Digital Multimeter
AM-1072

USER`S MANUAL

www.tmatlantic.com

Contents

1.

1. Overview

As a kind of intelligent 3 5/6 digital multimeter with automatic identification, steady performance and high reliability, It is equipped with LCD display device with the text height of 33mm which features clear reading, direct-viewing display and convenient operation. It can be used to measure DC voltage, AC voltage, DC current, AC current, resistance, capacitance, frequency, diode and make on-and-off test; meanwhile, it is available for unit symbol display, data retention, the measurement of maximum and minimum value, automatic/manual range switching, automatic power off and alarm function. The complete machine takes a switching integrated circuit which can directly drive LCD microprocessor and double-integrating A/D and a digital display drive offering high resolution and high precision. Since the meter features complete functions, high measurement accuracy and convenient operation, it is the ideal tool in laboratory and factory as well as for radio fans and family.

2. Open-package Inspection

Open the package box and take out the meter, check carefully if the following accessories are absent or damaged. If there is any absence or damage, please contact the distributor immediately.

- Digital multimeter 1 set
- Instruction Manual 1 copy
- Test leads 1 pair
- 6F22 Battery 9V 1 pair
- Holster 1 piece

3. Safety Considerations

In accordance with IEC1010 clause (the safety standard issued by International Electrotechnical Commission), It is designed and produced according to the safety requirements of pollution level Ⅱ.

⚠ Warning:

In order to avoid endangering the operator's safety, prior to the operation of the instrument, please read the instruction manual carefully, and conform to the safety warning information and operation instruction strictly to use the instrument.

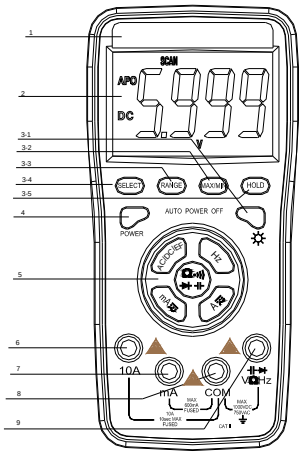
1. When voltage above 30V, current above 10mA, AC power line with inductive load or power line during electric fluctuation is measured, please beware of electric shock.
2. Prior to measurement, check if the measurement function is in conformity with the LCD display, and if the pushbutton switch is at the trigger position. Check if the test leads is contacted reliably, connected correctly, and grounded well and etc. in order to avoid electric shock.
3. Only if the meter is used with the matched test leads, can it meet the requirement of safety standard. When the line of the test leads is damaged, it is necessary to replace another one of the same model or the same electrical specification.
4. Don't use other unconfirmed or disapproved protector tube to replace the protector tube inside the meter. Only the protector tube of the same model or same specification can be replaced. Before the replacement, the test leads must leave the measuring point and ensure there is no any signal at the input terminal.
5. Don't use other unconfirmed or disapproved battery to replace the battery inside the meter. Only the battery of the same model or same electrical specification can be replaced. Before the replacement, the test leads must leave the measuring point and ensure there is no any signal at the input terminal.
6. When the electrical measurement is made, never let your body get in touch with the ground directly, and don't touch uncovered metal terminal, output port, lead clamp and etc. where earth potential may exist. Dry clothes, rubber shoes, rubber cushion and other insulating material are usually used to keep your body insulated against the ground.
7. Don't store and use it in the high-temperature, high-humidity, inflammable and strong magnetic field environment.
8. It may do damage to the meter and endanger the operator's safety if the voltage value beyond the permitted ultimate voltage value is measured. The ultimate voltage value permitted for measurement is marked on the instrument panel, and never measure the value exceeding the standard. Don't input the ultimate value out of regulation in order to avoid electric shock and the damage to the meter.
9. When the test leads is inserted into the current socket, don't measure any voltage for fear that the meter should be damaged and the operator's safety be endangered.
10. Don't try calibrating or repairing the meter. When it is indeed necessary for that, only the qualified professional personnel who have had special training or gained approval can make it.
11. During measurement, the requirement of measurement function must be in accordance with LCD display. Please be sure to disconnect the line of the test leads with the measured object first and ensure there is no any input signal. It is forbidden to switch the function/range selection switch during measurement
12. When "  " " is shown on LCD display, please replace battery immediately to ensure the measurement precision.
13. It is not allowed to insert the test leads into the current terminal to measure voltage!
14. Please don't change the circuits of the meter freely for fear that the meter be damaged and the safety be endangered.

4. Description of Safety Symbols

	Warning!		**AC/DC**
	High Voltage! Danger!	CE	**In accordance with the instructions of European Trade Union**
	Ground		**Fuse**
	Double Insulation		
	Battery Undervoltage		

5. Description of Instrument Panel and Pushbutton Functions

1. Instrument model.
2. LCD display area.
3. Function button: Used to select various measurement functions.
   3-1 Backlight selection switch, trigger it once to turn on the backlight, and trigger it once more to turn off the backlight.
   3-2 It is automatic identification when start-up. Press SELECT to enter automatic measurement, MAX/MIN: the maximum value and minimum value. Press the function button and enter MAX mode, in which the maximum value is held; press the button again to enter MIN mode, in which the minimum value is held. After the MAX/MIN mode is entered, the display device indicates the current value. Press down MAX/MIN button for 2 seconds, and then exit from MAX or MIN test.



   3-3 Manual range selection switch. It is automatic identification when start-up. Press SELECT to enter automatic measurement. Trigger “RANGE” button, automatic/manual range switch. In the mode of manual range, trigger “RANGE” button, and one shift up with every single press is realized. When it goes to the highest shift, it goes back to the lowest shift when the button is pressed again. The procedure repeats again and again like this in the same order. Press down the button for more than 2 seconds, then exit from manual range and enter the state of automatic range measurement.
   3-4 SELECT: Button switch, it is used to select various measurement functions.
   3-5 HOLD: Hold readings. Press the button to lock the displayed value, and press it again to unlock it.
4. Power function switch.
5. Function selection button.
6. 10A current input jack: Measure the positive input terminal of 10A shift AC/DC current, and insert red test leads.
7. mA input port: Measure the positive input terminal of AC/DC.
8. COM input port: Measure the negative input terminal, and insert black test leads.
9. VΩHz input port: Measure the positive input terminal of voltage, frequency, resistance, capacitance, diode as well as

on-and-off test, and insert red test leads.

6. Other Functions

Automatic power off

After the meter is stopped for 10 min, it will cut off power automatically (power off), and then enter the dormant (power off) state. Within one minute before power off, the built-in buzzer will send out warning tone for 3 times. After one minute, it beeps for several seconds and enters the dormant (power off) state. If you want to restart power (power on), it is available to press "SELECT"，"RANGE ""MAX/MIN" or "HOLD" key, or press the power switch to make it. If you want to cancel automatic power-off, press "SELECT" at the same time when you press down the power switch, then automatic power-off will be cancelled after power on, and "APO" symbol will be also turned off.

7. Features

1. General features

1－1 Display mode: LCD

1－2. Maximum display: 5999.3 5/6 display automatic polarity display and unit display.

1－3. Measurement mode: dual integration A/D conversion

1－4. Sampling rate: About 3 time/s.

1－5. 1－5. Over rang: Display "OL"

1－6. 1－6. Low vo isplay: the symbol displayed.

1－7.When it is over 30V AC/DC voltage, the symbol " s displayed

1－8 1－8.Working temperature: ：0～40□

1－9 1－9.Storage temperature: -10～50□, relative humidity <80%

1－10 1－10.Power: 6F22 9V

1－11 1－11.Volume (Dimensions): 185mm×91mm×49mm（Length, width and height）

1－12.Weight: About 408g (including battery)

2． Technical features.

2-1. Accuracy: ±（a% reading + d digits）, the ambient temperature for ensuring accuracy: 23±5□, relative humidity <75%.

2-2.The warranty period of calibration is one year from ex-factory date.

8.DC Voltage (DCV)

1．Trigger "AC/DC/EF", at this time it is at the AC/DC voltage automatic identification mode, and respectively plug in the red and black test leadss into the holes of "VΩHz"and"COM", as shown in the following diagram.

2．The initial state of the meter is the AC/DC voltage automatic identification mode and a symbol of "SCAN" is displayed; at this time, such buttons as "RANGE"."MAX/MIN"."HOLD" have no controlling functions, and only when "SELECT" button is pressed to select the non-automatic identification mode of the automatic range can such bottoms as "RANGE"."MAX/MIN"."HOLD" play their function controlling.

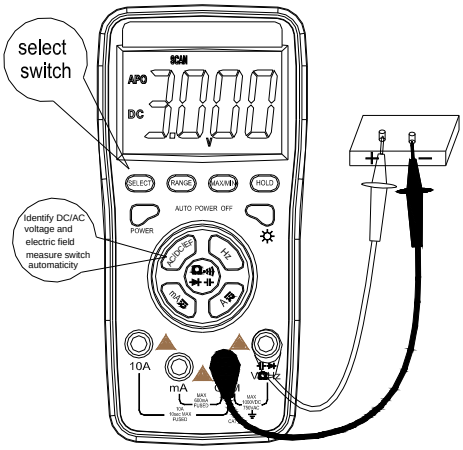
3．Touch the measuring point with the meter measuring pen and connect it in parallel to the circuit being tested, and the polarity of the red test leads wire and the tested voltage value are spontaneously displayed on the display.

Caution:

a） Voltages over DC1000V or AC750V cannot be tested.
When measuring high voltages, special precautions must be taken to avoid e lectrical shock. When measurement is completed, immediately disconnect the test leads and the measured circuit.

b） In case “OL” is displayed for manual range mode, it indicated the

c） range has been exceeded and it is necessary to select higher range mode to complete this measurement.



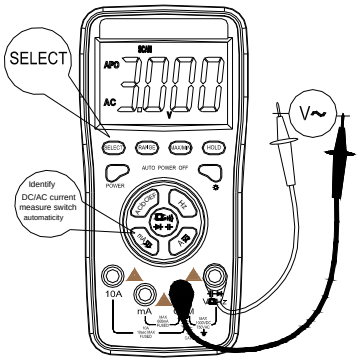
Range	Accuracy	Resolution
600mV	±(0.5%+4d)	0.1mV
6V		1mV
60V		10mV
600V		100mV
1000V	±(1.0%+6d)	1V

Input impedance: 600mVrange>60MΩ，the others are 10MΩ. Overload protection：1000VDC or 750Valternative peak.

9.AC Voltage (ACV)

1．Trigger “AC/DC/EF”, at this time it is at the AC/DC voltage automatic identification mode, and respectively plug in the red and black test leadss into the holes of “VΩHz”and“COM”, as shown in the following diagram.

2．The initial state of the meter is the AC/DC voltage automatic identification mode and a symbol of “SCAN” is displayed; at this time, such buttons as “RANGE”.“MAX/MIN”.“HOLD” have no controlling functions, and only when “SELECT” button is pressed to select the non-automatic identification mode of the automatic range can such bottoms as “RANGE”.“MAX/MIN”. “HOLD” play their function controlling.



3．Touch the measuring point with the meter measuring pen and connect it in parallel to the circuit being tested, and the polarity of the red test leads wire and the tested voltage value are spontaneously displayed on the display.

⚠ **Caution:**

a) Voltages over DC1000V or AC750V cannot be tested. The manual range mode is as shown in the LCD. “OL”， In case “OL” is displayed for manual range mode, it indicated the range has been exceeded and it is necessary to select higher range mode to complete this measurement.

b) At automatic identification and measurement, the AC threshold voltage is 0.5V; in case the voltage to be measured is smaller than 0.5V;trigger the “SELECT” button to select automatic ACV measurement. In case the AC mV mode is used, please select the “RANGE” button.

Range	Accuracy	Resolution
600mV	±(1.6%+10d)	0.1mV
6V		1mV
60V		10mV
600V		100mV
1000V	±(1.0%+6d)	1V

Input impedance: 10MΩ. Overload protection：1000VDC or 750V

alternating peak. Display： Mean value response（calibrated with sine wave）.
Frequency response： 600mV(40-100)Hz. 6V-750V：(40－400)Hz

10. DC Current (DCA)

1． Plug the black test leads into the hole of “COM” and the red test leads into the hole of “mA” or “10A”. Trigger the “ mA⎓ “ button or “ A⎓ “ button, select automatic identification AC/DC measurement, and at this time such buttons as “RANGE”.“MAX/MIN”.“HOLD” do not have the controlling functions, and only when the “SELECT” button is pressed in cycle to select automatic range AC or DC current measurement can such buttons as “RANGE”.“MAX/MIN”.“HOLD” play the relevant function controlling.

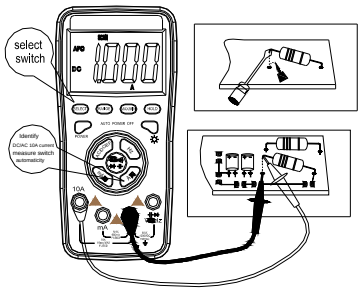
2． In case “OL” is displayed on the display, it indicates the current being measured has exceed the current range, and please select higher ranges for measurements.

Caution:

a）At the 10A mode, current bigger than 10A cannot be measured, and at mA mode, the current bigger than 600 mA cannot be measured. Otherwise this will lead to the burning of the fuse or damage the instrument.

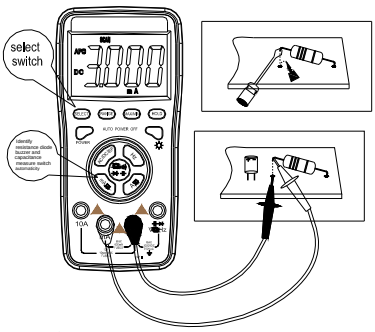
b) When the test leadsis plugged in the input terminal of the current, it is strictly prohibited to have the test leads connected in parallel on any circuits.

Range	Accuracy	Resolution
60mA	±(1.0%+10d)	10μA
600mA		100μA
10A		10mA



The maximum input current:
10A (not exceeding 15s))
Overload protection: 0.6A/250V fuse

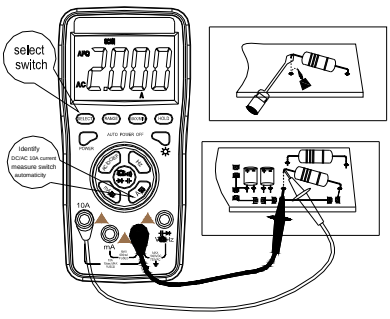
11.AC Current (ACA)



1．Plug the black test leads into the hole of “COM” and the red pen in the holes of “mA” or “10A”. Trigger “mA⎓ “ or A⎓ ” to select automatic identification AC/DC current measurements, and if the current is lower than 10% of the range, the automatic identification is lower than its threshold, measurements cannot be conducted.

Please press “SELECT button to select automatic range AC/DC current measurement.

2．In case “OL” is displayed on the display, it indicates the current being tested has exceeded the current range, and please select higher ranges for measurements.



Caution:

a）At the 10A mode, current bigger than 10A cannot be measured, and at mA mode, the current bigger than 600 mA cannot be measured.

b）Under automatic identification mode, such buttons as “RANGE”.“MAX/MIN”.“HOLD” do not play the controlling functions.

c) When the test leadsis plugged in the input terminal of the current, it is strictly prohibited to have the test leads connected in parallel on any circuits.

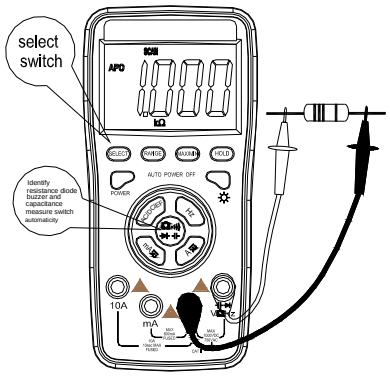
Range	Accuracy	Resolution
60mA	±(1.5%+10d)	10μA
600mA		100μA
10A	±(2.0%+15d)	10mA

Maximum input current: ：10A（Not exceeding 15s）。

过 Overload protection: 0.6A/250Vfuse；10A/250V fuse

40～100Hz。Frequency response:： 40～100Hz。

12. Resistance



1．Trigger “ ”button, and respectively plug the red and black test leadss into the holes of “VΩHz”and “COM”.”

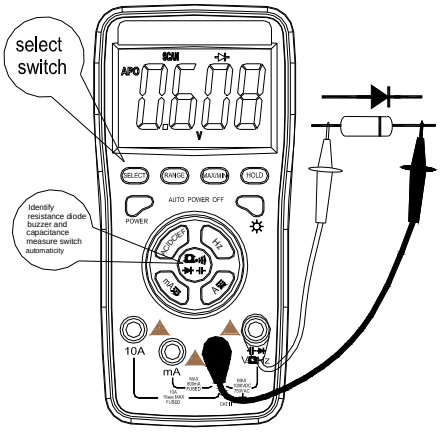
2．After the instrument is started, triggering “ button is the automatic identification measurement of resistor, diode, buzzer and capacitor. Under the mode of automatic identification such buttons of “RANGE”.“MAX/MIN”.“HOLD”do not play the controlling functions, and in case the measurement is bigger than 1MΩ, only when the “SELECT” button is triggered can the automatic range resistance mode can be measured, and at this time “RANGE”.“MAX/MIN” “HOLD” play the controlling functions

Caution:

a） When measuring the capacity, all the powers within the tested circuits must be disconnected and the capacitance shall be sufficiently discharged When measuring the resistance, any occurrence of voltage may Lead to inaccurate readings, and if the 250V protection voltage is exceeded, it may damage the meter or threaten the safety of the user.

b) When the range of 600Ω is in use, first sort-circuit the test leadss and measure the resistance of the lead wires and then deduct it in the actual measurement.

Range	Accuracy	Resolution
600Ω	±(0.8%+5d)	0.1Ω
6kΩ	±(0.8%+4d)	1Ω
60kΩ		10Ω
600kΩ		100Ω
6MΩ		1kΩ
60MΩ	±(1.2%+10d)	10kΩ

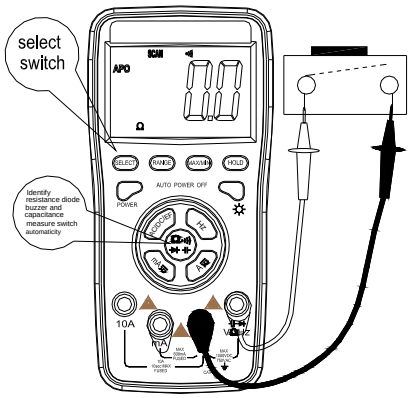


Open circuit voltage:

600mV. Overload protection: 250V DC or AC peak values.

13. Diode and On-and-Off Test

1. Press “ ” button and respectively plug the red and black pens into “VΩHz”and“COM”.
2. After the instrument is started, triggering “ ” button is the automatic identification measurement of resistance, diode, buzzer and capacitance. Under the mode of automatic identification such buttons of “RANGE”.“MAX/MIN”.“HOLD”do not play the controlling functions, trigger “SELECT” to select the diode or buzzer measurement, at this time such buttons as “MAX/MIN”. “HOLD” play the controlling functions.



3. Connect the red test leads to the positive of the diode, the black test leads to the negative of the diode.

Caution:

a）In case the diode is open circuit or the polarities are connected reversely, “OL” will be displayed on the screen.

b）When checking the diode, all the powers within the tested circuits must be disconnected and the capacitance shall be sufficiently discharged.

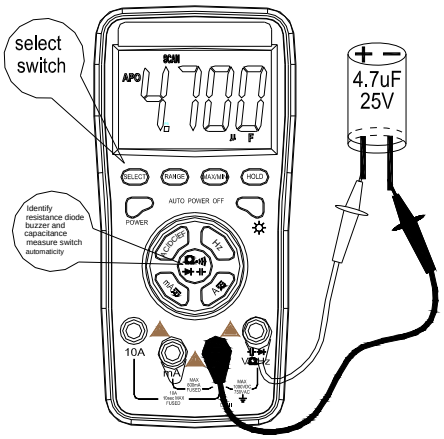
d） When the measurement is completed, immediately disconnect the meter and the measured circuit.

Range	Display value	Measurement condition
	Diode forward voltage drop	Forward DC current is about 1.0mA, and backward voltage is about 3.0V.
	30Ω Buzzer sounds for a long time and the resistance of the two points is measured as 30Ω	Open circuit voltage is about 1.2V

。Overload protection: 250V DC or AC peak value.

14. Capacitance（C）

1. Press button and respectively plug in the red and black test leadss into “VΩHz”and“COM”.
2. After the instrument is turned on, triggering the “ ” button Is the automatic identification measurement of resistance, diode, buzzer and capacitor. Under the mode of automatic identification, such bottoms as “RANGE”.“MAX/MIN”.“HOLD” do not play the controlling functions;In case the capacitor being measured is smaller than 0.5nF and Bigger than 600uF, please trigger the “SELECT” button, please Trigger the non-automatic identification automatic capacitance measurement mode, and at this time, such buttons as “MAX/MIN”“HOLD”“RANGE” play the functions. (When the mains current is mistakenly fed into the capacitor mode, the circuit may have automatic protection and it will not damage the meter.)



Caution:

a） When measuring the capacity, all the powers within the tested circuits must be disconnected and the capacitance shall be sufficiently discharged ; when measuring big capacitors, it takes a longer time.

Range	Accuracy	Resolution
6nF	±(2.5%+20d)	1pF
60nF		10pF
600nF		100pF

6μF		1nF
60μF		10nF
600μF		100nF
6mF		1uF
60mF	±(5.0%+10d)	10uF

Overload protection:

250V DC or AC peak values

15. Frequency (Hz)

1. Trigger “AC/DC/EF”, and at this time it is at the AC/DC voltage automatic identification mode, and trigger “Hz” button to conduct frequency measurement.
2. Respectively plug in the test leads into “VΩHz”and“COM”.
3. Have the testing end of the test leads connected in parallel with the signal sources to be measured and read the results from the display.

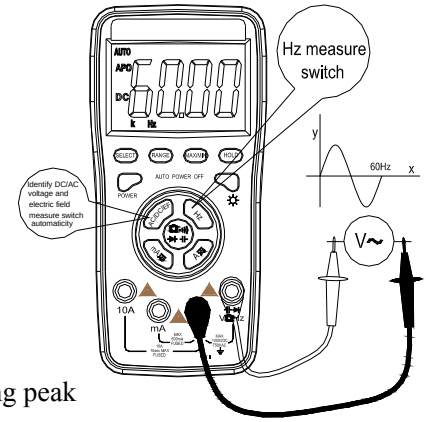
Caution:

a）Do not input signals higher than 60V, otherwise it may Damage the instrument and pose dangers to human safety.

b）After all the measurements are completed, it is necessary to disconnect the test leads and the tested circuit.

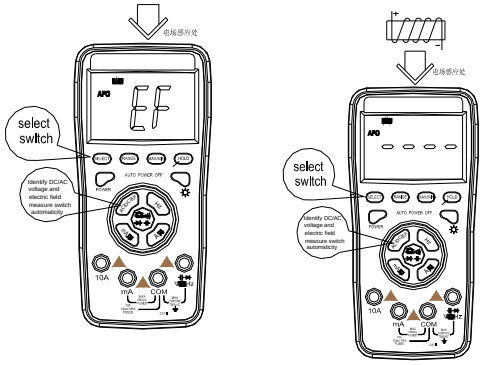
Range	Accuracy	Resolution
1000Hz	±(0.5%+8d)	1Hz
10kHz		10Hz
100kHz		100Hz

Input sensitivity: 2.5V effective value Overload protection: 250VDC or alternating peak



16.Electric Field Measurement

1. After triggering the “AC/DC/EF” button, trigger “SELECT” button in cycle, until the LCD displays “EF”, at this time, the meter enters the electric field measurement mode.
2. Put the area of the meter near the arrow near the measured object.
3. The strength of the electric field is judged by the number of “—” displayed on the LCD display, and based on the interval and continuous beeping sound produced by the buzzer of the EF strength.



Caution:

It is prohibited to input any voltage at any input ports.

17.Instrument Maintenance

This instrument is a sophisticated instrument and the user shall not alter the electric circuit at will.

1. 1. Cautions should be taken to water prevention, dust-prevention and fall prevention.
2. It shall not be stored in such environments as high temperature, high humidity and strong electromagnetic field.

3. Please use wet cloth and mild detergent to clean the exterior of the instrument and do not use such strong solvents as abrasives and alcohol.
4. In case it is not to be used for a prolonged period of time, the battery shall be removed so as to avoid the battery leakage from corroding the instrument.
5. Pay attention to the status of battery, and when the LCD displays a flashing " " symbol, the battery shall be replaced;

The steps are as follows:

1）. Loosen the screw on the back cover that secures the battery door and exit the battery door;

2）. Remove the 9V battery and replace it with a new one. Although a 9V battery of any standard can be used, but in order to lengthen the service life, alkaline batteries should be used.

3）.Mount the battery door and tighten the screw;

4）Replacement of fuse: The steps are as the above. When replacing the fuse, please use the fuse of the same size and type.

Precaution:

1. Do not connect DC or AC peak voltages higher than 1000V:
2. Don not measure voltage value on the current mode, resistance mode, diode mode and buzzer mode.
3. When the battery has not been mounted properly or the back cover ahs not been tightened, please do not use this meter.
4. Prior to the replacement of battery or fuse, please remove the measuring pen from the measuring point and switch off the meter.