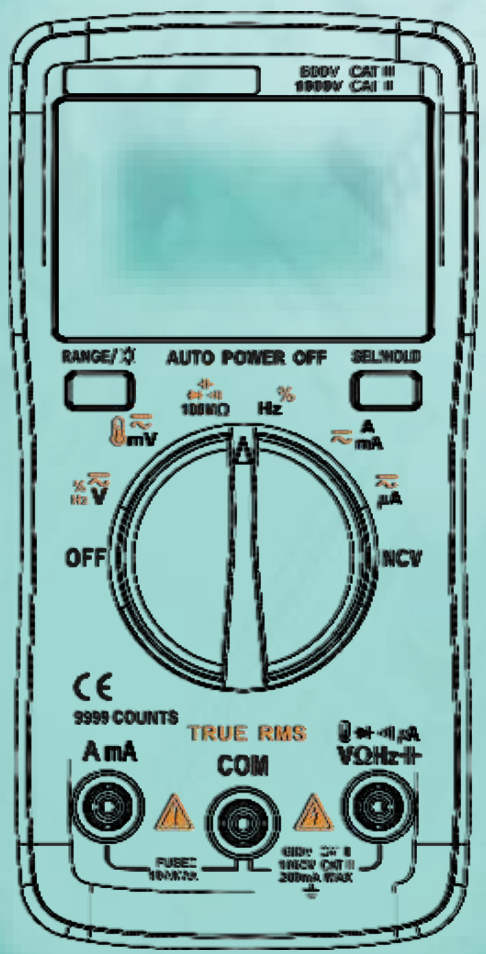
User Manual



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.

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Introduction

This product is the world's first 9999 counts palm-size auto-ranging digital multimeter. The product is battery-powered with true-rms, a LCD display and a backlight.

Safety Information

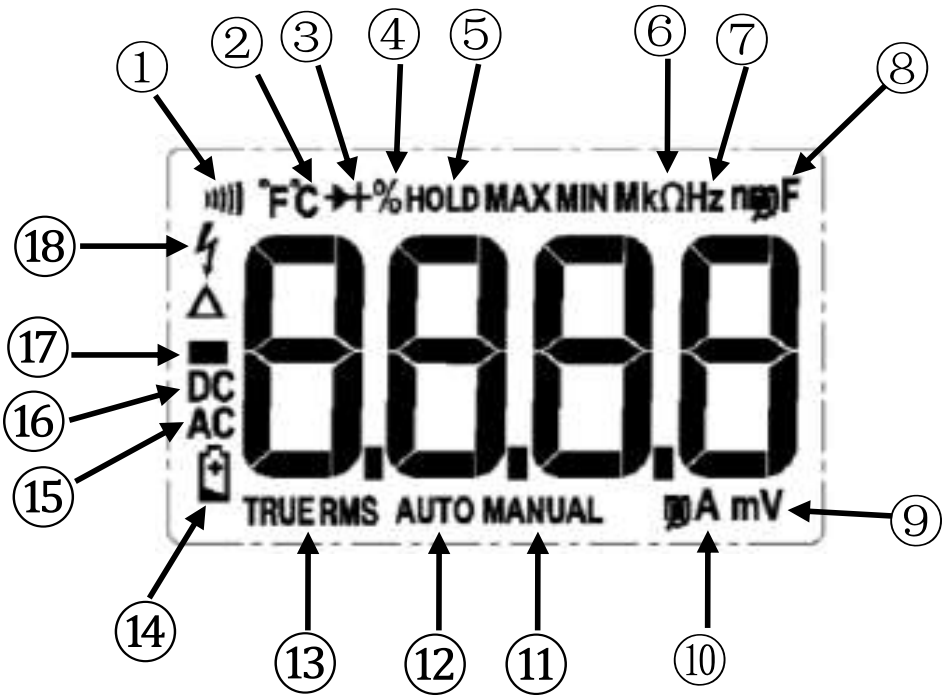
To avoid possible electrical shock, fire, or personal injury, please read all safety information before you use the product. Please use the product only as specified, or the protection supplied by the product can be compromised.

- 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

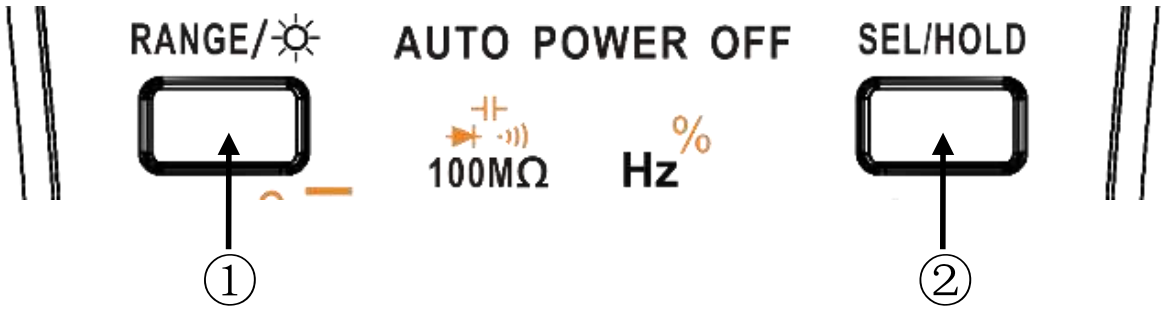
LCD Display



①		Continuity test.
②	°F °C	Temperature test. (Fahrenheit or Celsius)
③		Diode test.
④	%	Duty cycle test.
⑤	HOLD	Display freezes present reading.
⑥	Ω	Resistance test. (Ohm)

⑦	Hz	Frequency test. (Hertz)
⑧	F	Capacitance test. (Farad)
⑨	V	Voltage test. (Volt)
⑩	A	Current test. (Ampere)
⑪	MANUAL	Manual range. The user selects the range.
⑫	AUTO	Auto range. The product selects the range with the best resolution.
⑬	TRUE RMS	The product measures both sinusoidal and nonsinusoidal ac waveforms accurately.
⑭		Low battery. Replace batteries.
⑮	AC	Alternating current.
⑯	DC	Direct current.
⑰		Negative readings.
⑱		Unsafe Voltage.
n k M μ m		Measurement units.

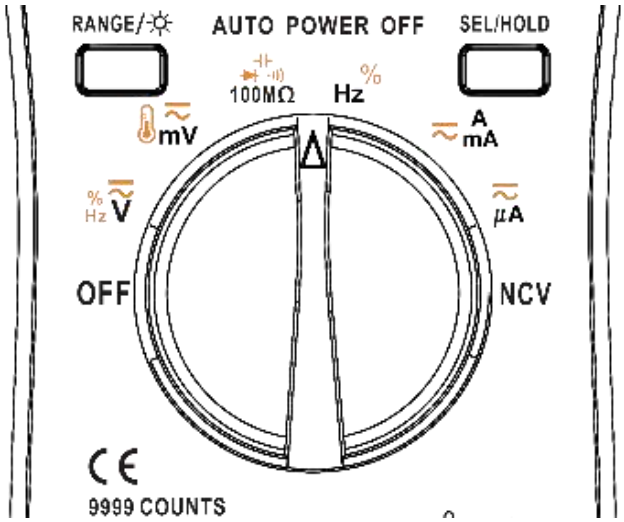
Function Buttons



①	*Range/Backlight Button* • 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. • 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	*SEL/HOLD Button* • Push to select alternate measurement modes on a rotary switch setting, including: 1. DC V/AC V/Frequency/Duty Cycle 2. DC mV/AC mV/Temperature 3. Resistance/ Continuity/ Diode/ Capacitance 4. Frequency/Duty Cycle 5. DC A/AC A 6. DC μA/AC μA 7. NCV • Push for more than 2 seconds to hold the current reading on the display; long-push again to continue normal operation.

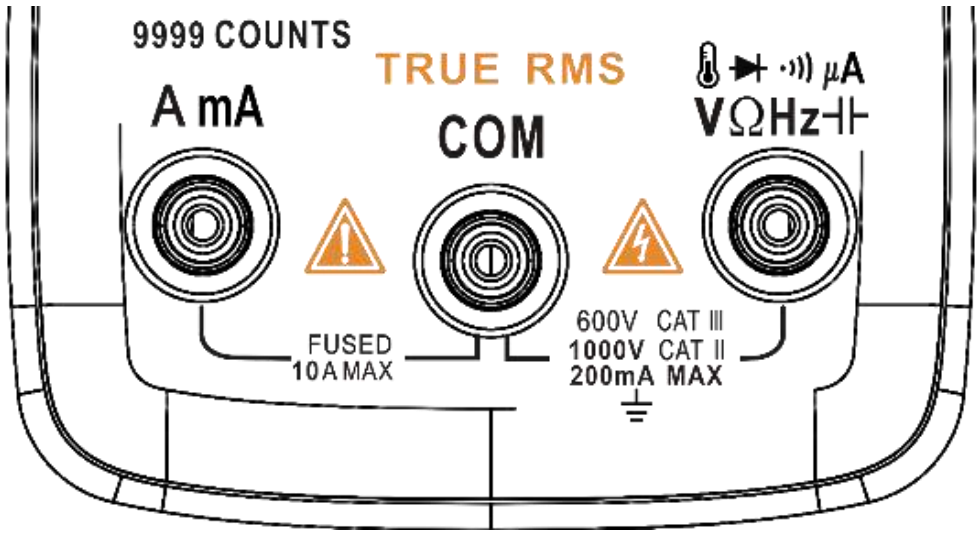
Rotary Switch



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/HOLD 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/HOLD button when turning on the product, you will hear five beeps if you have successfully disabled the function.

	DC voltage ≤999.9V AC voltage ≤750V Frequency with high voltage Duty Cycle from 1%~99%
	DC voltage ≤99.99mV AC voltage ≤99.99mV Celsius: -20~1000 Fahrenheit: -4~1832
	Ohms ≤99.99MΩ Continuity. Beeper turns on at ＜50Ω Diode test. Displays OL above 3V Farads ≤9.999mF
	Frequency with low voltage Duty Cycle from 1%~99%
	DC A ≤9.999A AC A ≤9.999A
	DC A ≤999.9μA AC A ≤999.9μA
	Non-contact voltage test.

Input Terminals



A mA	Input terminal for AC/DC current measurements to 9.999A.
COM	Common (return) terminal for all measurements.
VΩHz	Input terminal for the measurements of: 1. AC/DC voltage 2. Resistance 3. Capacitance 4. Frequency 5. Temperature 6. Continuity 7. Diode 8. Duty cycle 9. AC/DC current to 999.9μA

Measurements Instruction

Measure AC/DC Voltage

1. Connect the black test lead to the COM Terminal and the red lead to the VΩHz Terminal.
2. Turn the rotary switch to  or to  .
3. Press SEL 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.

***Do not measure voltage that exceeds the extremes as indicated in the Specifications.**
***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 VΩHz Terminal or the A mA Terminal (choose based on the value of the current to be measured).

2. Turn the rotary switch to ≂ A mA or ≂ μA .
3. Press SEL to toggle between AC/DC.
4. Break the circuit path to be measured, connect the test leads across the break and apply power.
5. Read the measured current on the display.

***Do not measure current that exceeds the extremes as indicated in the Specifications.**
***Use the A mA Terminal and the ≂ A mA Mode when you are measuring an unknown current. Then switch to the VΩHz Terminal and the ≂ μA Mode if necessary.**
***Do not input voltage at this setting.**

Measure Resistance

1. Connect the black test lead to the COM Terminal and the test lead to the VΩHz Terminal.
2. Turn the rotary switch to 100MΩ , 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 for Continuity

1. Connect the black test lead to the COM Terminal and the red lead to the VΩHz Terminal.
2. Turn the rotary switch to 

, press SEL once 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 VΩHz Terminal.

2. Turn the rotary switch to  , press SEL twice 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 “ OL ”.

***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 VΩHz Terminal.
2. Turn the rotary switch to  , press SEL three times 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 stablized.

***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 VΩHz Terminal.
2. Turn the rotary switch to  (applies to low frequency with high voltage), press SEL twice to toggle to the Frequency Mode; or turn the rotary switch to  (applies to high frequency with low voltage).
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 VΩHz Terminal.
2. Turn the rotary switch to  (applies to low frequency with high voltage), press SEL three times to toggle to the Duty Cycle Mode; or turn the rotary switch to  (applies to high frequency with low voltage), press SEL once 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 VΩHz Terminal.

2. Turn the rotary switch to  , press SEL three times to measure temperature(℃), or press SEL four times to measure temperature(℉).
3. Touch the probes to the desired test points.
4. Read the measured temperature on the display.

***Do not input voltage at this setting.**

Test NCV

1. Turn the rotary switch to NCV .
2. Hold the product and move it around, the built-in beeper will beep when the inner sensor detects AC voltage nearby. The stronger the voltage is, the quicker the beeper beeps.

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）	9999 Counts
Ranging	Auto/Manual
Material	ABS
Update Rate	3 Times/Second
Ture RMS	√
Data Hold	√
Backlight	√
Low Battery Indication	√
Auto Power Off	√

Mechanical Specifications	
Dimension	130*65*32mm
Weight	114g
Battery Type	1.5V AAA 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)	999.9mV	0.1mV	±(0.5%+3)
	9.999V	0.001V	
	99.99V	0.01V	
	999.9V	0.1V	
DC Voltage (mV)	9.999mV	0.001mV	
	99.99mV	0.01mV	
AC Voltage (V)	999.9mV	0.1mV	±(1.0%+3)
	9.999V	0.001V	
	99.99V	0.01V	
	750.0V	0.1V	
AC Voltage (mV)	9.999mV	0.001mV	
	99.99mV	0.01mV	

Function	*Range*	*Resolution*	*Accuracy*
DC Current (mA&A)	999.9mA	0.1mA	±(1.0%+3)
	9.999A	0.001A	
DC Current (μA)	99.99μA	0.01μA	±(0.8%+3)
	999.9μA	0.1μA	
AC Current (mA&A)	999.9mA	0.1mA	±(1.2%+3)
	9.999A	0.001A	
AC Current (μA)	99.99μA	0.01μA	±(1.0%+3)
	999.9μA	0.1μA	
Resistance	99.99Ω	0.01Ω	±(1.0%+3)
	999.9Ω	0.1Ω	±(0.5%+3)
	9.999kΩ	0.001kΩ	
	99.99kΩ	0.01kΩ	
	999.9kΩ	0.1kΩ	
	9.999MΩ	0.001MΩ	±(1.5%+3)
	99.99MΩ	0.01MΩ	

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	√		
NCV	√		