

# INSULATION TESTER

Model : AM-2002

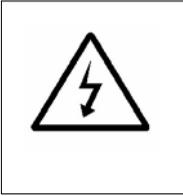


Your purchase of this INSULATION TESTER marks a step forward for you into the field of precision measurement. Although this INSULATION TESTER is a complex and delicate instrument, its durable structure developed. Please read the following instructions carefully and always keep this manual within easy reach.

## OPERATION MANUAL

[www.tmatlantic.com](http://www.tmatlantic.com)

## Caution Symbol



### ***Caution :***

- \* **Risk of electric shock !**



### ***Caution :***

- \* **Do not touch the input terminals & the test lead's pins during the measurements.**
- \* **Mega ohm range, do not apply external voltage to input terminals at any time.**
- \* **ACV & ohms range, do not apply the overload voltage to the input terminals !**
- \* **Remove test leads before open the battery cover !**
- \* **Cleaning - Only use the dry cloth to clean the plastic case !**

## Environment Conditions

- \* Installation categories III .
- \* Pollution Degree 2.
- \* Altitude up to 2000 meters.
- \* Indoor use.
- \* Relative humidity 80% max.

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# 1. FEATURES

- \* Digital display, easy and correct read-out.
- \* Multi function for insulation measurement of 200 M ohm(100V) 200 M ohm(250V), 200 M ohm(500V), 1000 M ohm(1000V).
- \* Build in the ACV & OHM measurement function.
- \* Precision 200ohm range easy for measuring low resistance such as motor windings, relay coils etc.
- \* A continuity beeper is equipped in 200 ohm range.
- \* Insulation measurement with high drive current, 2.8 mA short circuit current.
- \* 18mm (0.7") large LCD display.
- \* Battery operating easily to carry with user.
- \* LCD display allows clear read-out even at bright place.
- \* LSI-circuit provides high reliability and durability.
- \* Built-in over-input and low battery indication.
- \* Overload protection for each range.
- \* Automatic zero adjust & automatic circuit discharge.
- \* Durable & portable housing case with the front protective cover.

# 2. SPECIFICATIONS

## *2-1 General Specifications*

Display	18mm (0.7") LCD (Liquid Crystal Display), Max. indication 1999.	
Measurement	Insulation	200M ohm/100V 200M ohm/250V 200M ohm/500V 1000M ohm/1000V.
	ACV	600 ACV
	OHMS	200 ohm, continuity beeper.

Sampling Time	0.4 second.
Mega ohm Respond Time	Max. approx. 2.5 second.
Zero Adjustment	Automatic adjustment.
Over-input	Indication of "1" .
Operating Temp.	0 to 50°C (0 to 122°F)
Operating Humidity	Less than 80% R.H.
Power Supply	DC 9V, 1.5V AA(UM-3) battery x 6 PCs. Alkaline or heavy duty battery.
Power Consumption	Approx. 100 mA (1000M ohm/1000V range). Approx. 28 mA (200 M ohm/500V range). Approx. 28 mA (200 M ohm/250V range). Approx. 13 mA (200 M ohm/100V range). Approx. 10 mA (200 ohm/OHMS range). Approx. 10 mA (600 ACV/ACV range).
Dimension	160 x 120 x 85 mm (6.3 x 4.7 x 3.3 inch), with housing front cover.
Weight	575 g (1.3 LB).
Standard Accessories	Instruction Manual .....1 PC. Alligator Clips, AL-03S.....1 pair

## 2-2 Electrical Specifications (23± 5 °C)

<b>Mega ohm</b>			
<i>Range</i>	<i>Accuracy</i>	<i>Resolution</i>	<i>Test Voltage</i>
200 M ohm(100V)	± (3%+1d)	0.1 M ohm	100 V (+ 5%) ≥ 500 K ohm  
200 M ohm(250V)	± (3%+1d)	0.1 M ohm	250 V (+ 5%) ≥ 500 K ohm  
200 M ohm(500V)	± (3%+1d)	0.1 M ohm	500 V (+ 5%) ≥ 500 K ohm  
1000 M ohm(1000V)	± (3%+1d)	1 M ohm	1000 V (+ 5%) ≥ 10 M ohm  
* Input terminal Short circuit current is > 2.55 mA.			

<b>OHMS</b>			
<i>Range</i>	<i>Accuracy</i>	<i>Resolution</i>	<i>Open Circuit Voltage</i>
200 ohm	± (1%+1d)	0.1 ohm	Approx. 3 V
* Overload Circuit Protection AC/DC 500V (within 20 sec) 			

<b>AC VOLTAGE</b>			
<i>RANGE</i>	<i>Accuracy</i>	<i>Resolution</i>	<i>Input Impedance</i>
600 ACV	± (1%+2d)	1 ACV	4.5 M ohm
* Overload Circuit Protection 600 ACV 			

## 2. FRONT PANEL DESCRIPTION

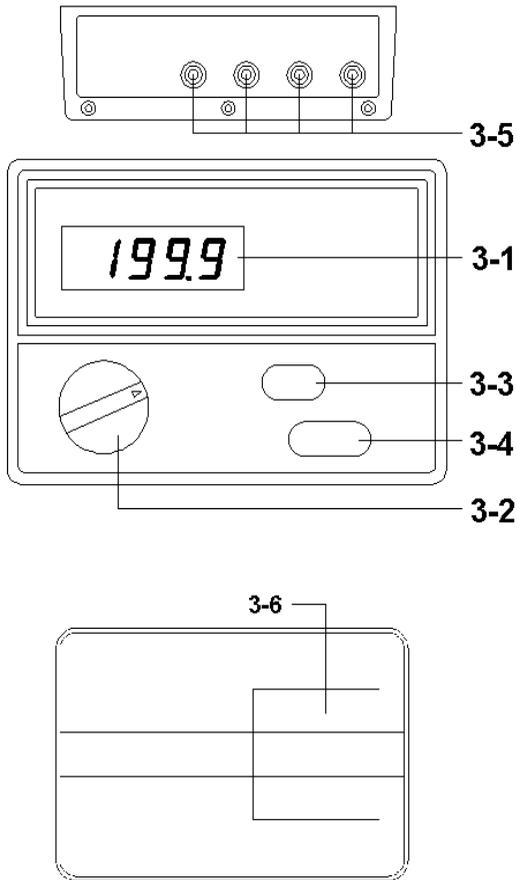


Fig. 1

- 3-1 Display
- 3-2 Function/Range Switch
- 3-3 Power Lock/Manual(off) Switch
- 3-4 Test Button
- 3-5 Input Terminal
- 3-6 Battery Cover/Compartment

## 4. PRECAUTION & PREPARATIONS FOR MEASUREMENTS

1. Remove the power from the circuit when making the measurement. If any voltage is present in the testing circuit, then an erroneous reading will result.
2. Ensure that the batteries (6 x 1.5 V AA battery) is connected correctly the right position into the battery compartment.
3. Rotate the "Function/Range Switch" (3-2, Fig. 1) to the right position before making measurement.
4. Slide the "Power Lock/Manual(off) Switch" (3-3, Fig. 1) to the off position if the meter not be used.

## 5. MEASURING PROCEDURE

### *5-1 OHMS Measurement (Continuous Check)*



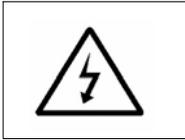
\* **Do not apply the external voltage to the input terminals !**

1. Connect the RED test plug into "ohm terminal"(3-5, Fig. 1)
2. Connect the BLACK test plug into "COM terminal"(3-5, Fig. 1)
3. Rotate the "Function/Range Switch"(3-2, Fig. 1) to the "200 OHM" position.
4. Connect test alligator clips into circuit under test.
5. Push the "Test Button"(3-4, Fig. 1) for measurement.

**Remark :**

*A continuity beeper is equipped. If the measured resistance < approx. 50 ohm, the beeper sounds will be generated.*

## ***5-2 Mega OHM Measurement(Insulation Measurement)***



- \* Do not touch the input terminals & the test lead's pins during the measurements.**
- \* Do not apply external voltage to input terminals at any time.**

1. Connect the RED test plug into "Hi terminal"(3-5, Fig. 1)
2. Connect the BLACK test plug into "Lo terminal"(3-5, Fig. 1)
3. Rotate the "Function/Range Switch"(3-2, Fig. 1) to the "200M ohm/100V", "200M ohm/250V", "200M ohm/500V" or "1000M ohm/1000V" position according the user's requirement.
4. Connect the test ALLIGATOR CLIPS into the circuit under test.
5. Push the "Test Button"(3-4, Fig. 1) for measurement.

## ***5-3 ACV Measurement***



- \* Do not apply the overload voltage to the input terminals !**

1. Connect the RED test plug into "ACV terminal"(3-5, Fig. 1)
2. Connect the BLACK test plug into "COM terminal"(3-5, Fig. 1)
3. Rotate the "Function/Range Switch"(3-2, Fig. 1) to the "600 ACV" position.

4. Connect test alligator clips into circuit under test.
5. Push the "Test Button"(3-4, Fig. 1) for measurement.

#### ***5-4 Power Lock/Manual(off) Switch***

Typically, when make the general measurement, always slide the "Power Lock/Manual(off) Switch"(3-3, Fig. 1) to the MANUAL(off) position. Then push the "Test Button" will power on the meter until release the "Test Button"(3-4, Fig. 1). However if user intend to power on the meter permanently & making the measurement continuously, then it should to slide the "Power Lock/Manual(off) Switch"(3-3, Fig. 1) to the POWER LOCK position.



#### ***Attention :***

***When the measurement the impedance ( resistance ) value less than 1 Mega-ohm, the period time of " Power Lock ON " ( power ON permanently ) should less than 5 minutes, otherwise the internal circuit may will be overheated.***

## **6. MEASURING CONSIDERATION FOR Mega OHM TESTING**

1. The amount of time during which the test voltage applied will also affect the reading. With good insulation, the measured value of insulation resistance will slowly increase is applied typically. This is due to dielectric absorption effect of the applied DC voltage on the bulk insulation resistance.

2. Measurements made in a humid environment will result in lower insulation resistance values than a dry environment.

## 7. BATTERY REPLACEMENT



- \* **Remove test leads before open the battery cover !**
  - \* **Risk of electric shock !**
1. When the upper left corner of LCD display show "BAT". It is necessary to replace the battery. However in-spec measurement may still be made for several hours after LOW BATTERY INDICATOR appears before the instrument becomes inaccurate .
  2. Loose the screws that on the battery cover(3-6, Fig. 1). Slide the battery cover & remove the battery.
  3. Replace with 6 x 1.5V AA(UM-3) battery and reinstate the cover.

## **8. THE ADDRESS OF AFTER SERVICE CENTER**

