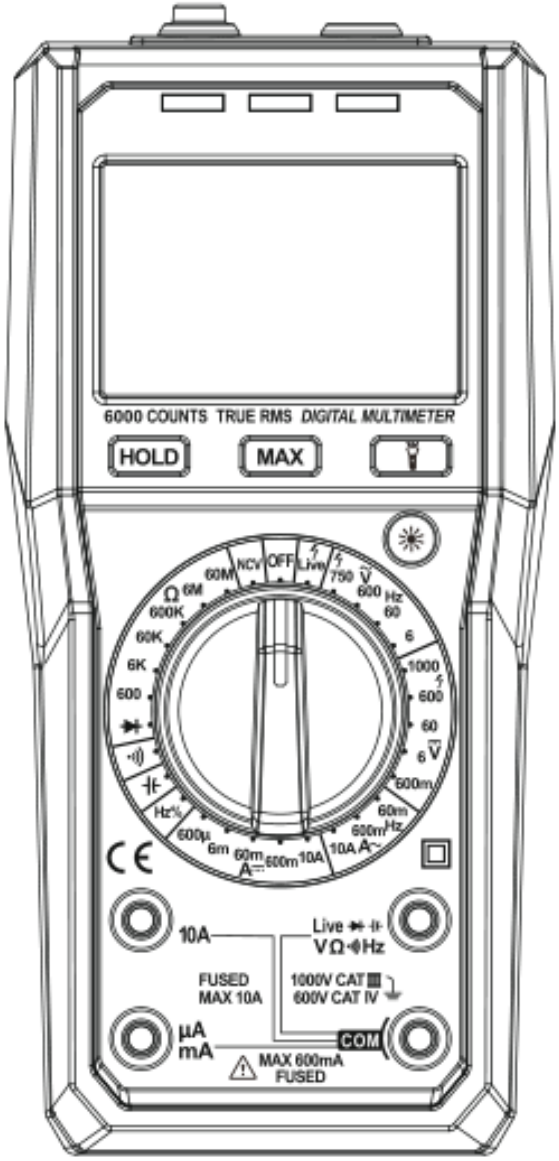
USERS MANUAL

Digital multimeter



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

1.Overview

-This product is a 6000-count and manual range digital multimeter with MAX maximum hold, HOLD data hold, frequency, duty ratio, automatic shutdown, backlight, flashlight, full range overload protection and battery undervoltage indication. Whether it is used by professionals, factories, schools, instrument lovers or families, it is an ideal multifunctional product.

-The instrument can be used to measure AC/DC voltage, AC/DC current, resistance, capacitance, diode, on-off test, live wire identification and NCV non-contact AC voltage detection.

2.Safety information

⚠	**Attention should be paid to the use of the instrument. Wrong operation may cause electric shock or damage to it. Please read the instructions carefully before using, and use the instrument according to the operating instructions.**

-When using the instrument, the user must observe the standard safety rules:

-After receiving the instrument, check whether it is damaged during transportation and whether the probe is in good condition.

-Before use, check whether the instrument shell is damaged, whether the insulation layer of the probe is complete and whether the function range is correct.

-It is forbidden to measure beyond the indicated value of the range protection range, and to switch positions during measurement.

-When the instrument is connected to the measuring circuit, the finger must be in the safe area of the protection device of the probe sheath, and it is forbidden to touch the probe tip (metal part).

-If the measured voltage is higher than 60V DC or 30V AC (effective value), please be careful, and the maximum voltage measured at COM end and V input end shall not exceed 750 V/DC 1000 V.

-Before changing the measuring function, the probe should be removed from the circuit under test.
-When using the instrument, select the corresponding range position to measure according to the measured value.
-If the measured value is unknown, please turn the range position to the maximum and gradually reduce the range according to the measured value.

2.1 Signs

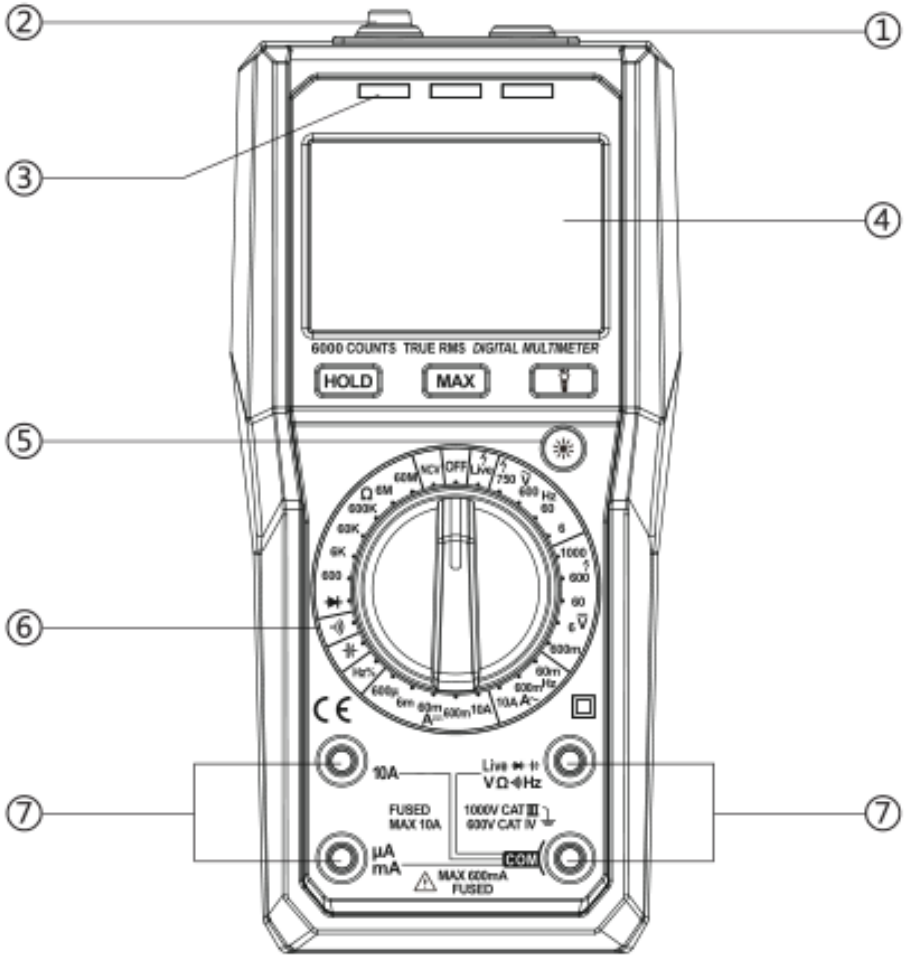
⚠	Warning! For important safety information, please refer to the instruction manual before use.
ϟ	Pay attention to the safety of use in case of electric danger!
⧈	Double insulation protection (Class II)
⏚	Earth
▭	Fuse
CE	Comply with the standards of the European Community (EU).
CAT III	Refers to the level of pulse withstand voltage protection provided by overvoltage (installation) level III and pollution degree 2 according to IEC-61010 standard.

2.2 Maintenance

-Non-professional maintenance personnel are forbidden to open the bottom case to adjust or repair the instrument.
-The instrument should be far away from high temperature, humidity, corrosive gases or objects.
-If the instrument is stained with dirt or dust, please clean it with a soft cloth.
-To avoid electric shock caused by incorrect reading, replace the battery immediately when the "  " symbol is displayed on the instrument.
-Turn off the power supply after the instrument is used.
-If the instrument is stored for a long time, the battery should be taken out to prevent leakage and corrosion.

3.Instrument introduction

3.1 Schematic diagram of appearance



1. Flashlight
2. NCV non-contact AC voltage detection
3. NCV indicator light
4. LCD display
5. Backlight
6. Range knob
7. Input end

3.2 Description of input end

Input end	Description
COM	Common input end (connected with black probe).
V/Ω/⊣⊢/⯈⊢ •))/Live/Hz	Voltage, resistance, capacitance, diode, on-off test, live wire identification frequency and input end (connected with red probe)
uA/mA	Input end of currentA、mA(connected with red probe).
10A	Input end of current 10A (connected with red probe).

3.3 Description of display symbol

Symbol	Description
	Battery undervoltage indicator
	Automatic shutdown function
-	Negative electrode
AC	AC voltage
DC	DC voltage
	On-off
	Diode test
HOLD	Data hold
MAX	Maximum hold
NCV	Non-contact AC voltage detection
Live	Live wire identification
Auto	Automatic range
Hz	Frequency
%	Duty ratio
mV/V	Voltage
Ω/K/M	Resistance
nF/uF/mF	Capacitance
uA/mA/A	Current

3.4 Key Description

Key	Description
HOLD	Data hold
MAX	Maximum hold
	Flashlight
	Backlight

4.Operation guide

4.1 Data hold

HOLD key: short press can lock the measurement data, and short press the HOLD key again to unlock it.

4.2 MAX maximum hold

MAX Maximum: It can be used at AC/DC voltage position, AC/DC current position and resistance position to hold the maximum value of measured data, and press short to turn this function on or off.

4.3 Backlight: Short press the (☀) key to turn on or off the backlight.

4.4 flashlight: and long press the (🔦) key to turn on or off the flashlight.

4.5 Automatic shutdown function:

If there is no operation after about 15 minutes of power-on, the instrument will automatically shut down and enter a dormant state. Press the (☀) key in automatic shutdown mode to restart the machine.

4.6 Cancel the automatic shutdown function

Hold the HOLD key, switch the range knob to turn on, the symbol (⏻) in the upper left corner of the display will disappear, the instrument will give five alarms, and the automatic shutdown function will be cancelled. Switch the range knob to turned off and restart, the automatic shutdown function will be resumed.

5.How to use

5.1 AC voltage measurement

(1) Turn the range knob to ($\tilde{V}$) AC voltage position.
(2) Insert the black probe into the COM end and the red probe into the V input end.
(3) Move the red and black probes to the tested line, and the instrument screen displays the measured value.

Note

① During measurement of AC voltage, the screen displays the frequency of the measured voltage at the same time.
② The maximum input voltage of AC voltage position is AC 750V/40HZ~1KHZ.
③ For the minimum range of AC voltage, because of the interference of environmental electromagnetic field, even if there is no input, the instrument will have a numerical display. It is normal to display zero, when short circuit the “V” input end and the “COM” end with a probe, .

5.2 DC voltage measurement

(1) Turn the range knob to ($\overline{\tilde{V}}$) DC voltage position.
(2) Insert the black probe into the COM end and the red probe into the V input end.
(3) Move the red and black probes to the tested line, and the instrument screen displays the measured value.

Note

① The maximum input voltage of DC voltage position is DC 1000V .
② For the mV range of DC voltage, because of the interference of environmental electromagnetic field, even if there is no input or insertion of the probe, the instrument will display the value. It is normal to display zero, when short circuit the “V” input end and the “COM” end with a probe.

5.3 Resistance measurement

(1) Turn the range knob to (Ω) resistance position.
(2) Insert the black probe into the COM end, and
the red probe into the (Ω) input end.
(3) Connect the red and black probes to the measured resistance,
and the measured values are displayed on the instrument screen.

Note

① in order to avoid the damage of the instrument or the equipment under test, when measuring the resistance, cut off the power supply of the circuit under test and fully discharge all high-voltage capacitors.
② The measured resistance on the circuit will be different from the actual resistance, and there will be some errors between them, because the measured resistance of other components will be connected in series or parallel.
③ When the instrument is open or the measured resistance value is too large, “OL” will be displayed to indicate that the measured value is out of range.

5.4 On-off test

(1) Turn the range knob to (•))) on-off position.
(2) Insert the black probe into the COM end,
and the red probe into the (•))) input end.
(3) Connect the red and black probes to the tested line.

Note

During on-off measurement, if the resistance is less than about 50W, the indicator light (green light) of the instrument is on for a long time, and the instrument emits a buzzer.

5.5 Diode measurement

(1) Turn the range knob to (⊣◀) diode position.
(2) Short press SEL key to (⊣◀) diode function.
(3) Insert the black probe into the COM end,
and the red probe into the (⊣◀) input end.
(4) Connect the red probe to the positive electrode of the diode under test, and the black probe to the negative electrode of the diode under test, the instrument screen displays the on-voltage value of the diode under test.

Note

During measurement of a normal diode, the instrument displays the forward voltage drop value of the diode under test, but it is not conductive in the reverse direction.

5.6 Capacitance measurement

(1) Turn range knob to (⊣⊢) capacitance position.
(2) Insert the black probe into the COM end,
and the red probe into the (⊣⊢) input end.
(3) Connect the red and black probes to the positive and negative poles of the measured capacitance, and the instrument displays the measured capacitance value.

Note

Before measurement of the capacitance, the capacitance should be discharged. During measurement, the instrument will charge the capacitance. The larger the capacity, the longer the charging time will be, and it will take some time to display the measured data on the screen.

5.7 Frequency measurement

(1) Turn the range knob to (HZ%) frequency position.
(2) Insert the black probe into the COM end and the red probe into the (HZ) input end.
(3) Connect the red and black probes to the measured signal, and the instrument displays the measured frequency value.

Note

During measurement of frequency, the instrument displays the frequency and duty ratio of the measured signal.

5.8 AC current measurement:

⚠	**When the open circuit voltage is 250 V, do not measure the current on the circuit.**

(1) Turn the range knob to (**A～**) mA/A position.
(2) Insert the black probe into the COM input.
(3) The frequency of the measured current can be displayed synchronously at the AC current position.
(4) The red probe selects the input end to be inserted according to the measured current range.

Measured value	Range	Input end connected by the red probe
0mA~60mA	60mA	uA/mA
60mA~600mA	600mA	
600mA~10A	10A	10A

Note

① If the current is unknown, turn the position to the maximum range first, and adjust the corresponding range according to the measured value.
② Series load and correct range position should be used when measuring current position, and out-of-range measurement is prohibited.
③ When measuring the current, the screen does not display the measured value. Check whether the fuse tube is blown. If the fuse tube is damaged, it needs to be replaced with the corresponding specification before it can be used continuously.

5.9 DC current measurement

⚠	**When the open circuit voltage is 250 V， do not measure the current on the circuit.**

(1) Turn the range knob to (A⎓) uA/mA/A position.
(2) Insert the black probe into the COM input.
(3) The red probe selects the input end to be inserted according to the measured current range.

Measured value	Range	Input end connected by the red probe
0uA~600uA	600uA	uA/mA
600uA~6mA	6mA	
6mA~60mA	60mA	
60mA~600mA	600mA	
600mA~10A	10A	10A

Note

① If the current is unknown, first turn the position to the maximum range, and adjust the corresponding current range according to the measured value.
② Use the series load and the correct range position for current position measurement and over-range measurement is forbidden.
③ During measurement of the current, if the measured value isn't displayed, check whether the fuse is blown. If the fuse is damaged, replace it with a new fuse with the corresponding specification before use.

5.10 NCV non-contact AC voltage detection

(1) Turn the range knob to NCV position.
(2) When the screen displays the NCV symbol, close the NCV probe to the conductor, and the corresponding signal indicator lights up according to the detection signal intensity. When the induced voltage is low, the screen displays- L the green indicator lights up, and when the induced voltage is high, the screen displays- H the red indicator lights up, and the buzzer sounds alarms at different frequencies.

Note

① Even if there is no indication, voltage may still exist. Don't rely on non-contact voltage detection to judge whether there is voltage on the conductor.
② The detection process may be influenced by factors such as socket design, insulation thickness and types.
③ Interference from external environment (such as static electricity, flashlights, motors, electromagnetic interference, etc.) may trigger non-contact voltage detection by mistake.

5.11 Live wire identification

(1) Turn the range knob to the Live position.
(2) When Live is displayed on the screen, insert the single red probe into the input end (Live), unplug the black probe, and insert the red probe tip into the power socket. If the screen displays ---H, the red and green indicators light up, and the buzzer sounds an alarm, then it's identified as a live wire, or else neutral wire or earth wire .

Note

① Before use, please test on the known live conductor to ensure that the instrument is in good working condition.
② When using the Live wire identification function, insert a single red probe into the input end (Live), and pull out a black probe to prevent the risk of electric shock!

6. Technical parameters

Operating height	Max 2000m
Manual range	Yes
Display	LCD
Full range overload protection	1000V
Maximum display	5999
Over-range indication	0L or - 0L
Sampling time	About 3 times/sec
Automatic shutdown	About 15 minutes
Backlight	About 2 minutes to shut down
Flashlight	About 5 minutes to automatically shut down
Power	2x1.5V AA battery
Low battery	LCD display symbol
Operating temperature	0°C~50°C
Operating humidity	0~85%RH
Storage temperature	-20~60°C
Storage humidity	0~80%RH
Size	184x88x50mm
Weight	About 300g（excluding the battery）

7.Technical indicators

7.1 DC voltage

Range	Resolution	Accuracy
600mV	0.1mV	±(0.5% reading +5 digits)
6V	0.001V	
60V	0.01V	
600V	0.1V	±(0.8% reading +3 digits)
1000V	1V	

Input impedance: 10MΩ / maximum input voltage: 1000V.

7.2 AC voltage

Range	Resolution	Accuracy
6V	0.001V	±(1.0% reading +5 digits)
60V	0.01V	
600V	0.1V	±(1.2% reading +3 digits)
750V	1V	

Input impedance: 10MΩ

maximum input voltage: 750V

frequency response: 40Hz ~1kHz.

7.3 Resistance

Range	Resolution ratio	Accuracy
600Ω	0.1Ω	±(0.8% reading +3 digits)
6kΩ	0.001KΩ	
60kΩ	0.01KΩ	
600kΩ	0.1KΩ	
6MΩ	0.001MΩ	±(1.2% reading +8 digits)
60MΩ	0.01MΩ	

Overload protection: 1000V / open circuit voltage: 0.5V~1V

7.4 Diode

Function	Range	Resolution ratio	Test condition
Diode test	0.1V~3V	0.001V	Forward DC current: about 2mA; Open circuit voltage: about 3V.

Overload protection: 1000V

7.5 On-off test

Function	Range	Resolution	Description	Test condition
•))	600Ω	0.1Ω	If the resistance is less than 50Ω, it will beep.	Open circuit voltage: about 1V

Overload protection: 1000V

7.6 Capacitance

Range	Resolution	Accuracy
60nF	0.01nF	±(3.5% reading +15 digits)
600nF	0.1nF	
6uF	0.001uF	
60uF	0.01uF	
600uF	0.1uF	
6mF	0.001mF	±(4.0% reading +20 digits)
60mF	0.01mF	

Overload protection: 1000V

7.7 Frequency

Range	Resolution	Accuracy
60HZ	0.01HZ	±(1% reading +3 digits)
600HZ	0.1HZ	
6KHZ	0.001KHZ	
60KHZ	0.01KHZ	
600KHZ	0.1KHZ	
10MHZ	0.001MHZ	

Overload protection: 1000V

7.8 DC current

Range	Resolution	Accuracy
600uA	1uA	±(0.8% reading +3 digits)
600mA	0.1mA	±(1.0% reading +3 digits)
10.00A	0.01A	

Overload protection:

mA range fuse (FF600mA/1000V)

10A range fuse (FF10A/1000V) .

7.9 AC current

Range	Resolution	Accuracy
600uA	1uA	±(1% reading +3 digits)
600mA	0.1mA	±(1.2% reading +5 digits)
10.00A	0.01A	

Overload protection:

mA range fuse (FF600mA/1000V)

10A range fuse (FF10A/1000V).

Frequency response: 40Hz~1KHz.

8. Battery replacement

⚠	In order to avoid electric shock or personal injury caused by wrong reading, the battery should be replaced immediately when the " 🔋 " symbol appears on the instrument display. Before opening the battery cover to replace the battery, turn it off and check that the test probe has been disconnected from the measuring circuit.

①. Turn off the power supply.
②. Remove the test probe from the measuring circuit.
③. Use a screwdriver to remove the battery cover screw on the back of the instrument.
④. Remove the battery cover.
⑤. Remove the old battery.
⑥. Replace with a new 1.5X2AA battery.
⑦. Install the battery cover and tighten the fixing screws.

9.Accessories

1. Multimeter	One
2. Manual instruction	One
3. Probe	A pair
4. 1.5x2 AA battery	A pair

USERS MANUAL

Made in China

CE RoHS

M101040065

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