm during current injection ensures operator safety during measurement.

Measuring with TRM 10

- Isolate the test object from both sides and provide earthing.
- Connect the TRM as shown & remove earthing from both sides.
- Switch ON the instrument.
- Using the Menu and keyboard, select range to capture expected ohmic value.
- Select Start from the Menu and confirm TEST.
- TRM will issue beeps to indicate the flow of current.
- Test current and winding resistances will be displayed.
- STOP the measurement. Transformer will be automatically discharged.
- The display will show safety status of discharge to enable removal of test cables.



Specifications

Display	: One backlit 4 line LCD display for interactive menu, keyboard functions, messages and test results TRM 103 : 3½ digit display for resistance TRM 104 : 4½ digit display for resistance TRM 103/104 : 3½ digit display for test current
Keyboard	: 5 key, menu sensitive
Open circuit voltage	: 30 V DC minimum
Output power	: Approx 300 VA
Channels	: Two, for simultaneous measurement on 2 windings.
Discharge indication	: Large 10 mm flashing LED
Current flow alert	: Beeper
Thermal management	: By 4 x 90 CFM cooling fans
Over-temperature	: Protection by solid-state sensor
Accuracy	: Value ± 0.5% ± 2 digits
Test leads	: 20 m, suitable to test HV/EHV transformers
Environment	: 0° to 50° C, 95% RH non-condensing, Live switchyard upto 765 kV
Power	: 230 VAC ± 15%, 50 Hz ± 10%, 400 VA approx.
Dimensions	: 475 x 405 x 230 mm
Construction	: Housed in robust industrial aluminum case
Instrument Weight	: 15 kg, instrument

Ordering Information

Description	Std Qty
Transformer Resistance Meter, Model TRM 103 complete with standard accessories	1 set
Transformer Resistance Meter, Model TRM 104 complete with standard accessories	1 set
Standard Accessories	
Test Cables 20 m long, with Ck clamps, 75 mm opening	1 set
Shorting Cable, 10m long, with Ck clamps, 75 mm opening	1 no.
Master Earthing Cable, 7 m long	1 set
Mains Cord, 3 m long	1 no.
Spare Fuses	1 set
Carrying Case for Test Lead Set	1 no.
Instruction Manual	1 no.
Optional Accessories	
Test Cables 20 m long, with Ck clamps of 100 or 150 mm opening	1 set

Note: Calibration Certificate having traceability to NABL is supplied

Current Range	Resistance Range	Resolution TRM 103	Resolution TRM 104
10 A	2mΩ	1μΩ	0.1μΩ
	20 mΩ	10μΩ	1μΩ
	200 mΩ	100μΩ	10μΩ
	2 Ω	1mΩ	100μΩ
1 A	20 mΩ	10μΩ	1μΩ
	200 mΩ	100μΩ	10μΩ
	2 Ω	1mΩ	100μΩ
	20 Ω	10mΩ	1mΩ
100 mA	200 mΩ	100μΩ	10μΩ
	2 Ω	1mΩ	100μΩ
	20 Ω	10mΩ	1mΩ
	200 Ω	100mΩ	10mΩ
10 mA	2 Ω	1mΩ	100μΩ
	20 Ω	10mΩ	1mΩ
	200 Ω	100mΩ	10mΩ
	2000 Ω	1Ω	100mΩ

Note: The actual Test Current is a non-linear inverse function of the resistance of test object

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