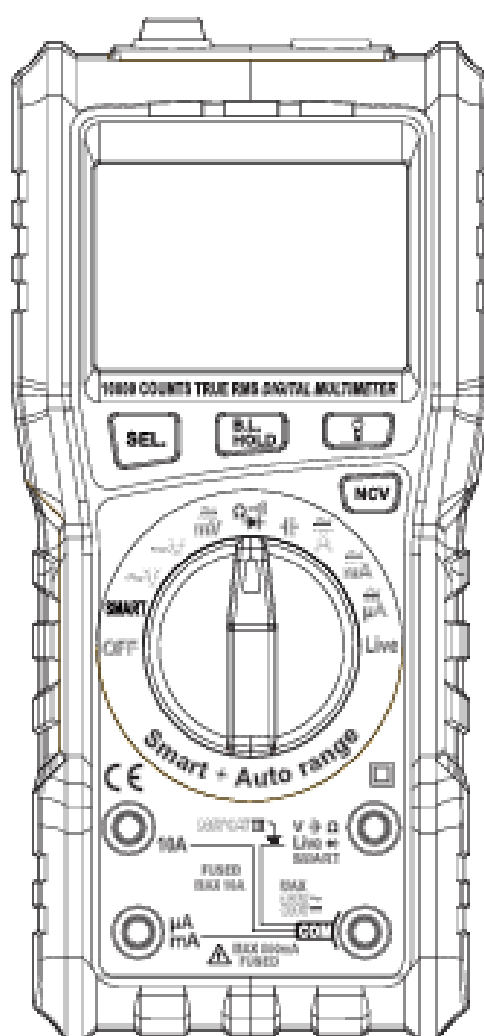


USERS MANUAL



DIGITAL MULTIMETER



Before using the instrument, please read this manual carefully, and save it well for future using.

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1. Overview

This instrument is a 9999 counting, intelligent/automatic hand-held digital multimeter. It has the functions of fuse alarm, meter pen insertion alarm, overload protection and battery undervoltage indication. Whether used by professionals, factories, schools, enthusiasts or families, it is an ideal multifunctional instrument.

It is designed and produced according to the safety requirements of international electrotechnical safety standard EN 61010 for electronic measuring instruments and hand-held digital multimeters. The instrument conforms to ICE/EN61010-1:2020 CAT III 600V.

1.1 Safety symbols:

Symbols used on the body of the instrument and in the instruction manual:



Warning, important safety signs, refer to the instruction manual before use. Incorrect use can damage the device or the measured products.



AC



DC



AC or DC



Ground



Double insulation protection



Fuse



Complies with the directives of the European Union



High voltage warning

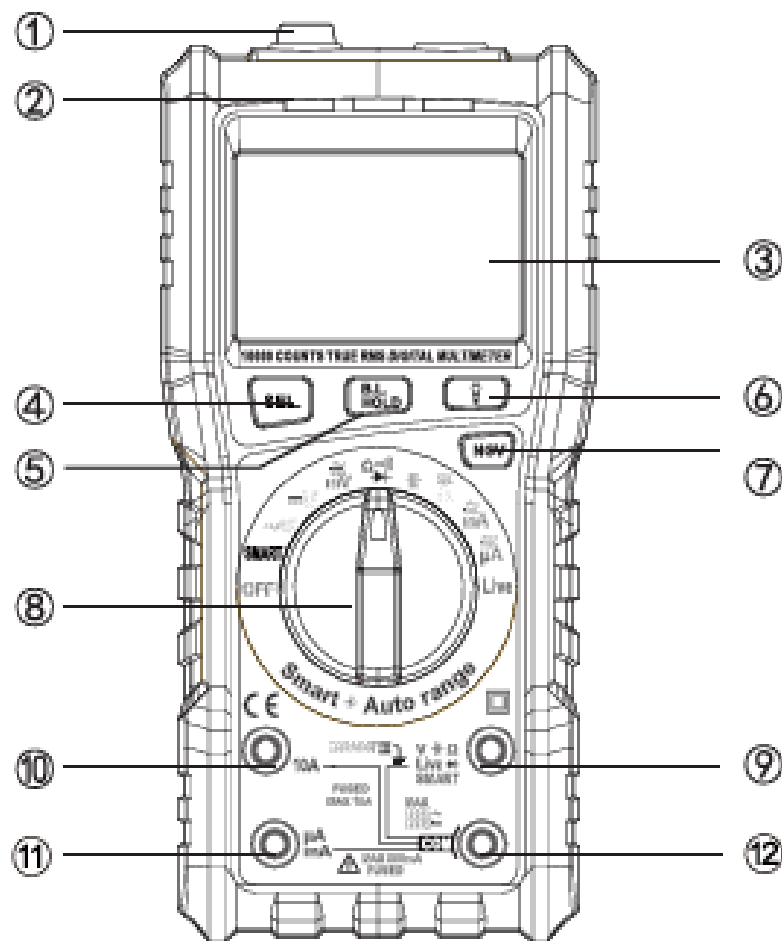
1.2 Input Protection Measures

- * When measuring voltage, the maximum input voltage is 600V AC/DC .
- * During the measurement of resistance, continuity and diode, the voltage should be no more than 250V.
- * During μA current, mA current measurement, the fuse (F600mA/250V) is used for protection.
- * The product has the function of probe misinsertion alarm. When LEAD appears on the display screen of probe and there is an alarm sound, it indicates that the position of measurement gear and probe insertion hole is wrong, even if the gear is adjusted to the correct position, it is necessary to pull out the probe, confirm it again and insert it. Even if the gear is adjusted to the correct position, it is necessary to pull out the probe, confirm it again and insert it.

In gear μA and mA, if the fuse is blown, the screen will display FUSE and  after the test pen is inserted into μA /mA jack. It indicates that the fuse is disconnected, and the measurement can be continued only after the fuse of the corresponding specification is replaced. The same warning function is also available in the 10A current range.

2. Instrument instructions

2.1 Diagram of the instrument



Appearance of the instrument

- | | |
|--|---|
| ① Non-contact voltage sensing area | |
| ② Non-contact voltage indicating light | |
| ③ Liquid Crystal Display | ④ SEL Button |
| ⑤ HOLD Button/Backlight | ⑥ “  ” Flashlight Button |
| ⑦ NCV Button | ⑧ Range Rotary Knob |
| ⑨ “V/ Ω /Hz%/Live/SMART/  ” Input socket | |
| ⑩ 10A Input socket | |
| ⑪ mA/ μ A Input socket | |
| ⑫ “COM” Input socket | |

2.2 Description of display symbols

Display symbols

Symbols	Description
	Battery undervoltage / low battery
	Automatic shutdown function
	High voltage warning
	Negative input polarity
	AC input
	DC input
	Continuity test mode
	Diode test mode
AUTO	Auto range mode
HOLD	Reading hold mode
NCV	Non-contact AC voltage detection mode
Live	Live fire test
Smart	Smart measurement
	Blown fuse
FUSE	Fuse

2.3 Description of the function key

Keys	Function
SEL	Selection
HOLD/BL	Reading hold/Backlight
	Flashlight
NCV	Press 2 seconds for non-contact voltage test

2.4 Description of the input socket

Input sockets	Description
COM	Connect the common input terminal with the black test pen.
 V Ω Smart Live	Voltage, resistance, capacity, diode continuity measurement, live wire judgment, Smart mode positive input (connected with the red test pen).
μ A mA	Current μ A, mA input (connected with the red test pen).
10A	Current A, mA input (connected with the red test pen).

2.5 Accessories

- | | |
|----------------------|--------|
| ① Multimeter | One |
| ② Instruction manual | One |
| ③ Test pen wire | A pair |
| ④ 1.5V x2 AA battery | A pair |

3. Operation guide

3.1 General operations

3.1.1 Reading hold mode

The reading hold mode can hold the current reading on the display. Change the gear of measuring function or press the HOLD key once to exit the reading hold mode.

3.1.2 Lighting function

The instrument is equipped with lighting function to facilitate users to operate in dark places. Press the  key to turn the flashlight on or off.

3.1.3 Automatic shutdown function

1. If there is no operation after starting the machine for about 15 minutes, the meter will automatically cut off the power supply and enter the sleep state. Press the  key to restart the machine.
2. Press SEL key to start the machine, cancel the automatic shutdown function, and resume the automatic shutdown function after restarting.

3.2 Measurement guide

This instrument adopts smart/automatic integrated design. When measuring voltage, resistance and continuity, you can choose Smart range measurement or automatic range measurement.

3.2.1 Measurement of AC and DC voltage



Do not measure any voltage higher than 600V to prevent electric shock and/or damage to the instrument.

The AC/DC voltage range of this instrument is: gear mV 999.9mV

gear  9.999V, 99.99V, 600V

gear  9.999V, 99.99V, 600V

Measure AC or DC voltage:

1. Turn the rotary switch to the voltage gear and select the corresponding range according to the corresponding gear.
2. Connect the black and red test pen to COM input socket and V input socket respectively.

Note:

In the mV range of DC and AC, even if there is no test pen input or connection, the meter will display numerical value. In this case, if the "V" and "COM" terminals are short-circuited, the meter will display zero, which is normal.

3.2.2 Capacitance measurement



In order to avoid damage to the instrument or the equipment under test, all power supplies of the circuit under test shall be cut off and all high voltage capacitors shall be fully discharged before measuring the capacitance.

Measure capacitance: 9.999nF, 99.99nF, 999.9nF,
9.999 μ F, 99.99 μ F, 999.9 μ F, 9.999mF

Measure capacitance:

1. Turn the rotary switch to gear C .
2. Connect the black and red test pen to COM input socket and input socket respectively.

Note::

When measuring large capacitance, it takes some time to stabilize the reading.

3.2.3 Measurement of resistance / continuity/diode

This instrument defaults to automatic identification function of continuity /diode. If the resistance needs to be tested, press SEL key.



In order to avoid damage to the instrument or the equipment under test, all power supplies of the circuit under test shall be cut off and all high voltage capacitors shall be fully discharged before measuring the resistance.

Continuity or diode measurement:

1. Turn the rotary switch to  Ω
2. If the diode or continuity needs to be measured, connect the black and red test pens to the COM input socket and V/ input socket respectively.
3. If the measured object is a diode, and the meter will display the forward voltage drop of the measured diode. Normal 0.5V to 0.8V forward voltage drop.
4. If the resistance of the tested circuit is less than about 30Ω , the meter will automatically switch to the continuity measurement mode. The indicator light (green light) of the meter will be on for a long time and the buzzer will sound.
5. To measure the resistance, press SEL key.

Note:

- ① The resistance measured on the circuit will be different from the actual resistance value.
- ② When the meter is open or the measured resistance value is too large, "OL" will be displayed, indicating that the measured value is out of range.

3.2.4 Current measurement



When the open circuit voltage exceeds 250V, do not measure the current on the circuit.

Measure current:

1. Turn the rotary switch to $\mu\text{A}/\text{mA}/\text{A}$ for current measurement.
2. Connect the black test pen to the COM input socket. If the measured current is less than $9999\mu\text{A}$, connect the red test pen to the $\mu\text{A}/\text{mA}$ input socket, and set the gear to gear μA ; if the measured current is between $9999\mu\text{A}$ and 600mA , set the gear to gear mA ; if the measured current is between 600mA and 10A , connect the red test pen to the 10A input socket and set the gear to gear A .

Note:

General SEL conversion key can be used for AC/DC current conversion.

3.2.5 NCV test

Press NCV key of the instrument for a long time and move the top of the instrument close to the conductor. According to the detected signal strength, the instrument lights up the corresponding signal strength indicating light. When the sensed voltage is low, the screen displays ---L, the green indicating light lights up for a long time. When the sensed voltage is high, the screen displays ---H, the two red indicator lights light up for a long time, and the buzzer emits alarm sounds of different frequencies.

3.2.6 Live wire test

1. Turn the rotary switch to Live gear.
2. Connect the red test pen to the V input socket.
3. Insert a single pen into the jack of the power socket. If the wire is a Live wire, the display will show LIVE, the red indicating light will be on, and the buzzer will sound.

3.2.7 SMART measurement

1. Turn the rotary switch to SMART, and the meter will enter the SMART measurement mode.
2. Connect black and red test pens to COM and V/ input sockets.
3. The instrument intelligently measures AC voltage, DC voltage, resistance, continuity.

4. Technical indicators

4.1 General indicators

Environmental conditions for use:

Temperature and humidity of working environment: 0~40°C (<80% RH).

Temperature and humidity of storage environment: -10~60 °C (<70% RH, remove battery).

- Fuse protection: gear mA: fuse FF 600mA/250V; gear A: fuse FF 10A/250V
- Conversion rate: about 3 times / second
- Display: 9999counts.
- Overrange indication: display "OL".
- Low battery voltage indication: "  "will be displayed.
- Power supply: 2 x 1.5V AA battery
- overall dimensions: 185x85x40mm
- Weight: about 500g

4.2 Precision index

4.2.1 Automatic DC Voltage

Range	Resolution	Accuracy
1000mV	0.1mV	$\pm(0.5\% \text{ reading} + 5\text{digits})$
1V	0.001V	
10V	0.001V	$\pm(0.5\% \text{ reading} + 3\text{digits})$
100V	0.01V	
600V	0.1V	

(SMART)DC voltage

Range	Resolution	Accuracy
0.5–600V	0.001V	$\pm(0.5\% \text{ reading} + 4\text{digits})$

Input impedance: 10M Ω / Maximum input voltage:
600V/ Minimum measured voltage value: 0.5V

4.2.2 Automatic AC Voltage

Range	Resolution	Accuracy
1000mV	0.1mV	$\pm$ (0.8%reading +3digits)
1V	0.001V	
10V	0.001V	$\pm$ (1%reading +5digits)
100V	0.01V	
600V	0.1V	

(SMART)AC voltage

Range	Resolution	Accuracy
0.8-600V	0.001V	$\pm$ (1.0%reading +7digits)

Input impedance: 10M Ω / Maximum Input Voltage: 600V/

Frequency Response: 50Hz-60Hz

4.2.3 Automatic resistance

Range	Resolution	Accuracy
1000 Ω	0.1 Ω	$\pm$ (0.8%reading +3digits)
10k Ω	1 Ω	
100k Ω	10 Ω	
1000k Ω	100 Ω	
10M Ω	1k Ω	
60M Ω	10k Ω	$\pm$ (1.5%reading +5digits)

(SMART) resistance

Range	Resolution	Accuracy
0.5-6K Ω	1 Ω	$\pm$ (1.2%reading +5digits)

Overload protection: 250V/ open circuit voltage:1.2V

4.2.4 Diode

Function	Range	Resolution	
Diode test 	0.15V–2.5V	0.001V	Forward DC: about 1mA; Open circuit voltage: about 2.5V

Overload protection:250V

4.2.5 Buzzer Continuity

Function	Range	Resolution	Description	Test condition
	100Ω	1Ω	Resistance is less than 30, the buzzer sounds	Open circuit voltage: about 2.5V

Overload protection:250V

4.2.6 Capacitance

Range	Resolution	Accuracy
100nF	0.01nF	± (3.5%reading +15digits)
1000nF	0.1nF	
10μF	1nF	
100μF	10nF	
1000μF	100nF	
10mF	1μF	

Overload protection:250V

4.2.7 DC current

Range	Resolution	Accuracy
9999 μ A	0.1 μ A	$\pm$ (0.8%reading +3reading)
600mA	0.01mA	
10A	0.01A	$\pm$ (1.2%reading +3reading)

Overload protection: mA range fuse (FF600mA/250V):10A range fuse (FF10A/250V).

When the measured current is greater than 5A, the continuous measurement time cannot be longer than 15 seconds, and the current measurement must be stopped for 1 minute after measurement.

4.2.8 AC current

Range	Resolution	Accuracy
9999 μ A	0.01 μ A	$\pm$ (1%reading +3reading)
600mA	0.01mA	
10A	0.01A	$\pm$ (1.5%reading +3reading)

Overload protection: mA range fuse (FF600mA/250V):10A range fuse (FF10A/250V).

When the measured current is greater than 5A, the continuous measurement time cannot be longer than 15 seconds, and the current measurement must be stopped for 1 minute after measurement, with a frequency response of 50Hz-60Hz.

4.2.9 Battery replacement



In order to avoid electric shock or personal injury caused by wrong reading, the instrument displays "". Symbol, the battery should be immediately replaced. Before opening the battery cover to replace a new battery, shut down and make sure that the test pen has been disconnected from the measuring circuit.

Follow these steps to replace the battery:

1. Turn off the power supply of the meter.
2. Pull out all the test pens from the input socket.
3. Use a screwdriver to remove the screw that fixes the battery cover on the back of the meter.
4. Remove the battery cover.
5. Remove the old battery.
6. Replace it with a new 2 x 1.5V AAA battery.
7. Install the battery cover and use the screwdriver to fix the screw.

USERS MANUAL

MADE IN CHINA

CE RoHS



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