



## INSTRUCTION MANUAL

MTD81



### A. Introduction

This product is a battery-powered, auto-ranging digital multimeter with a 4000 count, LCD display and backlight. It can be used to measure AC/DC voltage, AC/DC current, resistance, capacitance, frequency, duty cycle, diode, and continuity.

### 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 condition of the test leads and the insulation of the product before measuring voltage higher than 36V DC or 25V AC.
- Disconnect the test leads from the circuit before changing the mode.
- 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 symbols:

	Hazardous Voltage		Earth
	Double Insulated		Low Battery
	Risk of Danger. Check the User Manual.		

### C. Specifications

Electrical Specifications					
Function	Range	Resolution	Accuracy	MAX.Value	Other
DC Voltage	400.0mV	0.1mV	±(0.5%+4)	1000V	
	4.000V	0.001V			
	40.00V	0.01V			
	400.0V	0.1V			
	1000V	1V			
AC Voltage	400.0mV	0.1mV	±(1.2%+4)	750V	40Hz-400Hz
	4.000V	0.001V			
	40.00V	0.01V			
	400.0V	0.1V			
	750V	1V			
DC Current (A)	4.000A	0.001A	±(1.5%+4)	10A	
	10.00A	0.01A			
DC Current (mA)	40.00mA	0.01mA	±(1.5%+4)	400mA	
	400.0mA	0.1mA			
AC Current (A)	4.000A	0.001A	±(2.0%+4)	10A	40Hz-400Hz
	10.00A	0.01A			
AC Current (mA)	40.00mA	0.01mA	±(2.0%+4)	400mA	40Hz-400Hz
	400.0mA	0.1mA			
Duty Cycle	1%~99%	0.1%	±(0.1%+2)		
Diode			v		
Continuity			v		

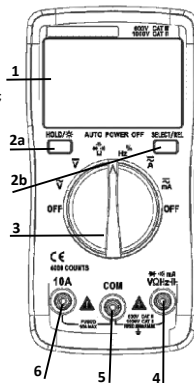
Function	Range	Resolution	Accuracy	MAX.Value	Other
Resistance	400.0Ω	0.1Ω	±(0.8%+4)	40MΩ	
	4.000kΩ	0.001kΩ			
	40.00kΩ	0.01kΩ			
	400.0kΩ	0.1kΩ			
	4.000MΩ	0.001MΩ			
Capacitance	40.00MΩ	0.01MΩ	±(2.0%+4)		
	4.000nF	0.001nF			
	40.00nF	0.01nF			
	400.0nF	0.1nF			
	4.000μF	0.001μF			
	40.00μF	0.01μF			
	200.0μF	0.1μF			
Frequency	99.99Hz	0.01Hz	±(0.1%+2)	9.999MHz	
	999.9Hz	0.1Hz			
	9.999kHz	0.001kHz			
	99.99kHz	0.01kHz			
	999.9kHz	0.1kHz			
	9.999MHz	0.001MHz			

General Specifications		
Display (LCD)	4000 count	
Ranging	Auto	
Material	ABS	
Update Rate	3 times/second	
True RMS	×	
Data Hold	v	
Backlight	v	
Low Battery Alert	v	
Auto Power Off	v	
Mechanical Specifications		
Dimension	130*65*32mm	
Weight	114g	
Battery Type	1.5V AAA Battery * 2	
Warranty	One year	
Environmental Specifications		
Operating	Temperature	0~40°C
	Humidity	<75%
Storage	Temperature	-20~60°C
	Humidity	<80%

### D. Instruction

#### (1) Front Panel (see the picture on the right)

- LCD display
- buttons
  - HOLD:** To hold the current reading, press this button and you will see "HOLD" on the display; press again to cancel. To turn on the backlight, press this button for more than 2 seconds; long-press again to turn off.
  - SELECT:** To toggle between AC/DC, Resistance/Diode/Continuity/Capacitance, or Frequency/Duty Cycle, press this button.
- Rotary Switch: To change mode or range.
  - from OFF, clockwise
  - OFF
  - AC Voltage
  - DC Voltage
  - Resistance/Diode/Continuity/Capacitance
  - Frequency/Duty Cycle
  - AC/DC Current (A) (Current-A Mode)
  - AC/DC Current (mA) (Current-mA Mode)
  - OFF
- VΩHz: Input terminal for voltage, resistance, capacitance, frequency, current (mA), continuity, diode, and duty cycle measurements.
- COM: Common terminal for all measurements.
- 10A: Input terminal for current (A) measurements.



#### (2) Measure AC/DC Current

- Connect the black test lead to the COM Terminal and connect the red test lead to the VΩHz 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;
  - Read the measured current on the display.
- \*Caution:
- Do not measure current that exceeds the MAX Value as indicated in the Specifications;
  - 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) Measure AC/DC Voltage

1. Connect the black test lead to the COM Terminal and connect the red test lead to the VQHz Terminal;
2. Turn the rotary switch to the AC Voltage Mode or the DC Voltage Mode;
3. Touch the probes to the correct test points of the circuit to measure the voltage;
4. 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 VQHz Terminal;
2. 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:

- a. Disconnect circuit power and discharge all capacitors before you test resistance.
- b. Do not input voltage at the Resistance Mode.

(5) Measure Diode

1. Connect the black test lead to the COM Terminal and connect the red test lead to the VQHz Terminal;
2. Turn the rotary switch to the Resistance Mode, press SELECT once 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.

(6) Measure Continuity

1. Connect the black test lead to the COM Terminal and connect the red test lead to the VQHz Terminal;
2. Turn the rotary switch to the Resistance Mode, press SELECT twice 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.

(7) Measure Capacitance

1. Connect the black test lead to the COM Terminal and connect the red test lead to the VQHz Terminal;
2. Turn the rotary switch to the Resistance Mode, press SELECT 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 stabilized.

\*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 VQHz 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.

(10) General 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.

- (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 "🔋" is shown on the display, batteries shall be replaced as below:
  1. Loosen the screw and remove the battery cover;
  2. 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 replaced 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 does 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

**NCV Function**

1. Keep pushing the NCV button to enter the NCV mode.
  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.
- ⚠ It is impossible to use NCV function in current mode.

## 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 neglect, misuse, alternation, contamination, or abnormal conditions of operation or handling.

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