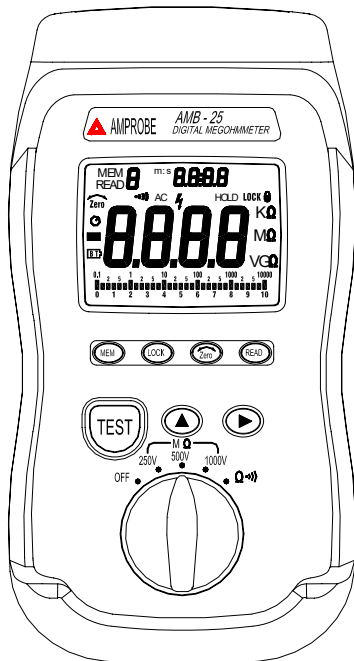




INSULATION TESTER

AMB-25

INSTRUCTION MANUAL



1. SAFETY INFORMATION

- The circuit under test must be de-energized and isolated before connections are made except for voltage measurement.
- Verify operation prior to measuring hazardous voltages (voltage above 30V AC rms, 42V AC peak and 60V DC).
- Do not touch the Circuit connections during a test.
- Disconnect the live test lead before disconnecting the neutral test lead.
- After insulation tests, to protect electric shock, capacitive circuits must to be discharged.
- Do not use the meter if the low battery indicator (**[BT]**) is showed.
- Test leads (including crocodile clips) must be in good order, clean and no broken or cracked.
Do not use the meter if it looks damaged.
- Do not use the meter around explosive gas, vapor or dust.
- Do not push test button before all connection and preparation is done. The instrument must only be used by suitably trained and competent persons.
- Do not use the meter with any parts or cover removed.
- Do not use the meter in a wet environment.
- **U.S. PAT. NO. 478,017**
- **JAPAN PAT. NO. 1180870**
- **CHINA PAT. NO. ZL02367250.1**

Warnings and Safety symbols:



Caution refer to this manual before using the meter.



Dangerous voltages.



Meter is protected throughout by double insulation or reinforced insulation.



Comply with IEC1010-1

When servicing, use only specified replacement parts.

2. SPECIFICATIONS

2-1 General Information

Environment conditions :

- ① Installation Categories III 1000V
- ② Pollution Degree 2
- ③ Altitude up to 2000 meters
- ④ Indoor use only

Safety Meets of IEC61010-1 and IEC61557


Display : Dual display, 3-3/4 Digital readout with analog bar indication.

Sampling Rate : 2.5 sample/sec.

Manual data Memory and Read : Memory capacity 9 set.

Over Range Indicator : "OL" will be displayed.

Low Battery Indication :

The () will be displayed when the battery voltage drop below the operating voltage.

Operating Temperature and Humidity :

0°C to 50°C (32°F to 122°F) below 80% RH (noncondensing).

Temperature Coefficient : 0.10 x (specified accuracy)/ °C

Storage Temperature and Humidity :

-10°C to 60°C (14°F to 140°F) below 70% RH (noncondensing)

Battery : 6 x 1.5V Size "AA" battery.

Fuse : 6mm x 32mm (0.25 x 1.25 inch), 0.5A 1000V, Fast Acting.

Dimensions : 235 (L) x 116 (W) x 54(H) mm ,
(9.3"L x 4.6"W x 2.1"H)

Weight : Approx. 520g (1.15 LB), include battery

Accessories : Test leads, 6pcs battery, Holster, operation manual.

2-2 Electrical Specifications

Accuracies are specified as:

±(...% of reading + ...digits) at 23°C ±5°C, below 80% RH.

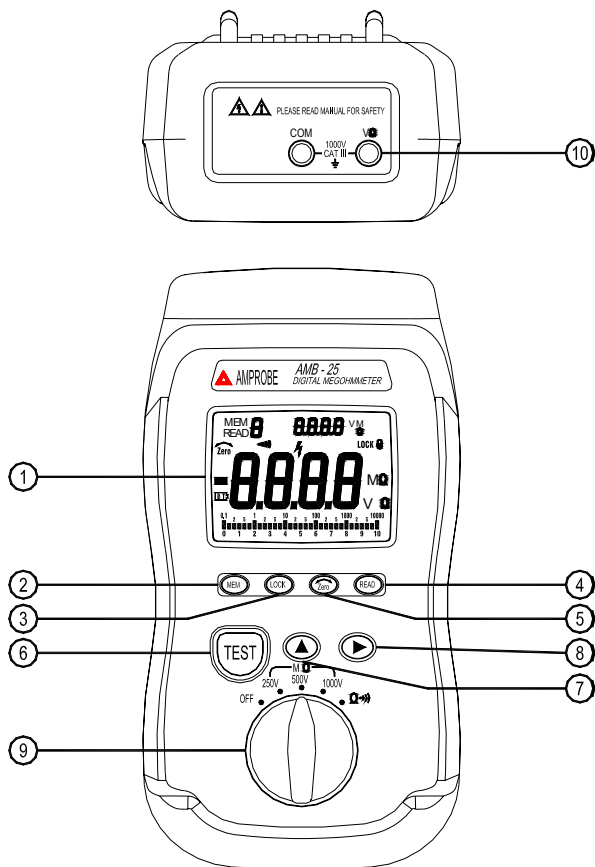
Insulation Resistance

Range	Resolution	Accuracy	Test Voltages
40MΩ/400MΩ	40MΩ: 10 KΩ 400MΩ: 100 KΩ 4000MΩ: 10MΩ	3%+5 (<1000M)	250V+20% ~ -0%
400MΩ/1000MΩ /500V		5%+5 (>1000M)	500V+20% ~ -0%
400MΩ/ 2000MΩ /1000V		1000V+20% ~ -0%	
Analog Bar Graph	0 to 4000MΩ		
Nominal Current	≥ 1mA		

Resistance & Continuity (<40Ω)

Range	Resolution	Accuracy	Max. open Circuit Voltage	Overload Protection
999.9Ω	0.1Ω	1%+2	3V	1000Vrms

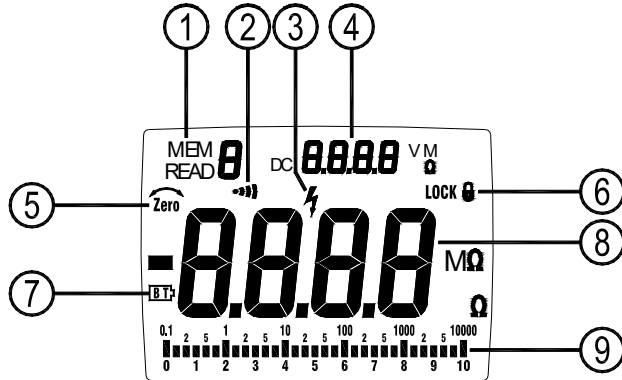
3. PARTS & CONTROLS



- ① LCD display.
- ② MEM key : Manual data memory control key.
- ③ LOCK key : Locks the test Insulation Resistance ($M\Omega$).
 - a). Press and hold down TEST key, then press LOCK key, the “LOCK” icon appears on the display.
 - b). In $M\Omega$ mode continuously applies the test voltage to the circuit to be tested. The beeper sounds every 2 seconds to remind you that you are in the LOCK mode.
 - c). Press Lock or TEST key again to exit the mode.
- ④ READ key: Manual memory data reading control key.
- ⑤ **Zero** key: In Ω function, turns the test lead resistance compensation ON.

Touch the probe tips together, then press **Zero** key, the **Zero** icon appears on the display and the main display indicates 0.0Ω .
- ⑥ TEST key :
 - a). Used for $M\Omega$ test functions.
 - b). Press and hold TEST key until the main display reading is stable.
- ⑦ ⑧ **▼▲** keys : In READ mode, select the memory data location for direct reading the data from the display.
- ⑨ Rotary switch : To select a measurement function.
- ⑩ Input terminals.

Display :



- ① Manual data memory and read location indicator.
- ② Beeper symbol shows if beeper turned on in Ω function.
- ③ High voltage warning symbol flashes, if voltage $\geq 30V$ is present on the probes.
- ④ Resistance reading held from the last measurement in $M\Omega$ and Ω function.
- ⑤ Zero symbol is on if test leads are zeroed out.
- ⑥ Lock symbol is on if the TEST mode is locked in $M\Omega$ functions.
- ⑦ Low battery symbol.
- ⑧ Main display reading for all functions.
- ⑨ Analog bar graph displays resistance on a logarithmic scale and voltage on a linear scale. The value always tracks the main display.

4. BEFORE OPERATION



- To avoid electrical shock remove test leads before opening case or battery cover. Do not operate with battery cover open.
- To avoid electrical shock when performing resistance tests, remove all power from the circuit to be measured.
- To avoid electrical shock, first connect the test leads to the meter inputs before you make connection to the circuit under test.
- To avoid electrical shock, do not touch test lead tips, test points or terminals when pressing TEST.

4-1 How to connect test leads.

Connect the red test lead into the “ $V\Omega$ ” terminal and the black lead into the “COM” terminal.

4-2 Battery Check & Replacement

- 1). If battery power is not sufficient, LCD will display “”. Replacement of 6 pcs new batteries, type 1.5V size “AA” is required.
- 2). Use a screw drive to unscrew the screw secured on battery cover. Take out the used batteries and replace 6 pcs new batteries.
- 3). Place back the battery cover and secure the screw.

4-3 Auto-Power-Off

- 1). The meter automatically turns off after 15 minutes of non-use.
- 2). To turn the meter back on, turn the rotary switch to OFF, then to the desired function.


4-4 Test Leads Check

Set the range select switch to the “ Ω ” range. Connect the crocodile clips with the test lead tips, Clip alligator clips with lead other. The indicator should read $<0.5\Omega$. When the leads are not connected the display will read infinity indicated by “”. This will ensure that test leads are under working condition.

4-5 Manual Data Memory and Read Mode :

- 1). Clear the manual memorized data
 - ① Set the function switch to OFF position to turn off the meter.
 - ② Press and hold down "MEM" key, and turn on the meter. When LCD shows "dEL" which means the manual memorized data is erased.
- 2). Manual data memory
 - ① Press "MEM" key each time, one set of reading will be stored to the memory. At this moment, LCD will show the "MEM" mark and the memory address number. Total memory size is 9 sets.
 - ② When the memory is full, LCD will show "9" memory address number.
- 3). Read Manual memory data
 - ① Press "READ" key to enter READ mode, the LCD will show "READ" mark and the memory address number.
 - ② Press "▲" or "▼" key to select the desired memory address number data for display.
 - ③ Press "READ" key again to exit this mode.

5. Ω RESISTANCE AND CONTINUITY MEASUREMENTS

- 1). Set the function switch to Ω  position.
- 2). Connect red test lead to "V Ω " terminal and black test lead to "COM" terminal.
- 3). Connect the probe to the circuit to be measured. Measure voltage first to ensure that no hazardous voltage is present, then switch to ohms.
- 4). Read the resistance value from the display. If the resistance is approximately 40 Ω or less, the meter will beep.

6. M Ω INSULATION RESISTANCE MEASUREMENTS

6-1 Measuring Insulation Resistance

Measuring insulation resistance requires the application of potentially dangerous voltage to the circuit. This may include exposed bonded metal work.

Before proceeding, ensure that the installation is correctly wired and no personnel are endangered by any test.

- 1). Set the function switch to the desired M Ω test voltage position.
- 2). Connect red test lead to "V Ω " terminal and black test lead to "COM" terminal.
- 3). The display will show "----" until the TEST button is pushed.

Press and hold the TEST key. The upper right display shows the test voltage applied to the circuit under test. The main display shows the resistance until a stable resistance reading is displayed on the main display.

- 4). Keeping the probes on the test points when release the TEST key. The upper right display shows the measured resistance reading and the circuit now discharges through the meter, while the main display reading shows the decreasing voltage, keep the probe touched to test points until the circuit is completely discharged and the main display shows “-----“.
- The upper right display holds the resistance reading until a new test is started or a different function is selected.

6-2 Using the LOCK Function to Measure Insulation Resistance

The LOCK function holds the test voltage on the probes. Use LOCK function to make long duration measurements, don't need to push and hold the TEST key.

- 1). Press and hold the TEST key, then press the LOCK key to enter LOCK mode. In this mode, a potentially dangerous voltage is continuously applied to the probes.

In this mode, if the probes are disconnected from the circuit, the meter cannot discharge any potentially dangerous capacitive voltages left on the circuit.

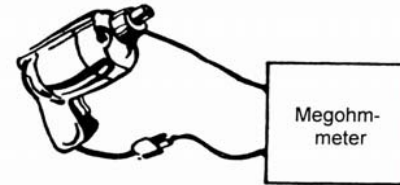
Ensure that the circuit is de-energized before connecting the test probes.

- 2). Press LOCK or TEST key to disable the Lock function.

7. POWER TOOLS AND SMALL APPLIANCES

This test would also apply to other similar equipment that has a line cord. For double insulated power tools, one leads of megohmmeter to be connected to the housing. The other leads would be connected to some metal part of the tool (e.g. chuck, blade).

Note: The switch of the device must be in the “ON” position and the main power should be disconnected.



MOTORS

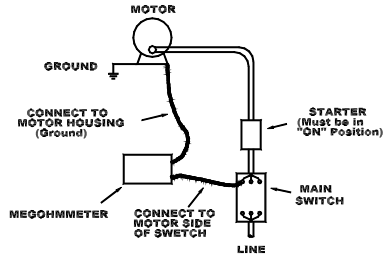
AC-Disconnect the motor from the line by disconnecting the wires at the motor terminals or by opening the main switch. If the main switch is used and the motor also has a starter then the starter must be held, by some means, in the “ON” position. In the latter case, the measured resistance will include the resistance of the motor, wire and all other components between the motor and the main switch. If a weakness is indicated, the motor and other components should be checked individually.

If the motor is disconnected at the motor terminals, connect one megohmmeter lead to the grounded motor housing and the other lead to one of the motor leads.

Disconnect the motor from the line. To test the brush rigging, field coils and armature connect one megohmmeter lead to the grounded motor housing and the other lead to the brush on the commutator.

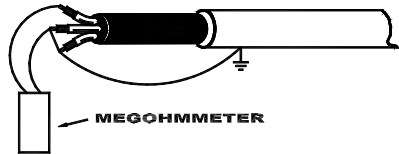
If the resistance measurement indicates a weakness, raise the brushes off the commutator and separately test the armature, field coils and brush rigging by connecting one megohmmeter lead to each of them

individually, leaving the other connected to the grounded motor housing. The above also applies to DC Generators.



CABLES

Disconnect the cable from power. Also disconnect opposite end to avoid errors of any leakage from other equipment. Check each conductor to ground and /or lead source by connecting one megohmmeter lead to a ground and /or lead source and the other megohmmeter lead to each of the conductors in turn. Check insulation resistance between conductors by connecting megohmmeter leads to conductors in pairs.



8. FUSE CHECK & REPLACEMENT

8-1 Testing the Fuse

- 1). Set the function switch to LoΩ position.
- 2). Connect the test leads to the input terminals and short them together.

- 3). Press TEST key, the display should indicate approximately 0.5Ω, if the display reads OL, replace the fuse as described next and test again.

8-2 Replace the Fuse

Warning

To avoid electric shock, personal injury or damage to the meter, use only the specified fuse.

- 1). Set the function switch to OFF position.
- 2). Disconnect test leads from any power source.
- 3). Place the meter face down on a nonabrasive surface and loosen the four screws.
- 4). Take off the bottom cover.
- 5). Remove the fuse, replace with a new fuse.
- 6). Place the bottom cover on and secure the four screws.
- 7). Test the fuse (refer 8-1 Testing the Fuse).

9. BATTERY REPLACEMENT

- 1). Set the function switch to OFF position.
- 2). Disconnect test leads from any power source.
- 3). Place the meter face down on a nonabrasive surface and loosen the two screws.
- 4). Take off the battery cover.
- 5). Remove the battery, replace with six new batteries.
- 6). Place the battery cover on and secure the two screws.

10. MAINTENANCE & CLEANING

Maintenance & Clearing :

- 1). Repairs or servicing not covered in this manual should only be performed by qualified personnel.
- 2). Periodically wipe the case with a dry cloth.
Do not use abrasives or solvents on this instrument.