#### A. Introduction

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

#### B. Safety Information

To avoid possible electrical shock, fire, or personal injury, please read all safety information before you use the product.

Do NOT exceed the "maximum value" indicated in the Specification.
 Examine the connection of the test leads and the insulation of the product

before measuring voltage higher than 36V DC or 25V AC. (3) Disconnect the test leads from the circuit before changing the mode.

(4) 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. (5) Safety compose:

# User Manual

(s) salety symbols.							
		Hazardous Voltage	÷	Earth			
		Double Insulated	Ð	Low Battery			
	Â	Risk of Danger. Check the User Manual.					

#### C. Specifications

(V)      600.0V      0.1V      ± (1.0%+3)      /50V      (600mV range, >600        AC Voltage [60.00mV]      0.01mV      600mV      600mV      600mV      600mV        (mV)      600.00mV      0.1mV      600mV      600mV      600mV      600mV        DC Current [60.00A      0.01A      ± (1.2%+3)      10A      MAX.Current: 10A (rmore than 15 seconds);        MC Current [60.00A      0.001A      ± (1.2%+3)      10A      MAX.current: 10A (rmore than 15 seconds);        AC Current [60.00A      0.001A      ± (1.5%+3)      10A      Frequency Response(A        AC Current [60.00mA      0.01mA      ± (1.5%+3)      10A      Frequency Response(A	c. specificat	IONS					
6.000V      0.001V        DC Voltage (60.00V      0.01V        1000V      1000V        1000V      10        1000V      1000A        1000A      0.01A        (A)      10.00A        (A)      10.00A        (A)      10.00A        (A)      10.00A        (A)      10.00A        (A)      10.00A        <			Ele	ctrical Specif	ications		
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Function	Range	Resolution	Accuracy	MAX.Value	Other	
(V)      600.0V      0.1V      ± (0.5%+3)      1000V      Input Resistance:10MC        DC Voltage      60.00V      0.1mV      600mV      600mV      600mV        MC Voltage      60.00V      0.01mV      600mV      600mV      600mV        AC Voltage      60.00V      0.01V      ± (1.0%+3)      750V      Input Resistance:10MC        AC Voltage      60.00W      0.01V      ± (1.0%+3)      750V      Input Resistance:10MC        MC Voltage      60.00W      0.01V      ± (1.0%+3)      750V      Input Resistance:10MC        MC voltage      60.00mV      0.01mV      ± (1.0%+3)      10A      40Hz-1kHz        MC current      6.000mA      0.01mA      ± (1.2%+3)      10A      MAX.Current: 10A (r        MC Current      6.000mA      0.01mA      ± (1.5%+3)      10A      mode        AC Current      6.000mA      0.01mA      ± (1.5%+3)      10A      Frequency Response(A        AC Current      6.000mA      0.01mA      ± (1.5%+3)      10A      Addtz-1kHz		6.000V	0.001V	±(0.5%+3)			
(V)      600.0V      0.1V      ± (0.5%+3)      Input Resistance:10MC        DC Voltage 60.00mV      0.01mV      600mV      600mV      600mV        (mV)      600.0mV      0.01mV      600mV      600mV      600mV        AC Voltage 60.00mV      0.01mV      ± (1.0%+3)      750V      Frequency Response:        AC Voltage 60.00mV      0.01mV      ± (1.0%+3)      10A      MAX.Current: 10A (r        MC Current 6.000m      0.01mA      ± (1.2%+3)      10A      MAX.current: 10A (r        MC Current 6.000m      0.001A      ± (1.5%+3)      10A      MAX.current: 10A (r        AC Current 6.000m      0.01mA      ± (1.5%+3)      10A      Frequency Response(A        AC Current 6.000m      0.01mA      ± (1.5%+3)      10A      Frequency Response(A        AC Current 6.000m      0.01mA      ± (1.5%+3)      10A      Frequency Response(A	DC Voltage	60.00V	0.01V				
DC Voltage      G0.00mV      0.01mV      G00mV      G00mV        (mV)      60.00mV      0.01mV      600mV      G00mV      G00mV        AC Voltage      60.00mV      0.01V      Frequency Resistance:10MC      G00mV range, >60M        750V      1V      ±(1.0%+3)      750V      Frequency Response:        AC Voltage      60.00mV      0.01mV      600mV      600mV      40Hz-1kHz        DC Current      60.00mA      0.01mA      ±(1.2%+3)      10A      MAX.Current: 10A (rmore than 15 seconds)        AC Current      60.00mA      0.01A      ±(1.5%+3)      10A      Frequency Response(A        AC Current      60.00mA      0.01mA      ±(1.5%+3)      10A      Frequency Response(A        AC Current      60.00mA      0.01mA      ±(1.5%+3)      10A      Frequency Response(A	(∨)	600.0V	0.1V			Innut Desistance 10140	
(mV)      60.0mV      0.1mV      6000mV        AC Voltage      60.00V      0.001V      (%)      6000W      (%)        VV      60.00V      0.01V      (%)      (%)      (%)      (%)        AC Voltage      60.00V      0.01V      (%)      (%)      (%)      (%)        AC Voltage      60.00V      0.01W      ±(1.0%+3)      750V      10V      40Hz.1kHz      40Hz.1kHz        DC Current      60.00M      0.01A      ±(1.2%+3)      10A      MAX.Current: 10A (r)        MC Voltage      60.0mA      0.01A      ±(1.2%+3)      10A      MAX.Current: 10A (r)        MAC Current      6.00A      0.001A      ±(1.5%+3)      10A      Frequency Response(A        AC Current      6.00A      0.01A      ±(1.5%+3)      10A      Frequency Response(A        AC Current      60.00A      0.01A      ±(1.5%+3)      10A      Frequency Response(A		1000V	1V			input Resistance. 101012	
(mV)      600.00V      0.01V        6.000V      0.001V        AC Voltage      60.00V      0.01V        750V      100      600 mV range, >600 mV        750V      100      600 mV range, >600 mV        750V      100      600 mV        750V      100      600 mV range, >600 mV        750V      100      600 mV        750V      100      MAX.Current 100 (range)        750V      100      600 mV        750V      100      MAX.Current 100 (range)        750V      100      600 mV        750V      100 mV      100 mV	DC Voltage	60.00mV	0.01mV		600mV		
AC Voltage      60.00V      0.01V      750V      Input Resistance:10MC, (600mV range, >60N 7ange, >60N	(mV)	600.0mV	0.1mV				
(V)      600.0V      0.1V      ±(1.0%+3)      750V      (600mV range, >60M        AC Voltage [60.00mV 0.01mV      100      Frequency Response:      40Hz-1kHz      40Hz-1kHz        MC Voltage [60.00mV 0.01mV      600mV      600mV      40Hz-1kHz      600mV        DC Current [6.000A 0.001A      ±(1.2%+3)      10A      MAX.Current: 10A (rmore than 15 seconds).        MC Current [6.000A 0.001A      ±(1.2%+3)      10A      Frequency Response(A dvlz-1kHz).        AC Current [6.000A 0.001A      ±(1.5%+3)      10A      Frequency Response(A dvlz-1kHz).        AC Current [6.000A 0.01A      ±(1.5%+3)      10A      Frequency Response(A dvlz-1kHz).		6.000V	.000V 0.001V		/50V		
(V)      600.0V      0.1V      ± (1.0%+3)      C600mV range, >600        750V      1V      ± (1.0%+3)      Frequency Response:        AC Voltage      60.0mV      0.01mV      600.0mV      40Hz-1kHz        (mV)      600.0mV      0.01nA      ± (1.2%+3)      10A      MAX.current: 10A (r more than 15 seconds)        NAC Current      60.00mA      0.01nA      ± (1.5%+3)      10A      Frequency Response(A        AC Current      60.00mA      0.01mA      ± (1.5%+3)      10A      Frequency Response(A        AC Current      60.00mA      0.01mA      ± (1.5%+3)      10A      Frequency Response(A	AC Voltage	60.00V	0.01V	±(1.0%+3)		Input Resistance:10MΩ (600mV range, >60MΩ Frequency Response:	
AC Voltage (50.00mV )      0.01mV )      Frequency Response:        (mV)      600.0mV )      0.01mV )      600mV       40Hz-1KHz )        DC Current [6.000A 0.001A )      1.00A (0.01A )      1.00A )      1.00A )      MAX.Current: 10A (r more than 15 seconds).        DC Current [6.000mA 0.001A )      1.00A )      0.001A )      600mA )      No Voltage input at thi: mode (A) 10.00A 0.01A ↓        AC Current [6.000mA 0.001A )      1.00A ↓      1.00A ↓      Frequency Response(A / 40Hz-1KHz)	(∨)	600.0V	0.1V				
(mV)      60.0mV      0.1mV      b00mV        DC Current      6.000A      0.001A      10A        (A)      10.00A      0.01A      10A        DC Current      6.00mA      0.01A      10A        (mA)      60.0mA      0.01A      ±(1.2%+3)        AC current      6.00mA      0.001A      No Voltage input at this        AC Current      6.000A      0.01A      ±(1.5%+3)        AC Current      60.00mA      0.01mA      ±(1.5%+3)		750V	1V				
(mV)      600.0mV      0.1mV      10A        C Current (50.000A      0.001A      10.4      MAX.Current: 10A (r)        (mA)      60.0mA      0.01A      ±(1.2%+3)      more than 15 seconds:        (mA)      60.00mA      0.01A      ±(1.2%+3)      600mA      No Voltage input at this        AC Current (6.00mA      0.001A      ±(1.5%+3)      10A      Frequency Response(A        AC Current (6.00mA      0.01mA      ±(1.5%+3)      10A      Frequency Response(A	AC Voltage	60.00mV	0.01mV	1 [	1 Г	600m)/	40Hz-1kHz
(A)      10.00A      0.01A      ± (1.2%+3)      10A      MAX.Current: 10A (r more than 15 seconds).        (mA)      6000mA      0.001mA      ± (1.2%+3)      600mA      No Voltage input at this        AC Current      6.000A      0.001A      ± (1.5%+3)      10A      Frequency Response(A        AC Current      60.001A      ± (1.5%+3)      10A      Frequency Response(A	(mV)	600.0mV	0.1mV		600111		
(A)      10.00A      0.01A      ± (1.2%+3)      MAX.Current:      10A (r)        C Current 60.00mA      0.01mA      ± (1.2%+3)      600mA      No Voltage input at this        AC Current 60.00mA      0.001A      ± (1.5%+3)      10A      Frequency Response(A        AC Current 60.00mA      0.01mA      ± (1.5%+3)      10A      Frequency Response(A	DC Current	6.000A	0.001A	±(1.2%+3)	1.2%+3) 600mA		
Dc Current 60.00mA      0.01mA      600mA      more than 15 seconds.        (mA)      600.00mA      0.1mA      600mA      No Voltage input at thi        AC Current      6.000A      0.001A      ±(1.5%+3)      10A      Frequency Response(A        AC Current      60.00mA      0.01mA      ±(1.5%+3)      600mA      40Hz :hHz	(A)	10.00A	0.01A			MAX.Current: 10A (no	
(mA)      600.0mA      0.1mA      No      Voltage input at this        AC Current      6.000A      0.001A      mode      mode        (A)      10.00A      0.01A      frequency Response(A        AC Current      6.00mA      0.01HA      40Hz-1kHz	DC Current	60.00mA	0.01mA			more than 15 seconds) No Voltage input at this mode	
(A)      10.00A      0.01A        AC Current      60.00mA      0.01mA      ±(1.5%+3)      600mA      40Hz-1kHz	(mA)	600.0mA	0.1mA				
(A) 10.00A 0.01A AC Current 60.00mA 0.01mA ±(1.5%+3) Frequency Response(A 40Hz-1kHz	AC Current	6.000A	0.001A	±(1.5%+3)	404		
AC Current 60.00mA 0.01mA 600mA 40Hz-1kHz	(A)	10.00A	0.01A		1 (4 50(12)	IUA	Frequency Response(AC):
(mA) 600.0mA 0.1mA 600mA	AC Current	60.00mA	0.01mA		600mA	40Hz-1kHz	
	(mA)	600.0mA	0.1mA				

Function	Range	Resolution	Accuracy	MAX.Value	Other	
	600.0Ω	0.1Ω				
	6.000kΩ	0.001kΩ	±(0.5%+3)	60MQ	No Voltage input at this mode	
Resistance	60.00kΩ	0.01kΩ				
Resistance	600.0kΩ	0.1kΩ		00IVIΩ		
	6.000MΩ	0.001MΩ				
	60.00MΩ	0.01MΩ	±(1.5%+3)			
	9.999nF	0.001nF	±(5.0%+20)		No Voltage input at this mode	
	99.99nF	0.01nF	±(2.0%+5)			
	999.9nF	0.1nF				
Capacitance	9.999µF	0.001µF		9.999mF		
	99.99µF	0.01µF				
	999.9µF	0.1µF				
	9.999mF	0.001mF	±(5.0%+5)			
	99.99Hz	0.01Hz	±(0.1%+2)			
	999.9Hz	0.1Hz		9.999MHz		
Frequency	9.999kHz	0.001kHz				
Frequency	99.99kHz	0.01kHz				
	999.9kHz	0.1kHz				
	9.999MHz	0.001MHz				
Duty Cycle	1%~99%	0.1%	±(0.1%+2)			
Diode	v(DC forward current is 5mA, voltage is 3V)				No Voltage input a	
Continuity		this mode				

General Specifications			Mechanical Specifications			
Display (LCD)	6000 counts		Dimension	130*65*32mm		
Ranging	Auto		Weight	114g/128g(w/batteries)		
Material	ABS		Battery Type	1.5V AAA B	attery * 2	
Update Rate	3 times/second		Warranty One year		/ear	
Ture RMS	v		Environmental Specifications			
Data Hold	v		Operating	Temperature	0~40℃	
Backlight	V		Operating	Humidity	<75%	
Low Battery Alert	V		C	Temperature	-20~60°C	
Auto Power Off	v	Storage		Humidity	<80%	

### D. Instruction

Front Panel (see the picture on the right)
 LCD display
 buttons
 A. HOLD: To hold the current reading, press

3b. AC/DC Voltage (V) (Voltage-V)

3e. Frequency/Duty Cycle 3f. AC/DC Current (A) (Cureent-A) 3g. AC/DC Current (mA) (Current-mA)

3c. AC/DC Voltage (mV) (Voltage-mV) 3d. Resistance/Continuity/Diode/Capacitance

this button and you will see "HOLD" on the display; press again to cancel. To turn on <u>2b</u> the backlight, press this button for more <u>2a</u> <u>2b</u>. SELECT: To toggle between AC/DC, Diode/ Resistance/Capacitance/Continuity, or "C/TF, press this button. 3. Rotary Switch: To change mode or range. (from OFF, clockwise) 3a. OFF

- VΩHz: Input terminal for voltage, resistance, capacitance, frequency, current (mA), continuity, diode, and duty cycle measurements.
- 5. COM: Common terminal for all measurements.
- 6. 10A: Input terminal for current (V) measurements.

## (2) Measure AC/DC Current

- Connect the black test lead to the COM Terminal and connect the red test lead to the VQHz Terminal or the 10A Terminal (choose based on the value of current);
- Turn the rotary switch to the Current-A Mode or the Current-mA Mode;
  Press SELECT to toggle between AC/DC;
- Break the circuit path to be measured. Then connect the test leads across the break and apply power;
- 5. Read the measured current on the display.
- \*Caution:

3h. OFF

- Do not measure current that exceeds the MAX Value as indicated in the Specifications;
- b. Use the 10A Terminal and the Current-A Mode when you are measuring an unknown current. Then switch to the VΩHz Terminal and the Current-mA Mode if necessary.

Do not input voltage exceeds 36V DC or 25V AC when you are at the setting of measuring current.

- 3	1 -
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- 3 -

#### (3) Measure AC/DC Voltage

- 1. Connect the black test lead to the COM Terminal and connect the red test lead to the VOHz Terminal:
- Turn the rotary switch to the Voltage-V Mode or the Voltage-mV Mode; 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. \*Caution:
- a. Do not measure voltage that exceeds the MAX Value as indicated in the Specifications:
- b. Do not touch high voltage circuit during measurements.

#### (4) Measure Resistance

- 1. Connect the black test lead to the COM Terminal and connect the red test lead to the VΩHz Terminal:
- Turn the rotary switch to the Resistance Mode, 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.
- \*Caution:
- Disconnect circuit power and discharge all capacitors before you test resistance. b. Do not input voltage at the Resistance Mode.

#### (5) Measure Continuity

- 1. Connect the black test lead to the COM Terminal and connect the red test lead to the VOHz Terminal
- 2. Turn the rotary switch to the Resistance Mode, press SELECT 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.
- \*Caution:
- a. Do not input voltage at the Continuity Mode.

#### (6) Measure Diode

- 1. Connect the black test lead to the COM Terminal and connect the red test lead to the VOHz Terminal
- 2. Turn the rotary switch to the Resistance Mode, press SELECT 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".
- \*Caution:
- a. Do not input voltage at the Diode Mode.
- b. Disconnect circuit power and discharge all capacitors before you test diode.

#### (7) Measure Capacitance

- 1. Connect the black test lead to the COM Terminal and connect the red test lead to the VOHz Terminal:
- 2. Turn the rotary switch to the Resistance Mode, press SELECT three times to toggle to the Capacitance Mode:
- 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. \*Caution:
- a. Disconnect circuit power and discharge all capacitors before you test capacitance.

#### (8) Measure Frequency and Duty Cycle

- 1. Connect the black test lead to the COM Terminal and connect the red test lead to the VOHz Terminal:
- 2. Turn the rotary switch to the Frequency Mode: press SELECT once to toggle to the Duty Cycle Mode if you want to measure duty cycle:
- 3. Touch the probes to the desired test points of the circuit:
- 4. Read the measured frequency/duty cycle value on the display. \*Caution:
- a. The Frequency Mode only applies to measure high frequency with low voltage.

### (9) Auto Power Off

- 1. The product automatically powers off after 15 minutes of inactivity:
- 2. The built-in beeper beeps 5 times 1 minute before power off; 3. To restart the product, press SELECT button:
- 4. To disable the Auto Power Off function, hold down the SELECT button when turning on the product, you will hear five beeps if you have successfully disabled the function

#### E. Genearl Maintenance

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

- (1) Do not operate the product around hot, wet, flammable, explosive or magnetic environments.
- (2) Clean the product with damp cloth and mild detergent: do not use abrasives or solvents.
- (3) Remove the input signals before you clean the product.
- (4) Remove the batteries if you will not use the product for a long time to prevent possible battery leak.
- (5) When "B" is shown on the display, batteries shall be replaced as below: 1. Loosen the screw and remove the battery cover;
- Replace the used batteries with new batteries of the same type:
- 3. Place the battery cover back and fasten the screw.
- (6) Replace fuses as above steps. Use only fuses of the same type as the original ones.

- Warning: 1. Do NOT exceed the "maximum value" indicated in the Specification; 2. Do NOT input voltage at the Current Mode, the Resistance Mode, the Diode Mode, or the Continuity Mode:
- 3. Do NOT use the product when the batteries or the battery cover is not placed properly;
- 4. Turn off the product and remove the test leads from the test points before changing batteries or fuses.

#### F. Troubleshooting

If your product do not function as normal, the following steps may help you. If the problem still cannot be solved, please contact your dealer.

Problem	Possible Reason			
Display Malfunction	Low battery; replace batteries			
😫 Symbol	Replace batteries			
No current input	Replace fuse			

# LIMITED WARRANTY AND LIMITATION OF LIABILITY

Customers enjoy one-year warranty from the date of purchase. This warranty does not cover fuses, disposable batteries, or damage from accident, neglect, misuse, alternation, contamination, or abnormal conditions of operation or handling.

#### All rights reserved. Specifications are subject to change without notice.