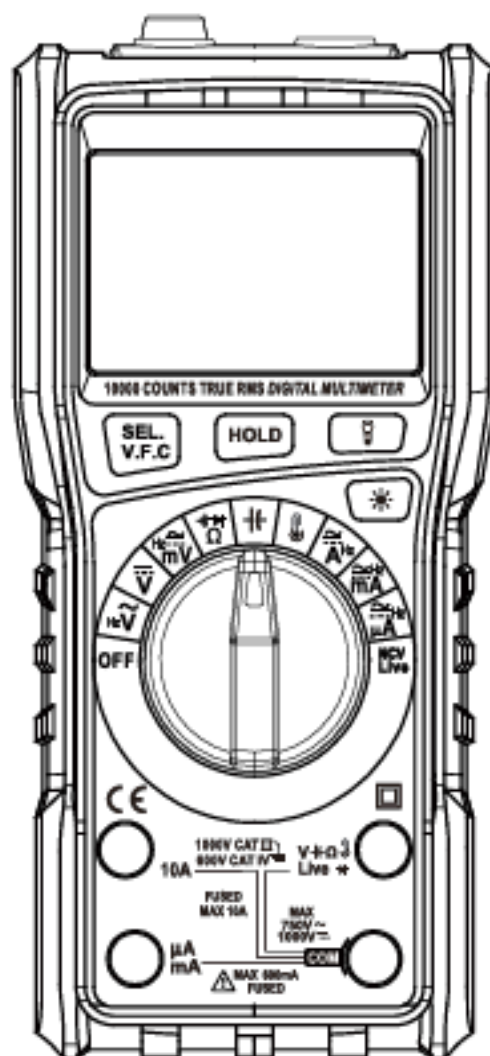


USERS MANUAL



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 10000 counts, automatic range 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 EN61010 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
	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 DC1000V/AC750V.

*During the measurement of resistance, capacity, continuity and diode, the voltage should be no more than 250V.

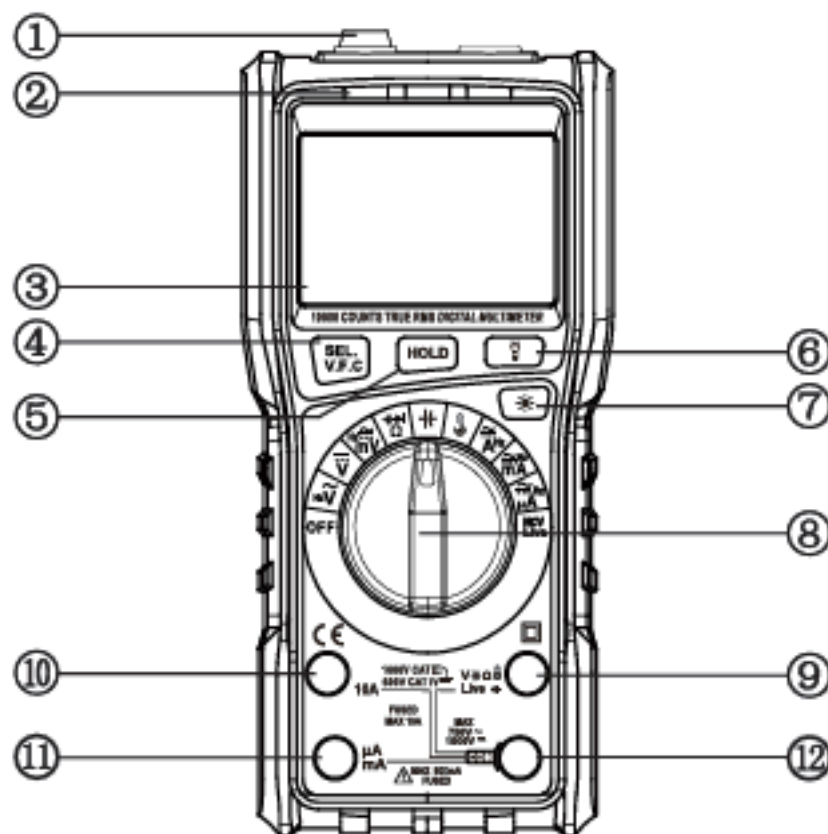
*During A current, mA current measurement, the fuse (F600mA/250V) is used for protection.

*The meter has the functions of meter pen insertion alarm. When LEAD appears on the display of the meter and there is a warning sound, it means that the measurement gear and the position of the input jack of the test pen are wrong. Reconfirm whether the measurement gear is correct.

In gear μ A, mA and 10A, if the fuse is blown, the screen will display FUSE and  after the test pen is inserted into μ A/mA/10A jack. It indicates that the fuse is disconnected, and the measurement can be continued only after the fuse of the corresponding specification is replaced.

2. INSTRUMENT INSTRUCTIONS

2.1 Diagram of the instrument



Appearance of the instrument

- | | |
|---|--------------------------|
| 1. Non-contact voltage detection area | 7. Backlight |
| 2. Non-contact voltage indicating light | 8. Rotary switch |
| 3. LED display | 9. Positive input socket |
| 4. SEL function conversion | 10. 10A Input socket |
| 5. Hold | 11. mA/uA Input socket |
| 6. Flashlight | 12. COM 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
VFC	Voltage Frequency Conversion
°C/°F	Temperature symbol
AUTO	Auto range mode

HOLD	Reading hold mode
NCV	Non-contact AC voltage detection mode
Live	Live fire test
	Blown fuse
FUSE	Fuse

2.3 Description of the function key

Keys	Function
SEL/VFC	Selection /Voltage Frequency Conversion
HOLD	Reading hold
	Flashlight
	Backlight

2.4 Description of the input socket

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

2.5 Accessories

1、 Multimeter	One
2、 Instruction manual	One
3、 Test pen	A pair
4、 K-type temperature probe	A pair
5、 1.5x2 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. Press the HOLD key to turn on/off the reading hold mode.

3.1.2 Backlight

Press  to turn on/off the backlight.

3.1.3 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.

3.1.4 SEL/VFC function conversion

The instrument can switch at AC and DC mV , resistance/continuity/diode, current , and NCV/Live .

The instrument can start variable frequency voltage measurement by pressing the VFC key at AC voltage gear.

3.1.5 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 in automatic shutdown mode.
2. Press the SEL key to start the meter, cancel the automatic shutdown function, and resume the automatic shutdown function after restarting.

3.2 Measurement guide

3.2.1 Measurement of AC and DC voltage



Do not measure any voltage higher than DC1000V/AC750V 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, 750V

gear  9.999V, 99.99V, 1000V

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 capacity.

The capacitance range of this instrument is 9.999nF, 99.99nF, 999.9nF, 9.999μF, 99.99μF, 999.9μF.

Measure capacitance:

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

Note:

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

3.2.3 Measurement of temperature



In order to measure the temperature value accurately, please select K-type temperature probe.

1. Set the range switch to
2. Then the display shows the current ambient temperature.
3. To use a thermocouple to measure temperature, insert the K-type thermocouple red into the V input terminal and black into the COM input terminal, and the thermocouple temperature probe touches the object or area to be measured for measurement.

3.2.4 Measurement of resistance / continuity/diode

Press the SEL key to switch to measurement of resistance continuity /diode.



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.

Measure continuity or diode:

1. Turn the rotary switch to Ω
2. 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 30, 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 the 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.

3.2.5 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 600 mA , set the gear to gear mA ; if the measured current is between 600 mA and 10A , connect the red test pen to the 10 A input socket and set the gear to gear A .
3. SEL conversion key can be used for AC/DC current conversion.

Note:

If the current is unknown, turn the gear to the maximum range first, and adjust the corresponding current gear according to the measured value.

3.2.6 NCV test

Turn the rotary switch to NCV key and move the top of the instrument close to the conductor. According to the detected signal strength, the instrument lights up the indicating light with corresponding signal strength. 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 indicating lights light up for a long time, and the buzzer emits alarm sounds of different frequencies.

3.2.7 Live wire test

1. Turn the rotary switch to NCV/Live gear. And press the SEL key to switch to Live.
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.

4. TECHNICAL INDICATORS

4.1 General indicators

Environmental conditions for use:

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

Temperature and humidity of storage environment: -10~60℃ (<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: 10000 counts.
- Overrange indication: display OL.
- Low battery voltage indication: will be displayed.
- Power supply: 2 x 1.5V AA battery
- Overall dimensions: 185x85x40mm
- Weight: about 360g (including the batteries)

4.2 Precision index

4.2.1 DC Voltage

Range	Resolution	Accuracy
1000mV	0.1mV	± (0.5% reading + 5digits)
1V	0.001V	
10V	0.01V	± (0.5% reading + 3digits)
100V	0.1V	
1000V	0.1V	

Input impedance: 10M Ω / Maximum input voltage: 1000V

4.2.2 AC Voltage

Range	Resolution	Accuracy
1000mV	0.1mV	± (0.8% reading + 5digits)
1V	0.001V	
10V	0.01V	± (1.0% reading + 3digits)
100V	0.1V	
750V		

Input impedance: 10M Ω / Maximum Input Voltage: 750V/ Frequency

Response: 40Hz-400Hz

4.2.3 Resistance

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

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

4.2.4 Diode

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

Overload protection: 250V

4.2.5 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	
10 μF	1nF	
100 μF	10nF	
1000 μF	100nF	
6mF	1μF	

Overload protection: 250V

4.2.7 Temperature

Range	Resolution	Accuracy
-20~1000℃	1℃	± (2.0% reading + 2 digits)
-4~1832°F	1°F	± (2.0% reading + 4 digits)

Overload protection: 250V

4.2.8 DC Current

Range	Resolution	Accuracy
9999 μ A	0.1 μ A	$\pm$ (0.8% reading + 3 digits)
600mA	0.01mA	$\pm$ (0.8% reading + 3 digits)
10.00A	0.01A	$\pm$ (1.2% reading + 3 digits)

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.

4.2.9 AC Current

Range	Resolution	Accuracy
9999 μ A	0.1 μ A	$\pm$ (1.0% reading + 3 digits)
600mA	0.01mA	$\pm$ (1.0% reading + 3 digits)
10A	0.01A	$\pm$ (1.5% reading + 3 digits)

Overload protection: mA range fuse (FF630mA/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 40Hz-400Hz.

4.3.0 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 AA batteries.
7. Install the battery cover and use the screwdriver to fix the screw.

USERS MANUAL

MADE IN CHINA

CE RoHS



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