

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

Safety Information

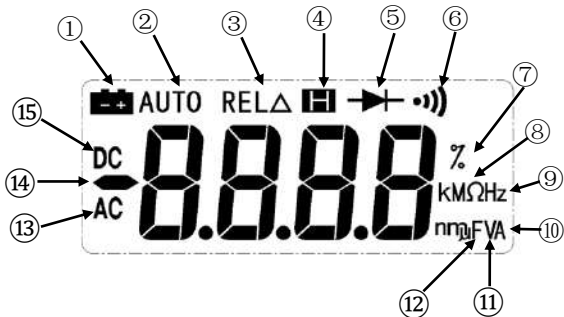
To avoid possible electrical shock, fire, or personal injury, please read all safety information before you use the product. Please use the product only as specified, or the protection supplied by the product can be compromised.





- 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. “  ” 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 |  | Low battery. Replace batteries. |
| ② | AUTO | Auto range. The product selects the range with the best resolution. |
| ③ | REL Δ | Relative mode. |
| ④ |  | Display freezes present reading. |
| ⑤ |  | Diode test. |
| ⑥ |  | Continuity test. |

| | | |
|--------------|---|---------------------------|
| ⑦ | % | Duty cycle test. |
| ⑧ | Ω | Resistance test. (Ohm) |
| ⑨ | Hz | Frequency test. (Hertz) |
| ⑩ | A | Current test. (Ampere) |
| ⑪ | V | Voltage test. (Volt) |
| ⑫ | F | Capacitance test. (Farad) |
| ⑬ | AC | Alternating current. |
| ⑭ |  | Negative readings. |
| ⑮ | DC | Direct current. |
| nmμkM | | Measurement units. |


Function Buttons




When the rotary switch position is at:



push this button to hold the current reading on the display; push again to continue normal operation.

When the rotary switch position is at:  push this button to enter the relative mode.

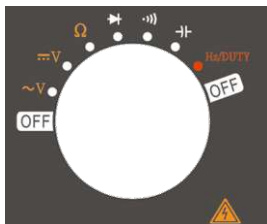
The product will store the present reading as a reference for subsequent readings. The display is zeroed, and the stored reading is subtracted from all subsequent readings. Push again to exit the relative mode.

When the rotary switch position is at:  push this button to toggle between Frequency/Duty Cycle.

②

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, push the button for more than 2 seconds or turn the rotary switch.








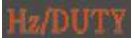
Rotary Switch



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 RANGE 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 RANGE button when turning on the product, you will hear 2 beeps if you have successfully disabled the function.

| | |
|---|---|
|  | AC voltage $\leq 600V$ |
|  | DC voltage $\leq 600V$ |
|  | Ohms $\leq 40M\Omega$ |
|  | Diode test. Displays  above 3V |
|  | Continuity. Beeper turns on at $< 50\Omega$ |
|  | Farads $\leq 9.999mF$ |
|  | Frequency with low voltage Duty Cycle from 1%~99% |

Measurements Instruction



Measure AC/DC Voltage

1. Turn the rotary switch to  or to .
2. Touch the probes to the correct test points of the circuit to measure the voltage.
3. 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 Resistance

1. Turn the rotary switch to  and the display will show “ ”. 
2. 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.**

Test for Continuity

1. Turn the rotary switch to .
2. Touch the probes to the desired test points of the circuit.
3. 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. Turn the rotary switch to .
2. Connect the red probe to the anode side and the black probe to the cathode side of the diode being tested.
3. Read the forward bias voltage value on the display.
4. 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. Turn the rotary switch to .
2. Connect the red probe to the anode side and the black probe to the cathode side of the capacitor being tested.
3. 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. Turn the rotary switch to  (applies to high frequency with low voltage).
2. Touch the probes to the desired test points.
3. Read the measured frequency value on the display.

Measure Duty Cycle

1. Turn the rotary switch to  (applies to high frequency with low voltage), press Hz/DUTY once to toggle to the Duty Cycle Mode.
2. Touch the probes to the desired test points.
3. Read the measured duty cycle value on the display.

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

| <i>General Specifications</i> | |
|-------------------------------|----------------|
| Display (LCD) | 4000 Counts |
| Ranging | Auto/Manual |
| Material | ABS |
| Update Rate | 3 Times/Second |
| Ture RMS | √ |
| Data Hold | √ |
| Backlight | × |
| Low Battery Indication | √ |
| Auto Power Off | √ |

| <i>Mechanical Specifications</i> | |
|----------------------------------|----------------------|
| Dimension | 125*80*19.5mm |
| Weight | 107g (w/o batteries) |
| 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% |

Electrical Specifications

| <i>Function</i> | <i>Range</i> | <i>Resolution</i> | <i>Accuracy</i> |
|-----------------|-----------------|-------------------|-----------------|
| DC Voltage | 400.0mV | 0.1mV | $\pm(0.5\%+4)$ |
| | 4.000V | 0.001V | |
| | 40.00V | 0.01V | |
| | 400.0V | 0.1V | $\pm(0.8\%+4)$ |
| | 600V | 1V | |
| AC Voltage | 400.0mV | 0.1mV | $\pm(1.2\%+4)$ |
| | 4.000V | 0.001V | |
| | 40.00V | 0.01V | |
| | 400.0V | 0.1V | |
| | 600V | 1V | $\pm(1.5\%+4)$ |
| Resistance | 400.0 Ω | 0.1 Ω | $\pm(0.8\%+4)$ |
| | 4.000k Ω | 0.001k Ω | |
| | 40.00k Ω | 0.01k Ω | |
| | 400.0k Ω | 0.1k Ω | |
| | 4.000M Ω | 0.001M Ω | |
| | 40.00M Ω | 0.01M Ω | $\pm(2.0\%+4)$ |

| <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 | $\pm(5.0\%+5)$ |
| Frequency | 99.99Hz | 0.01Hz | $\pm(0.1\%+2)$ |
| | 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% | $\pm(0.1\%+2)$ |
| Diode | √ | | |
| Continuity | √ | | |

