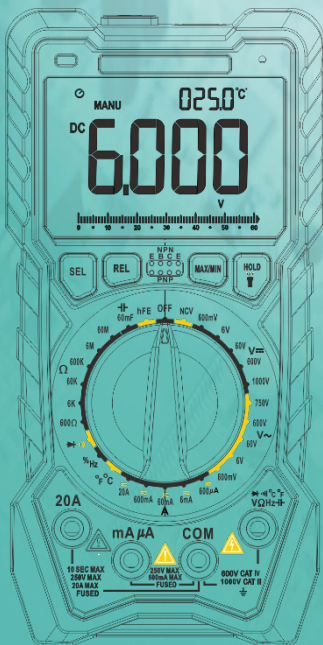


User Manual



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Specification 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.

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Introduction

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

Safety Information

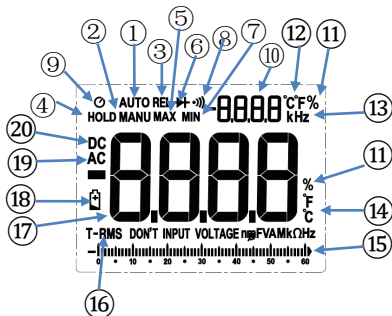
To avoid possible electrical shock, fire, or personal injury, please read all safety information before you use the product. Please use the product only as specified, or the protection supplied by the product can be compromised.

- 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

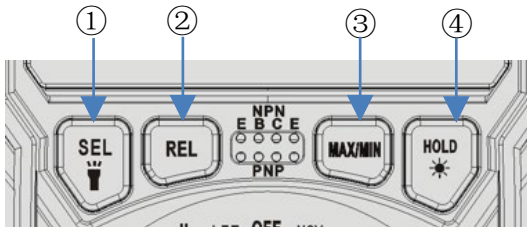
LCD Display

















①	AUTO	Auto range. The product selects the range with the best resolution.
②	MANU	Manual range. The user selects the range.
③	REL	The display will save the current reading value as the reference value, and the reference value will be automatically subtracted by the instrument each time the measurement is performed.
④	HOLD	Display freezes present reading.
⑤	MAX	Display shows maximum reading.
⑥	▶+	Diode test.
⑦	MIN	Display shows minimum reading.
⑧	 	Continuity test.














⑨		Auto power off symbol
⑩	-8888.8	Secondary measurements display
⑪	%	Duty cycle test.
⑫	°F°C	Temperature test-Fahrenheit
⑬	Hz	Frequency test. (Hertz)
⑭	°F °C	Temperature test-Celsius
⑮		Analog bar graph
⑯	T-RMS	The product can accurately measure alternating current with and without sinusoidal waveforms
⑰	-8888.8	Main display
⑱		Low battery. Replace batteries.
⑲	AC	Alternating current.
⑳	DC	Direct current.
DON'T INPUT VOLTAGE		Don't input voltage reminder.
mFVAMkΩHz		Measurement units.

Function Buttons

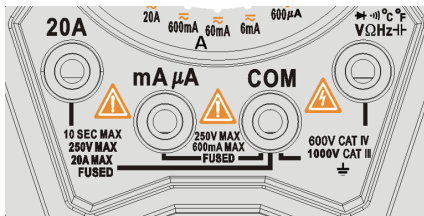






①	<p>Selects alternate measurement modes on a rotary switch setting, including:</p> <ol style="list-style-type: none">1. Frequency/Duty Cycle2. DC A/AC A3. DC mA/AC mA4. DC μA/AC μA5. Press and hold for 2 seconds to turn on/off the flashlight
②	<p>Relative value measurement button: In capacitance, resistance, triode, voltage, current measurement mode, press this key to enter the relative value measurement mode; press it again to exit.</p>
③	<p>Push to toggle between the MAX and the MIN mode. To exit MAX/MIN mode, push the button for more than 2 seconds.</p>
④	<p>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.</p>

	Non-contact voltage test
	DC voltage $\leq 600\text{mV}$
	DC voltage $\leq 6\text{V}$
	DC voltage $\leq 60\text{V}$
	DC voltage $\leq 600\text{V}$
	DC voltage $\leq 1000\text{V}$
	AC voltage $\leq 750\text{V}$
	AC voltage $\leq 600\text{V}$
	AC voltage $\leq 60\text{V}$
	AC voltage $\leq 6\text{V}$
	AC voltage $\leq 600\text{mV}$
	AC/DC current: $\leq 600\mu\text{A}$
	AC/DC current: $\leq 6\text{mA}$
	AC/DC current: $\leq 60\text{mA}$

	AC/DC current: $\leq 600\text{mA}$
	AC/DC current: $\leq 20\text{A}$
	Celsius: $-20\sim 1000$, Fahrenheit: $-4\sim 1832$
	Low voltage and high frequency, duty cycle: $1\%\sim 99\%$
	Continuity, Diode
	Resistance: $\leq 600\Omega$
	Resistance: $\leq 6\text{K}\Omega$
	Resistance: $\leq 60\text{K}\Omega$
	Resistance: $\leq 600\text{K}\Omega$
	Resistance: $\leq 6\text{M}\Omega$
	Resistance: $\leq 60\text{M}\Omega$
	Resistance: $\leq 60\text{mF}$, Automatic range
	Triode hFE value: $0\sim 1000\beta$



Input Terminals





	Input terminal for AC/DC current measurements to 20A.
	Input port for current mA/uA measurement $\text{mA} \leq 600\text{mA}$, $\text{uA} \leq 600\text{uA}$
	Common (return) terminal for all measurements.
	Input terminal for the measurements of: 1. AC/DC voltage 2. Resistance 3. Capacitance 4. Frequency 5. Temperature 6. Continuity 7. Diode

Measurements Instruction

Measure DC Voltage

1. Connect the black test lead to the COM Terminal and the red lead to the  Terminal.
2. Rotate the dial to the  DC voltage range, and select the test range according to the size of the measured signal.
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 Voltage

1. Connect the black test lead to the COM Terminal and the red lead to the  Terminal.
2. Rotate the dial to the  DC voltage range, and select the test range according to the size of the measured signal.
3. Touch the probes to the correct test points of the circuit to measure the voltage.
4. 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. Rotate the dial to the **A** current measurement mode, and the current gear indicator light    will be on. Select the test range according to the size and type of the measured current (range 600uA~20A is divided into 5 ranges), and you can press SEL to select AC/DC switching.
2. The black test lead is inserted into the COM port. When the current is less than 600mA, the red test lead is inserted into the mAuA port. When the current is in the range of 600mA~20A, the red test lead needs to be inserted into the 20A port.
3. Break the circuit path to be measured, connect the test leads across the break and apply power.
4. Read the measured current on the display.

***Do not measure current that exceeds the extremes as indicated in the Specifications.**

***Use the 20A Terminal when you are measuring an unknown current. Then select the test port and gear according to the displayed value.**

***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  Terminal.
2. Rotate the dial to the resistance gear, turn the knob switch to select the range according to the resistance to be measured (the measurement range is $0\Omega\sim 60M\Omega$, divided into 6 gears)
3. Touch the probes to the desired test points of the circuit to measure the resistance.
3. 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.**

Measure 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 SEL button to measure continuity.
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 .
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  Terminal.
2. Turn the rotary switch to .
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  (applies to high frequency with low voltage); or turn the rotary switch to , press SELECT once to toggle to the Frequency Mode (applies to low frequency with high 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  Terminal.
2. Turn the rotary switch to , press the Hz % button 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  Terminal.
2. Turn the rotary switch to  , and the display will show the room temperature, to toggle between °C/°F, 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.**

Test NCV

1. Turn the rotary switch to 
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.
3. If the red test lead is inserted into the “  ” alone, and the probe of the test lead is used to contact the mains power plug, if the buzzer alarm is strong, it is the live wire, otherwise the earth wire or the neutral wire.

Test triode hFE value

1. Turn the rotary switch to 
2. Determine whether the triode to be measured is NPN or PNP type, respectively insert the base (B), emitter (E), and collector (C) into the  triode measurement socket.
3. Read the approximate hFE value on the display (range 0~1000 β).

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/PVC
Update Rate	3 times/second
Ture RMS	√
Data Hold	√
Backlight	√
Low Battery Indication	√
Auto Power Off	√

Mechanical Specifications	
Dimension	176*91*47mm
Weight	330g (no battery)
Battery Type	1.5V AA Battery * 3
Warranty	One year

Environmental Specifications

Operating	Temperature	0~40°C
	Humidity	< 75%
Storage	Temperature	-20~60°C
	Humidity	< 80%

Electrical Specifications

<i>Function</i>	<i>Range</i>	<i>Resolution</i>	<i>Accuracy</i>
DC Voltage (V) (mV)	600.0mV	0.1mV	$\pm(0.5\%+3)$
	6.000V	0.001V	
	60.00V	0.01V	
	600.0V	0.1V	
	1000V	1V	
AC Voltage (V) (mV)	600.0mV	0.1mV	$\pm(1.0\%+3)$
	6.000V	0.001V	
	60.00V	0.01V	
	600.0V	0.1V	
	750V	1V	
DC Current (A)	20.00A	0.01A	$\pm(1.2\%+3)$

<i>Function</i>	<i>Range</i>	<i>Resolution</i>	<i>Accuracy</i>
DC Current (mA)	6.000mA	0.001mA	±(1.2%+3)
	60.00mA	0.01mA	
	600.0mA	0.1mA	
DC Current (μA)	600.0μA	0.1μA	
AC Current (A)	20.00A	0.01A	±(1.5%+3)
AC Current (mA)	6.000mA	0.001mA	
	60.00mA	0.01mA	
	600.0mA	0.1mA	
AC Current (μA)	600.0μA	0.1μA	
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)

<i>Function</i>	<i>Range</i>	<i>Resolution</i>	<i>Accuracy</i>
Capacitance	9.999nF	0.001nF	$\pm(5.0\%+20)$
	99.99nF	0.01nF	$\pm(2.0\%+5)$
	999.9nF	0.1nF	
	9.999 μ F	0.001 μ F	
	99.99 μ F	0.01 μ F	
	999.9 μ F	0.1 μ F	
	9.999mF	0.001mF	$\pm(5.0\%+5)$
	60.00mF	0.01mF	
Frequency	9.999Hz	0.001Hz	$\pm(0.1\%+2)$
	99.99Hz	0.01Hz	
	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%	$\pm(0.1\%+2)$

<i>Function</i>	<i>Range</i>	<i>Resolution</i>	<i>Accuracy</i>
Temperature	(-20~1000)°C	1°C	±(2.5%+5)
	(-4~1832)°F	1°F	
Diode	√		
Continuity	√		
NCV	√		
Triode	hFE approximation value 0~1000 β		

