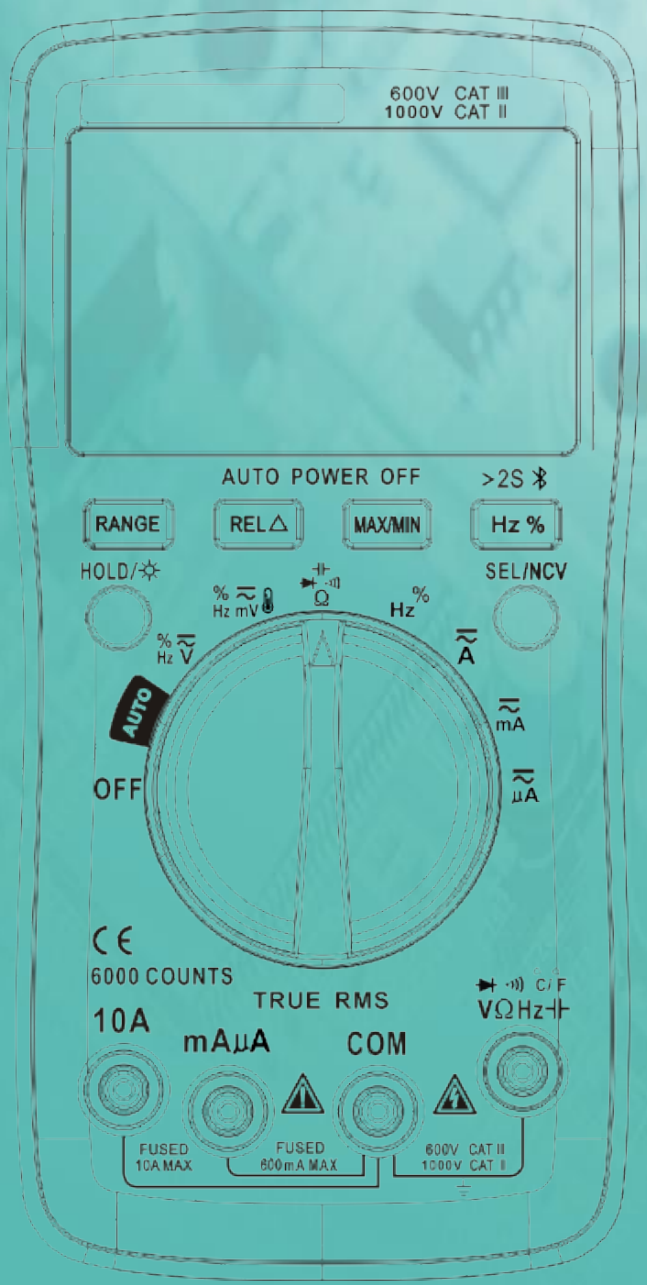
User Manual



Specifications are subject to change without notice.

LIMITED WARRANTY AND LIMITATION OF LIABILITY

Customers enjoy one-year warranty from the date of purchase.

This warranty does not cover fuses, disposable batteries, damage from misuse accident, neglect, alteration, contamination, or abnormal conditions

of operation or handling, including failures caused by use outside of the product's specifications, or normal wear and tear of mechanical components.

FCC Caution：

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.

Contents

Introduction

This product is a battery-powered, true-rms, auto-ranging digital multimeter with a 6000 counts LCD display and a backlight.

Safety Information

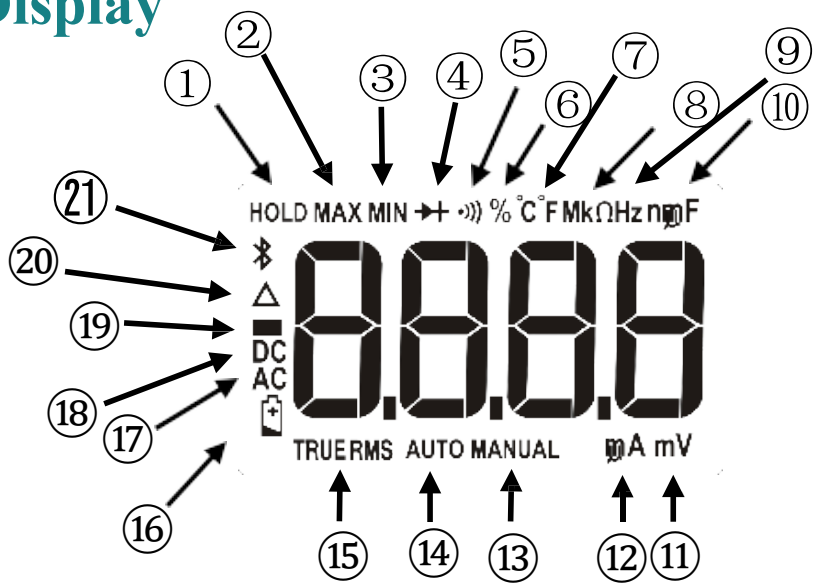
To avoid possible electrical shock, fire, or personal injury, please read all safety information before you use the product. Please use the product only as specified, or the protection supplied by the product can be compromised.

- Examine the case before you use the product. Look for cracks or missing plastic. Carefully look at the insulation around the terminals.
- The measurement must be made with correct input terminals and functions and within the allowable measuring range.

- Do not use the product around explosive gas, vapor, or in damp or wet environments.
- Keep fingers behind the finger guards on the probes.
- When the product has already been connected to the line being measured, do NOT touch the input terminal that is not in service.
- Disconnect the test leads from the circuit before changing the mode.
- When the voltage to be measured exceeds 36V DC or 25V AC, the operator shall be careful enough to avoid electric shock.
- Misuse of mode or range can lead to hazards, be cautious. "OL" will be shown on the display when the input is out of range.
- Low level of a battery will result in incorrect readings. Change the batteries when battery level is low. Do not make measurements when the battery door is not properly placed.

Instrument Overview

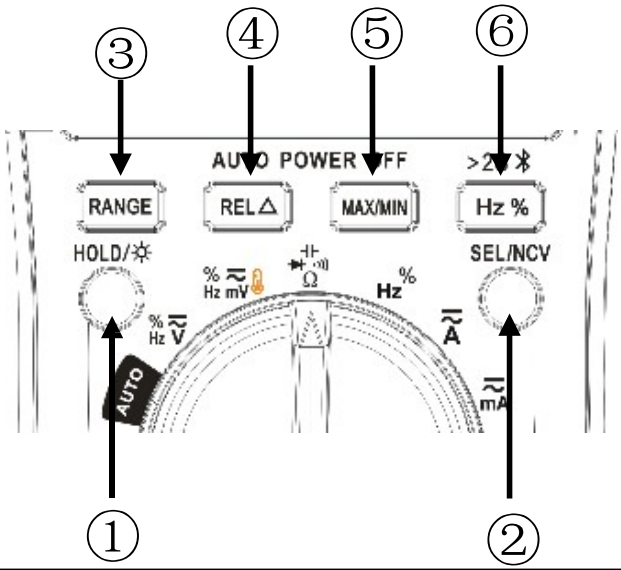
LCD Display



①	HOLD	Display freezes present reading.
②	MAX	Display shows maximum reading.
③	MIN	Display shows minimum reading.
④	⊣◁	Diode test.
⑤	)))	Continuity test.
⑥	%	Duty cycle test.
⑦	°F °C	Temperature test. (Fahrenheit or Celsius)
⑧	MkΩ	Resistance test.（Ohm）
⑨	Hz	Frequency test. (Hertz)

⑩	nμmF	Capacitance test.（Farad）
⑪	mV	Voltage test. (Volt)
⑫	μmA	Current test. (Ampere)
⑬	MANUAL	Manual range. The user selects the range.
⑭	AUTO	Auto range. The product selects the range with the best resolution.
⑮	TRUE RMS	The product measures both sinusoidal and nonsinusoidal ac waveforms accurately.
⑯		Low battery. Replace batteries.
⑰	AC	Alternating Current
⑱	DC	Direct Current
⑲	▬	Negative readings.
⑳	△	Relative mode.
㉑		Bluetooth connection
	nkMμm	Measurement units.

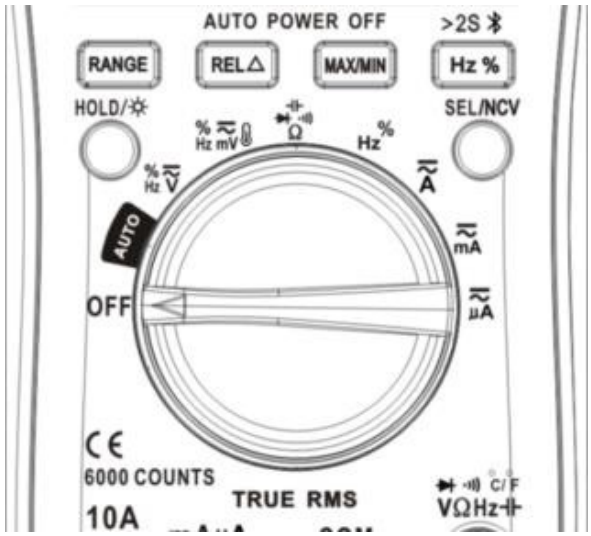
Function Buttons



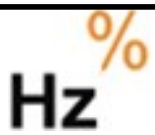
①	Push once to hold the current reading on the display; push again to continue normal operation. Push for more than 2 seconds to turn on the backlight; long-push again to turn off or the backlight automatically turns off after 2 minutes.
②	Short press to toggle between AC/DC, Voltage(V,mV) / Current(A,mA,μA) / Resistance / Continuity / Diode /Capacitance or ℃/℉, Keep pushing this button to enter the NCV testing mode.

③	Push this button once to enter the manual range mode. In manual range mode, each push increases the range; when the highest range is reached, the next push will lead to the lowest range. To exit the manual range mode, turn the rotary switch.
④	Push this button to enter the relative mode. The product will store the present reading as a reference for subsequent readings. The display is zeroed, and the stored reading is subtracted from all subsequent readings. Push again to exit the relative mode.
⑤	Push to toggle between the MAX and the MIN mode. To exit MAX/MIN mode, push the button for more than 2 seconds.
⑥	1.Push this button when the rotary switch is at the position of , the product will enter Frequency/Duty Cycle (only applies to low frequency with low voltage) measuring mode. 2.Press and hold the button for 2 seconds to turn on / off the Bluetooth function. After the APP is downloaded, you can connect to the phone.

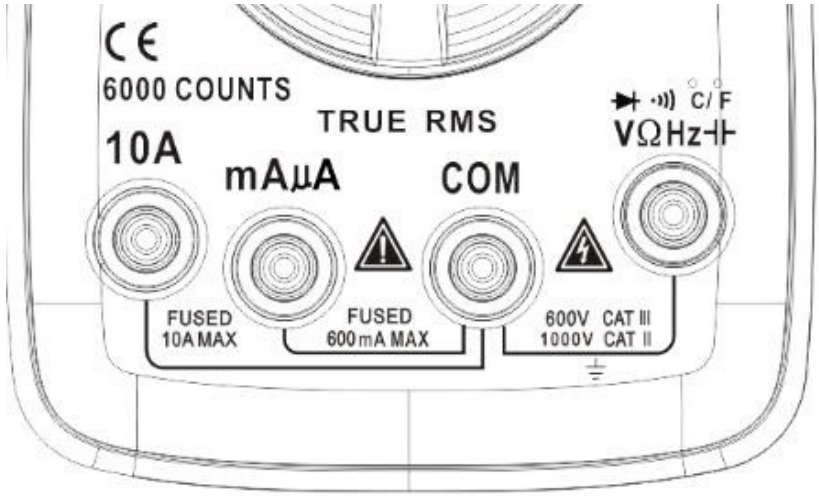
Rotary Switch



OFF	Turn off the product at this position. • The product automatically powers off after 15 minutes of inactivity. • The built-in beeper beeps 5 times 1 minute before auto power off. • To restart the product from auto power off, press the SEL button or turn the rotary switch back to the OFF position and then to a needed position. • To disable the Auto Power Off function, hold down the SEL button when turning on the product, you will hear five beeps if you have successfully disabled the function.

AUTO	Please rotate dial to AUTO position; Put probes correctly to recognize Voltage/Resistance/Continuity automatically. Only when the voltage is higher than 0.8V, this data will be shown on the display. ※ Voltage/Resistance/Continuity can be also measured by switch dial to function position manually
	AC Voltage≤750V DC Voltage≤1000V Frequency≥10V，1~100KHz Duty Cycle：1%~99%。
	AC Current≤600mV DC Current≤600mV Frequency≤10V，1~10MHz Duty Cycle：1%~99%。 Temperature：-20~1000° C (-4~1832)℉
	Resistance：≤60MΩ Continuity： Beeper turns on at < 50Ω Diode： Displays OL above 3V
	Frequency≤10V，1~10MHz Duty Cycle：1%~99%。
	DC Current：≤10A。 AC Current：≤10A。
	DC Current：≤600mA。 AC Current：≤600mA。
	DC Current：≤6000µA。 AC Current：≤6000µA。

Input Terminals

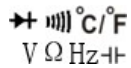


10A	Input terminal for AC/DC current measurements to ≤10A.
mA μA	Input terminal for AC/DC current measurements to ≤600mA.
COM	Common (return) terminal for all measurements.
VΩHz	Input terminal for the measurements of: 1. Diode 2. Continuity 3. Temperature 4. AC/DC voltage 5. Resistance 6. Frequency 7. Capacitance

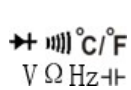
Measurements Instruction

AUTO Mode

1.Auto mode can recognize Voltage/Resistance/Continuity automatically. Only when the voltage is higher than 0.8V, this data will be shown on the display.

1. Connect the black test lead to the COM Terminal and the red lead to the  Terminal.
2. Turn the rotary switch to AUTO position
3. Touch the probes to the correct test points of the circuit to measure the voltage.
4. Read the measured voltage on the display.

Measure AC/DC Voltage

1. Connect the black test lead to the COM Terminal and the red lead to the  Terminal.
2. Turn the rotary switch to  or to  .
3. Press SELECT to toggle between AC/DC.
4. Touch the probes to the correct test points of the circuit to measure the voltage.

5. Read the measured voltage on the display.

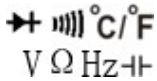
*The measured voltage should not exceed the rated maximum test value, otherwise it may damage the product and endanger personal safety.
*Do not touch high voltage circuit during measurements.

Measure AC/DC Current

1. Connect the black test lead to the COM Terminal and the red lead to the mA, μA, A Terminal (MAX.600mA) or the 10A Terminal(MAX.10A).
2. Turn the rotary switch to ≂ mA , ≂ μA or ≂ A .
3. Press SELECT to toggle between AC/DC mode。
4. Cut off the circuit path to be measured. Then connect the test leads across the circuit and power supply.
5. Read the measured current on the display.

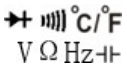
- The measured current should not exceed the rated maximum test value, otherwise it may damage the product and endanger personal safety.
- Use the 10A Terminal and ≂ A e Mode to judge range and choose the right function position when measure an unknown current.
- It is strictly forbidden to input voltage in this measuring state.

Measure Resistance

1. Connect the black test lead to the COM Terminal and the test lead to the  Terminal.
2. Turn the rotary switch to  , and the display will show " OL ".
3. Touch the probes to the desired test points of the circuit to measure the resistance.
4. Read the measured resistance on the display.

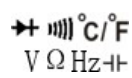
- Disconnect circuit power and discharge all capacitors before you test resistance.
- Do not input voltage at this setting.

Test Continuity

1. Connect the black test lead to the COM Terminal and the red lead to the  Terminal.
2. Turn the rotary switch to  , press SELECT to toggle to the Continuity Mode.
3. Touch the probes to the desired test points of the circuit.
4. The built-in beeper will beep when the resistance is lower than 50Ω, which indicates a short circuit.

*Do not input voltage at this setting.

Test Diodes

1. Connect the black test lead to the COM Terminal and the red lead to the  Terminal.
2. Turn the rotary switch to  , press SELECT to toggle to the Diode Mode.
3. Connect the red probe to the anode side and the black probe to the cathode side of the diode being tested.
4. Read the forward bias voltage value on the display.
5. If the polarity of the test leads is reversed with diode polarity or the diode is broken, the display reading shows "  ".

*Do not input voltage at this setting.
*Disconnect circuit power and discharge all capacitors before you test diode.

Measure Capacitance

1.Connect the black test lead to the COM Terminal and the red lead to the  Terminal.

2. Turn the rotary switch to , press SELECT to toggle to the Capacitance Mode.
3. Connect the red probe to the anode side and the black probe to the cathode side of the capacitor being tested.
4. Read the measured capacitance value on the display once the reading is stabilized.

- Disconnect circuit power and discharge all capacitors before you test capacitance.

Measure Frequency

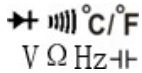
1.Connect the black test lead to the COM Terminal and the red lead to the Terminal.

2.Turn the rotary switch to ,press SELECT to switch to AC Voltage and press Hz % to toggle to the Frequency Mode (Voltage≥10V, 1~100KHz); or turn the rotary switch to press SELECT to switch to AC Voltage and press Hz % to toggle to the Frequency Mode (Voltage ≤10V 1~10MHz); or turn the rotary switch to press SELECT to switch to AC Voltage and press Hz % to toggle to the Frequency Mode(Voltage≤10V,1~10MHz).

3.Touch the probes to the desired test points.

4. Read the measured frequency value on the display.

Measure Duty Cycle

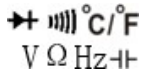
1.Connect the black test lead to the COM Terminal and the red lead to the  Terminal.

2. Turn the rotary switch to  or  and press Hz % to toggle to the Duty Cycle Mode; or turn the rotary switch to  press Hz % to toggle to the Duty Cycle Mode.

3. Touch the probes to the desired test points.

4. Read the measured duty cycle value on the display.

Measure Temperature

1.Connect the black thermocouple probe to the COM Terminal and the red probe to the  Terminal.

2.Turn the rotary switch to  , press SELECT twice to toggle to the Temperature Mode and the display will show the room temperature, to toggle between ℃/℉, press SELECT button.

3. Touch the probes to the desired test points.

4. Read the measured temperature on the display.

*Do not input voltage at this setting.

Maintenance

Beyond replacing batteries and fuses, do not attempt to repair or service the product unless you are qualified to do so and have the relevant calibration, performance test, and service instructions.

Clean the Product

Wipe the product with a damp cloth and mild detergent. Do not use abrasives or solvents. Dirt or moisture in the terminals can affect readings.

*Remove the input signals before you clean the product.

Replace the Batteries

When “  ” is shown on the display, batteries shall be replaced as below:

1.Remove the test leads and turn off the product before replacing the batteries.

2. Loosen the screw on the battery door and remove the battery door.
3. Replace the used batteries with new batteries of the same type.
4. Place the battery door back and fasten the screw.

Replace the Fuses

When a fuse is blown or do not work properly, it shall be replaced as below:

1. Remove the test leads and turn off the product before replacing the fuse.
2. Loosen the four screws on the back cover and the screw on the battery door, then remove the battery door and the back cover.
3. Replace the fuse with a new fuse of the same type.
4. Place the back cover and the battery door back and fasten the screws.

Specifications

General Specifications	
Display（LCD）	6000 counts
Ranging	Auto/Manual
Material	ABS
Update Rate	3 times/ second
True RMS	√
Data Hold	√
Backlight	√
Low Battery Indication	√
Auto Power Off	√

Mechanical Specifications	
Dimension	161*81*39mm
Weight	330g（without batteries）
Battery Type	1.5V AA Battery * 2
Warranty	One year

Environmental Specifications		
Operating	Temperature	0~40℃
	Humidity	＜75%
Storage	Temperature	-20~60℃
	Humidity	＜80%

Electrical Specifications

Function	Range	Resolution	Accuracy
DC Voltage（V）	6.000V	0.001V	±(0.5%+3)
	60.00V	0.01V	
	600.0V	0.1V	
	1000V	1V	
DC Voltage（mV）	60.00mV	0.01mV	
	600.0mV	0.1mV	
AC Voltage（V）	6.000V	0.001V	±(1.0%+3)
	60.00V	0.01V	
	600.0V	0.1V	
	750V	1V	
AC Voltage（mV）	60.00mV	0.01mV	
	600.0mV	0.1mV	
DC Current（A）	6.000A	0.001A	±(1.2%+3)
	10.00A	0.01A	

Function	Range	Resolution	Accuracy
DC Current（mA）	60.00mA	0.01mA	±(1.2%+3)
	600.0mA	0.1mA	
DC Current（μA）	600.0μA	0.1μA	
	6000μA	1μA	
AC Current（A）	6.000A	0.001A	
	10.00A	0.01A	
AC Current（mA）	60.00mA	0.01mA	±(1.5%+3)
	600.0mA	0.1mA	
AC Current（μA）	600.0μA	0.1μA	
	6000μA	1μA	
Resistance	600.0Ω	0.1Ω	±(0.5%+3)
	6.000kΩ	0.001kΩ	
	60.00kΩ	0.01kΩ	
	600.0kΩ	0.1kΩ	
	6.000MΩ	0.001MΩ	
	60.00MΩ	0.01MΩ	±(1.5%+3)

Function	Range	Resolution	Accuracy
Capacitance	9.999nF	0.001nF	±(5.0%+20)
	99.99nF	0.01nF	±(2.0%+5)
	999.9nF	0.1nF	
	9.999μF	0.001μF	
	99.99μF	0.01μF	
	999.9μF	0.1μF	
	9.999mF	0.001mF	±(5.0%+5)
Frequency	99.99Hz	0.01Hz	±(0.1%+2)
	999.9Hz	0.1Hz	
	9.999kHz	0.001kHz	
	99.99kHz	0.01kHz	
	999.9kHz	0.1kHz	
	9.999MHz	0.001MHz	
Duty Cycle	1%~99%	0.1%	±(0.1%+2)

Function	Range	Resolution	Accuracy
Temperature	(-20~1000)℃	1℃	±(2.5%+5)
	(-4~1832)℉	1℉	
Diode	√		
Continuity	√		
Bluetooth	√