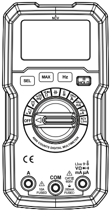
Made in China

C€ RoHS M101040052

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

Digital multimeter



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120*90mm

1.Overview

-This product is a 4000-count and auto range digital multimeter with MAX maximum hold, HOLD data hold, temperature measurement, automatic shutdown, backlight, full range overload protection and battery undervoltage indication. Whether 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, temperature, 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, please observe the standard safety rules

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

-During use, please check whether the instrument shell is damaged, whether the insulation layer of the probe complete and whether the function range 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 AC 600V/DC 600V.

-Before changing the measuring function, please remove the probe from the circuit under test.

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
C€	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.

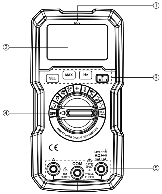
-If the instrument is stained with dirt or dust, please clean it with a soft cloth.

-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. NCV non-contact AC voltage detection probe
2. LCD display
3. Function keys
4. Range knob
5. Input end

3.2 Description of input end

Input end	Description
COM	Common input end (connected with black probe).
V/Ω/-|(-/🌡/→| •))/Live/uA/mA	Voltage, resistance, capacitance, temperature,diode, on-off test, live wire identification, and input end of current uA 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 test
→|	Diode
°C/°F	°C/°F
HOLD	Data hold
MAX	Maximum hold
NCV	Non-contact AC voltage detection
Live	Live wire identification
Hz	Frequency
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
☀	Backlight
SEL	Function selection key

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 short press to turn this function on or off.

4.3 Backlight

Long press the (☀) key to turn on or off the backlight.

4.4 SEL function selection key

The instrument performs function selection at AC/DC mV position, resistance position, on-off position, diode position and temperature position, current position and NCV/Live position.

4.5 Automatic shutdown function

If there is no operation after about 20 minutes of power-on, the instrument will automatically shut down and enter a dormant state. Press the (SEL) key to restart the machine.

5. How to use

5.1 AC voltage measurement

(1) Turn the range knob to (Ṽ) 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 Choose appropriate position mV or V according to the corresponding voltage.
② During measurement of AC voltage, short press the HZ key and then the screen displays the frequency of the measured voltage .
③ The maximum input voltage of AC voltage position is AC 600V/40HZ~1KHZ.
④ For the mV range of AC voltage, even if there is no input or insertion of the probe, the instrument will have a numerical display, because of the interference of environmental electromagnetic field. It is normal to display zero, when the "V" input end and the "COM" end is under short circuit by a probe.

5.2 DC voltage measurement

(1) Turn the range knob to (V̄) 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 Choose appropriate position mV or V according to the corresponding voltage.
② The maximum input voltage of DC voltage position is DC 600V .
③For the mV range of DC voltage, even if there is no input or insertion of the probe, the instrument will have a numerical display, because of the interference of environmental electromagnetic field. It is normal to display zero, when the "V" input end and the "COM" end is under short circuit by a probe.

5.3 Resistance measurement

(1)Turn the range knob to (·))▶|Ω) resistance position.
(2)Short press the SEL key to switch to (MΩ) resistance position.
(3) Insert the black probe into the COM end, and the red probe into the (Ω) input end.
(4) Connect the red and black probes to the measured resistance, and the measured value is displayed on the instrument screen.

Note

①In 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 value on the circuit may be different from the actual one, and there will be some errors between them, because other components may 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 (·))▶|Ω) on-off position.
(2) Short press the SEL key to switch to (·)))on-off position.
(3) Insert the black probe into the COM end, and the red probe into the (·))) input end.
(4) Connect the red and black probes to the tested line.

Note

During on-off measurement, if the resistance is less than about 50Ω, the instrument emits a buzzer.

5.5 Diode measurement

(1) Turn the range knob to (·))▶|Ω) diode position.
(2) Short press the SEL key to (▶|) diode position.
(3) Insert the black probe into the COM end, and the red probe into the (▶|) input end.
(4) Connect the red and the black probes to the diode, the instrument screen displays the forward 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 is about 0.5V~ 0.8V, 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 measured capacitance, and the instrument displays the measured capacitance value.

Note

Before measurement of the capacitance, discharge the capacitance. It will take some time to stabilize the measured data.

5.7 Temperature measurement

(1) Turn the range knob to the temperature position (🌡), and the instrument will automatically measure the current ambient temperature.
(2) Short press SEL key to switch to (°C/°F).
(3) K-type thermocouple measurement: Connect the red plug of K-type thermocouple to the input end of (🌡) and the black plug to the "COM" end, and move the thermocouple probe to the measured object for measurement.

Note

If the temperature of the measured environment suddenly changes, the instrument should be placed in the current measuring environment for constant temperature for about 15 minutes for accurate measurement.

5.8 AC current measurement

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

(1) Turn the range knob to uA/mA/A position.
(2) Press the SEL key to AC current function.
(3)Short press the HZ key at the AC current key, and the frequency of the measured current can be displayed .
(4)Insert the black probe into the COM input.

Measured value	Range	Input end connected by the red probe
0uA~4000uA	uA	uA/mA
4000uA~400mA	mA	
400mA~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 250V，do not measure the current on the circuit.**

(1) Turn the range knob to uA/mA/A position.
(2) Press the SEL key to DC current function.
(3) Insert the black probe into the COM input.

Measured value	Range	Input end connected by the red probe
0uA~4000uA	uA	uA/mA
4000uA~400mA	mA	
400mA~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 one with the corresponding specification before use.

5.10 NCV non-contact AC voltage detection

(1)Turn the range knob to NCV position.
(2)Press the SEL key to NCV function.
(3) When the screen displays the NCV symbol, close the NCV probe to the conductor. When the induced voltage is low, the screen displays- L, and when the induced voltage is high, the screen displays- H, and the buzzer sounds alarms at different frequencies.

Note

①Even 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 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)Press the SEL key to Live function.
(3)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 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 a good working condition.
② When using the Live wire identification function, insert a single red probe into the input end (Live), and pull out the 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	250V
Maximum display	3999
Over-range indication	0L or - 0L
Sampling time	About 3 times/sec
Automatic shutdown	About 20 minutes
Backlight	About 2 minutes to shut down
Power	2x1.5V AAA 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	144x73x32mm
Weight	About 146g (excluding the battery)

7.Technical indicators

7.1 DC voltage

Range	Resolution	Accuracy
400mV	0.1mV	±(0.5% reading +5 digits)
4V	0.001V	
40V	0.01V	
400V	0.1V	±(0.8% reading +5 digits)
600V	1V	

Eingangsimpedanz: 10MΩ
Maximale Eingangsspannung: 600V

7.2 AC voltage

Range	Resolution	Accuracy
400mV	0.1mV	±(1.0% reading +5 digits)
4V	0.001V	
40V	0.01V	±(1.2% reading +5 digits)
400V	0.1V	
600V	1V	

Input impedance: 10MΩ
maximum input voltage: 600V
frequency response: 40Hz ~1kHz

7.3 Resistance

Range	Resolution ratio	Accuracy
400Ω	0.1Ω	±(1.2% reading +5 digits)
4kΩ	0.001KΩ	
40kΩ	0.01KΩ	
400kΩ	0.1KΩ	
4MΩ	0.001MΩ	±(1.5% reading +8 digits)
40MΩ	0.01MΩ	

Overload protection: 250V
open circuit voltage: 1V

7.4 Diode

Function	Range	Resolution ratio	Test condition
Diode test	0.1V~2V	0.001V	Forward open circuit voltage: about 2V; current: about 1mA.

Overload protection: 250V

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 2V; current : about 0.3mA.

Overload protection: 250V

7.6 Capacitance

Range	Resolution	Accuracy
400nF	0.1nF	±(3.5% reading +15digits)
4uF	0.001uF	
40uF	0.01uF	
400uF	0.1uF	
4mF	0.001mF	±(4.0% reading +20 digits)

Overload protection: 250V

7.7 Temperature

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

Overload protection: 250V

7.8 DC current

Range	Resolution	Accuracy
4000uA	1uA	±(1.0% reading +3 digits)
400mA	0.1mA	±(1.2% reading +5digits)
10.00A	0.01A	

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

7.9 AC current

Range	Resolution	Accuracy
4000uA	1uA	±(1% reading +3 digits)
400mA	0.1mA	±(1.2% reading +5 digits)
10.00A	0.01A	

Overload protection: mA range fuse (FF600mA/250V):10A range fuse (FF10A/250V).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 the power off and check if 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 screw of the battery cover .
④ Remove the battery cover and the old battery.
⑤ Replace with a new 1.5X2AAA battery
⑥ Install the battery cover and tighten the fixing screws.

9. Accessories

1. Multimeter	One
2. Manual instruction	One
3. Probe	A pair
4. K-type temperature probe	A pair
5. 1.5x2 AAA battery	Two pieces