Winding Resistance Tester
Model WRM-10N

PHENIX TECHNOLOGIES

Testing Applications

Winding resistance testing is an important part of a power transformer maintenance or a manufacturing quality assurance program. Transformers and large motors are subject to vibrations, overloading and environments with large temperature variations. Winding resistance measurements can assure that the connections are made correctly and that no opens or shorts are present. Tap changers of power transformers are a particularly critical element of a power system. The WRM-10N is very effective in detecting tap changer abnormalities.

Design Features

- Rugged, highly regulated and filtered output current source for fast stabilized measurements
- High accuracy 0.1% of reading
- High resolution with 4 ½ display, 0.1 μΩ
- Large, color LCD display
- Full QWERTY keyboard for easy data entry
- Large internal memory
- Reporting software automatically generates a finished report from PC
- Built-in thermal printer
- Remote Tap Changer circuit
- Stabilized reading indicator
- Protection against overvoltage transients
- Timed mode for logging heat run testing
- Multi-language interface
- Housing internal storage compartment for accessories or leads

- Bright **LCD** display
- **Built-in** printer
- Full **QWERTY keypad** for easy data entry
- **Demagnetisation** circuit

Operation

The WRM-10N injects a DC current through the windings and measures the voltage drop. The instrument calculates the resistance R= E / I. The challenge in winding resistance measurements is that the voltage across an inductor is defined by V= L (di/dt), where L is the inductance of the winding and (di/dt) is rate of change of current. Therefore, small changes in the current, as may be caused by ripple or poor regulation, can make it impossible to measure the DC resistance. The highly regulated and filtered current output of the WRM-10N allows for winding resistance measurements on very large power transformers.

MOTOR | PORTABLE | TRANSFORMER

Specifications

Power input	120 VAC or 230 VAC, 50/60 Hz, 550 VA max (Voltage required must be specified)
Fuse rating	5 A , 250 VAC, Type T
Test current	0.01, 0.1, 1 & 10 ADC
Test voltage	30 VDC
Resistance measurements	2 auto-ranging channels
Resistance range	0.1 µΩ to 2000 Ω
Protection	• Against overvoltage transients and substation noise • High speed current interruption detector • Audible warning during testing and discharging • Emergency off button
Accuracy	± 0.1% reading ± 0.025% Full Scale
Measuring ranges	10 A Range 1 : 0.1 µΩ to 1.9999 mΩ Range 2 : 1.0 µΩ to 19.999 mΩ Range 3 : 10 µΩ to 199.99 mΩ Range 4 : 0.1 mΩ to 1.9999 Ω 1 A Range 1 : 1.0 µΩ to 19.999 mΩ Range 2 : 10 µΩ to 199.99 mΩ Range 3 : 0.1 mΩ to 1.9999 Ω Range 4 : 1.0 mΩ to 19.999 Ω 0.1 A Range 1 : 10 µΩ to 199.99 mΩ Range 2 : 0.1 mΩ to 1.9999 Ω Range 3 : 1.0 mΩ to 19.999 Ω Range 4 : 10 mΩ to 199.99 Ω 0.01 A Range 1 : 0.1 mΩ to 1.9999 Ω Range 2 : 1.0 mΩ to 19.999 Ω Range 3 : 10 mΩ to 199.99 Ω Range 4 : 0.1Ω to 1999.9 Ω
Resolution	4 ½ digits
Environmental	• Operating temperature: -10°C to 50°C (+14°F to 122°F) • Storage temperature: -20°C to 80°C (-68°F to 176°F) • Relative humidity: 0–90%, non-condensing
Display	4¾" x 3½" (120 mm x 90 mm) bright color LCD display
Printer	Built-in, 40-character wide
Housing	Rugged, waterproof case, IP-67
Memory	At least 100 files with at least 120 measurements
PC Connection	Downloads results to PC via USB port or RS-232 connection
Dimensions	22" (558 mm)" L x 18" (457 mm) W x 10 ½" (266 mm)H
Weight	25 lbs (11.4 kgs)

Standard Accessories

- Test leads, 50' (15 m)
- Jumper lead, 30' (9 m)
- Tap changer cables
- Ground cable
- RS-232C cable
- USB cable, PC software
- User manual
- Calibration certificate

Optional Equipment

- WMR shipping case
- WMR printer paper roll
- Custom made test clips
- Custom length test leads

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