

# ATRM-20/40

HIGHEST RESOLUTION AND ACCURACY  
WITH LOW COST



## Winding Resistance Meters

# ATRM-20/40

Auto discharge circuit for operator safety.

Demagnetizes transformer after test.

Selectable test current from 1A to 20A (ATRM-20) or 40A (ATRM-40).


Computer control via RS-232C, USB,

Bluetooth interface.

Equivalent resistance value at any temperature.

amperis

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The ATRM-20 and ATRM-40 are Amperis' third generation transformer winding resistance meters. The ATRM line is designed specifically to measure DC resistance values of transformer windings, rotating machine windings, or any dc resistance of an inductive device.

The ATRM line features dual resistance-reading input channels that can measure two winding resistances simultaneously (primary and secondary windings of a transformer). Both the ATRM-20 and ATRM-40 can provide a fast and stable reading of very large transformers by utilizing a 60Vdc power supply. The ATRM-20 is capable of outputting a selectable test current from 1A to 20A while the ATRM-40's test current is selectable from 1A to 40A.

Since the ATRM-20 and ATRM-40 can accurately measure resistance values from 1 micro-ohm to 500 Ohms (up to 2,000 Ohms for the ATRM-20), they can be used as micro-ohm meters to measure EHV circuit breaker contact resistance, or for any low resistance measuring application.

If the transformer winding resistance temperature is available at the time of testing, the ATRM can calculate the equivalent resistance value at any temperature value. This useful feature allows the user to compare the field readings against the factory test resistance values. A special test mode allows the ATRM to collect data automatically for up to 90 minutes (at 60-second sampling interval) or 45 minutes (at 30 second sampling interval). Test data is recorded with a time stamp.

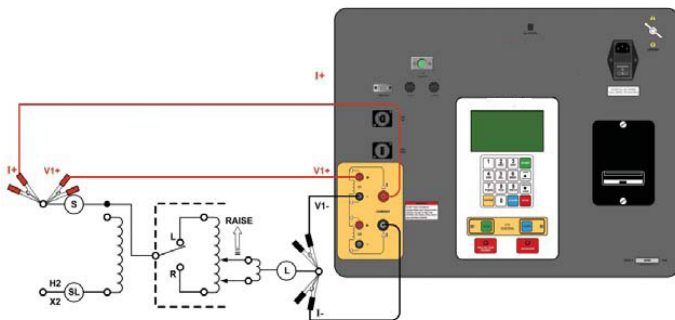
All test results can be printed on a 2.5" wide thermal printer. Test record header information including the company, substation name, transformer information can also be entered using the 16-key key pad. The ATRM-20 and ATRM-40 can automatically demagnetize the inductive device under test, eliminating the manual task of demagnetizing the transformer core after a resistance test.

The ATRM can also be computer-controlled via the unit's RS-232C, USB or Bluetooth interface.

The ATRM also has a "make-before-break" test mode that can be used to test the load tap changer (LTC) or voltage regulator test sequence. The ATRM produces a "Dynamic-Resistance" graph of the LTC or voltage regulator contact under operation. An opened contact can be detected visually from this resistance chart.

The ATRM's built-in LTC/Voltage regulator can be used to change the LTC/Voltage regulator tap position from the ATRM front panel.

## ATRM-20/40 Connections



### Computer Interface

The ATRM can be connected to a PC via the unit's RS-232C, USB, or Bluetooth interface. The included Windows®-based Transformer Winding Resistance Analyzer (TWRA) software can be used to retrieve test records (stored in the ATRM or on a USB Flash drive) or to run tests from the PC. Test records are automatically exported to PDF, Excel, and XML formats.

### User Interface

The ATRM features a back-lit graphic LCD screen (128 x 64 pixels) that is clearly viewable in both bright sunlight and low-light levels. An alphanumeric keypad is used to enter test information and to operate the unit.

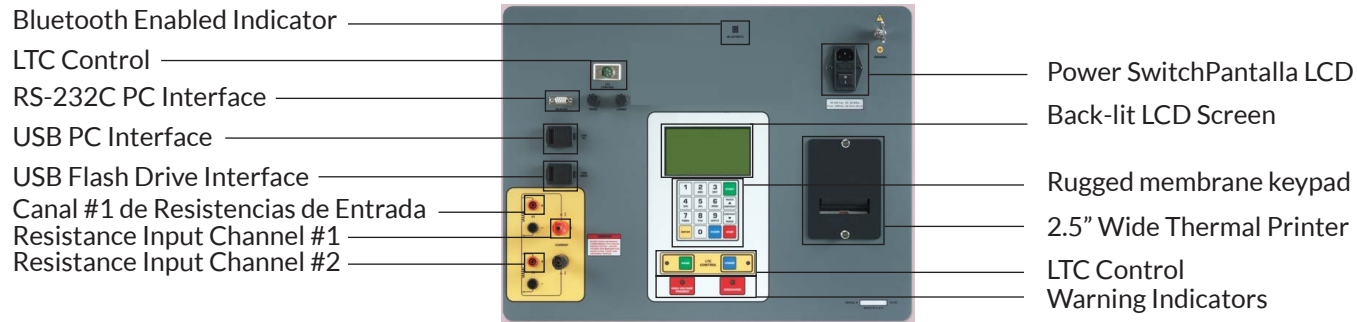
### Safety Features

The ATRM automatically dissipates the energy stored in the transformer at the end of each test. The discharge circuit will continue to work even if the ATRM power supply is lost.

### Test Record Storage

The ATRM can store up to 256 static test records (111 readings per record) and 120 dynamic test records internally. For external test record storage, the ATRM features a USB Flash drive interface port. Up to 999 test records can be stored on a connected USB Flash drive.

## ATRM-20/40 Controls



### ATRM-20/40 Specifications

<b>Type</b>	Portable transformer winding resistance meter
<b>Physical specifications</b>	21"W x 17"H x 9" D (53 cm x 43 cm x 24 cm); Weight: 33 lbs (15.4 kg)
<b>Operating voltage</b>	100 - 240 Vac, 50/60 Hz
<b>Resistance reading range</b>	ATRM-20: 1 micro-ohm - 2000 ohms; ATRM-40: 1 micro-ohm - 500 ohms
<b>Accuracy</b>	1 - 19,999 micro-ohms: $\pm 0.5\%$ reading, $\pm 1$ count; 20 - 999 milli-ohms: $\pm 1\%$ reading, $\pm 1$ count; 1 - 2000 ohms: $\pm 1.5\%$ reading, $\pm 1$ count
<b>Test current</b>	ATRM-20: 1A - 20A in 1A increments; ATRM-40: 1A - 40A in 1A increments
<b>Test voltage</b>	60Vdc charging, 18V DC max during measurement
<b>Resistance channels</b>	Two static resistance reading channels
<b>Display</b>	Back-lit LCD screen (128 x 64 pixels); viewable in bright sunlight and low light conditions
<b>Printer</b>	Built-in 2.5-inch wide thermal printer
<b>Internal data storage</b>	256 static test records (each can contain up to 111 readings) and 120 dynamic test records
<b>External data storage</b>	Up to 999 test records on external USB Flash drive
<b>Computer interface</b>	RS-232C, USB, and Bluetooth
<b>Safety</b>	Designed to meet UL 61010A-1 and CAN/CSA C22.2 No. 1010.1-92 standards
<b>Environment</b>	Operating: $-10^{\circ}\text{C}$ to $+50^{\circ}\text{C}$ ( $+15^{\circ}\text{F}$ to $+122^{\circ}\text{F}$ ); Storage: $-30^{\circ}\text{C}$ to $+70^{\circ}\text{C}$ ( $-22^{\circ}\text{F}$ to $+158^{\circ}\text{F}$ )
<b>Humidity</b>	90% RH @ $40^{\circ}\text{C}$ ( $104^{\circ}\text{F}$ ) non-condensing
<b>Altitude</b>	2,000 m (6,562 ft) to full safety specifications
<b>Cables</b>	One 50-foot current cable set, two 50-foot resistance sense cable set, one LTC control cable, one ground cable, one power cord, One RS-232C cable, one USB cable
<b>Optional accessories</b>	Transportation case
<b>Warranty</b>	1 year on parts and labor

### ATRM Thermal Printer Report

RECORD NUMBER 7
<b>TEST RESULTS</b>
DATE: 03/28/11 TIME: 14:21:17
COMPANY: STATION: CIRCUIT: MFR: MODEL: SN: KVA RTG: OPERATOR:
V1 & V2 TEST
TESTED AT 40 AMPS
R1 = 3.457 MILLI-OHMS
R2 = 3.559 MILLI-OHMS
I = 39.991 AMPS
TAP/WINDING: _____

NOTE: the above specifications are valid at nominal voltage and ambient temperature of  $+25^{\circ}\text{C}$  ( $+77^{\circ}\text{F}$ ). Specifications are subject to change without notice