# AstroAI

AstroAI   MUS10KRD

MANUAL
SMART

HOLD
MAXMIN
AVG REL
DC
AC

TRUE RMS MkΩHz% ⌦μmAV℃℉
0   20   40   60   80   100

DIGITAL MULTIMETER TRUE RMS

| RANGE | | SEL |
| AUTO FUNC | | |
| REL HOLD | | MAX MIN |

10A    mA    COM    V Hz%℃℉
MAX   MAX   MAX790V
10(A/250V)  600mA/250V  10/DC14V

CE   AUTO POWER OFF
9999 Counts

MUS10KRD

SMART DIGITAL MULTIMETER
# USER MANUAL

# CATALOG

# INTRODUCTION

Thank you for purchasing the True RMS 10000 Counts Smart Digital Multimeter from AstroAI.

This product is designed to be safely and accurately used in schools, laboratories, factories and other settings. This user manual provides all safety information, operation instructions, specifications, and maintenance information for the meter. This instrument performs AC / DC Voltage, AC / DC Current, Resistance, Diode Testing, Continuity Testing, Frequency testing, temperature testing, NCV, and Live Testing.

If you have any questions or concerns regarding your product, please contact us at support@astroai.com

Fully read and comprehend this manual before using this Digital Multimeter.

# WARNING

To avoid electric shocks or personal injury, and possible damage to the meter or to the equipment being tested, please adhere to the following rules:
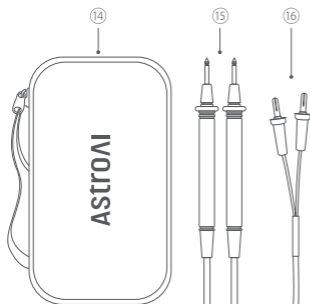
- Use the meter strictly in accordance with this manual, otherwise the protection function provided by the meter may be damaged or weakened.
- Please be especially careful when measuring over 60 V DC, 30 V AC RMS or 42 V peak value, there is an increased danger of electric shock.
- Do not apply more than the rated voltage, as marked on the meter, between the terminals or between any terminal and grounding.
- Check whether the meter is working normally by measuring a known voltage; do not use it if the readings are incorrect or the meter is damaged.
- Before using the meter, please check whether there are cracks or damage to the plastic parts of the meter casing. Do not use the meter if any part of the exterior casing is damaged.
- Before using the meter, please check whether the test leads are cracked or damaged.
- Use the meter according to the measurement category, voltage or current rating specified on the meter or manual.
- Comply with local and national safety regulations. Wear personal protective equipment (such as approved rubber gloves, masks, flame-retardant clothing, etc.) to prevent injury from electric shocks and arcs when hazardous live conductors are exposed.

- Replace the battery as soon as the low-battery indicator appears to avoid measurement errors.
- Do not use the meter around explosive gas, steam or humid environments.
- When using the test leads, keep your fingers behind the finger guards.
- When measuring, connect the neutral wire or ground wire first, and then connect the live wire. When disconnecting, disconnect the live wire first, then disconnect the neutral/ground wire.
- Before opening the case or battery cover, remove the test leads from the  meter first. Do not use the meter when it is disassembled or the battery cover is opened.
- To ensure your safety, the meter can only be used with the equipped test leads. If the test leads are damaged and need to be replaced, only replace them with the same model and the electrical specifications.

## INCLUDED IN BOX

| | |
|---|---|
| User Manual | x 1 |
| Pair of Test Leads | x 1 |
| Organizer Bag | x 1 |
| K-Type Thermocouple | x 1 |
| AstroAI 10000 Counts SMART Multimeter | x 1 |

# DIAGRAM



① NCV Detection Point

② Flashlight Button

③ Jack Indication Light

④ 10A Jack

⑤ Power Button

⑥ Alarm Indication Light

⑦ APO Button

⑧ Color LCD Screen

⑨ Functions & Buttons

⑩ LiveΩHz⊶·⊶)  Jack
   V Hz%°C°F

⑪ mA Jack

⑫ COM Jack

⑬ Flashlight

⑭ Organizer Bag

⑮ Test Leads

⑯ K-Type Thermocouple

## SIZE



Length

Height

Width

Length: 3.27 inches (8.3 cm)

Height: 6.49 inches (16.5 cm)

Width: 0.98 inches (2.5 cm)

## SCREEN DISPLAY

### Electrical Symbols

| | | | |
|---|---|---|---|
| $\sim$ | AC (Alternating Current) | Hz% | Frequency/Duty Ratio |
| $=$ | DC (Direct Current) | ∘))) | Audible Continuity Test |
| V | Voltage | ✈ | Diode Test |
| A | Current | Ω | Resistance Test |
| ⊣⊢ | Capacitance Test | SMART | SMART Mode |
| Live | Live Wire Detection | MANUAL | MANUAL Mode |
| ⊏⊐ | Damaged Fuse | ⏚ | Ground |
| ⊏⊐ | Low Battery | ⚠ | Warning |
| ▣ | Double Insulation | NCV | Non-Contact Voltage Detection |
| CE | Compliant with EU Standards | | |

## BUTTON FUNCTIONS

| | |
|---|---|
| ⏻ | Press and hold the "⏻" button to turn the meter on / off. |
| APO | Press the "APO" button to toggle the AUTO-OFF function. The absence of "⏻" means the AUTO-OFF function is turned off. |
| SEL | If there are multiple functions of this mode, press the "SEL" button to choose the function. |

Press the "⊏▭▤▶" button to turn the flashlight on / off. This function provides lighting in dim conditions.
**Note**: Users can record the readings from the screen in dim conditions without the backlight function.

Press the "RANGE" button to turn on manual range mode, in this mode, users can press the "RANGE" button to choose the suitable range. Users can press and hold the "RANGE" button at any time to activate Auto range mode.
**Note**: In SMART mode, this function is invalid. Only valid for voltage, resistance and mA testing.

Press the "AUTO / FUNC" button to turn on MANUAL mode, press again to switch modes. Press and hold the "AUTO / FUNC" button to go back to SMART mode at any time. When the meter turns on, it will default to SMART mode.
**Note**: In SMART mode, "AUTO" will be displayed on the screen, the top left corner will display "SMART" .

Press the "MAX / MIN" button to record the maximum and minimum readings detected. To record the maximum and minimum readings during measurement; connect the meter with the circuit, then press the "MAX / MIN" button (Please don't move the test leads away during this operation) to turn on the MAX / MIN hold function. Press the button to hold the maximum reading, then press the button again to record the minimum reading, hold this button for more than 2 seconds to terminate the MAX / MIN function.
**Note**: "MAX" will be displayed on the screen when the MAX function button is turned on. "MIN" will be displayed on the screen when the MIN button is turned on. MAX / MIN function is invalid for capacitance, frequency / Duty Ratio, NCV / Live testing. The meter will default to manual ranging mode after the MAX / MIN function is turned on.

REL
HOLD

Press the "REL / HOLD" button to turn the reading hold function on / off. When you need to record the reading, press the "REL / HOLD" button, "HOLD" will be displayed on the screen to hold the reading. Press it again to turn the function off. When you need to record a set of relative values, press and hold the "REL / HOLD" button, the screen will display "REL", indicating that the relative value function is turned on, press and hold the button again to turn the relative value function off.
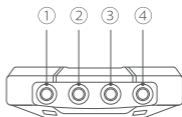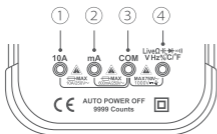


① Current in the "$\overline{\underline{A}}$" setting, please insert red test lead into 10A Jack.

② When testing current in the "$\overline{m}A$" setting, please insert red test lead into "mA" Jack.

③ When testing other functions except current, please insert red test lead into the "VHz%℃/℉" Jack.

④ Plug the black test lead into the COM Jack.

Jack indication light

When switching to other functions, the light above the corresponding jack will flash, prompting users to insert the appropriate test lead into the correct jack. Test failure or instrument damage can be caused by connecting the wrong jack, avoid doing so.

# OPERATION INSTRUCTIONS

- To avoid damaging the meter, do not measure voltage exceeding DC 1000 V or AC 750 V.

- To avoid electric shock or personal injury, please pay close attention to safety when testing high voltages.

- Before use, please test the meter with a known voltage or current to ensure the meter is working normally.

## I. SMART Testing Mode

Note: When the meter is powered on, the default mode is SMART testing mode. In this mode, the meter can test DC voltage, AC voltage, resistance, and more. The meter automatically recognizes testing signals and displays measurements.

1. Press and hold the " ⏻ " button to turn on the meter, " Auto " will be displayed on the screen, and the pointer will move by itself, indicating the SMART measurement mode.
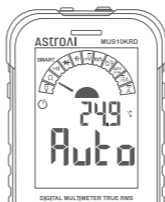
2. Insert red test lead into the "  " Jack, and the black test lead into "COM" Jack.

3. Touch the red and the black test leads together to verify their functionality. The buzzer will beep and the indicator light will come on if the test leads are functioning normally.
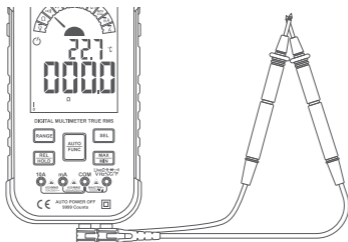


4. Connect the test leads with the both ends of the circuit or resistor (in parallel), the meter will automatically recognize the testing sources being measured.

   Note: When measuring AC voltage, the frequency will be displayed at the same time. When measuring other settings, the ambient temperature will be displayed on the screen. When measuring resistance, if the resistance value is less than 50 Ω, the meter will beep and the indicator will light up.

5. Record the reading on the LCD screen.

6. Press and hold the " ⏻ " button to turn off the meter after measurement.

   Note: The minimum measurable voltage in this mode is AC: 0.5 V; DC: 0.8 V.

## II. Professional Testing Mode

### AC/DC Voltage Testing

1. Press and hold the " ⏻ " button to turn on the meter, " 𝐴𝑢𝑡𝑜 " will be displayed on the screen. The pointer will move by itself, indicating the SMART measurement mode.



2. Insert the red test lead into the " LiveꞒᴴᴥᴥꟷᴵᴵᴵ / V Hz%°C/F " Jack,and the black test lead into the "COM" Jack.

3. Touch the red and the black test leads together to verify their functionality. The buzzer will beep and the indicator light will come on if the test leads are functioning normally.
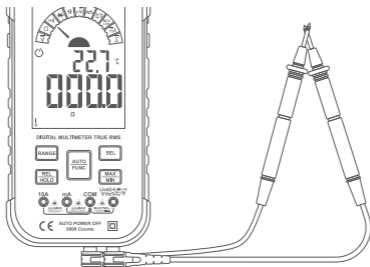
4.  Press the "AUTO / FUNC" button to the " $\overline{A}$ " setting, " $\underset{\sim}{DC}$ " and "V" will be displayed on the screen, indicating DC voltage measurement.

Press the "SEL" button, " $\underset{\sim}{AC}$ " and " $\widetilde{V}$ " will be displayed on the screen, indicating AC voltage measurement.



**Note**: When measuring AC voltage, the frequency will be displayed at the same time. When measuring DC voltage, the ambient temperature will be displayed on the screen.

5.  Connect the test leads with both ends of the circuit (in parallel).

6.  Record the stable reading on the screen.

7.  Press and hold the " ⏻ " button to turn off the meter after measurement.

## AC/DC mV Voltage Testing

1.  Press and hold the " ⏻ " button to turn on the meter, " Auto" will be displayed on the screen, and the pointer will move by itself, indicating the SMART measurement mode.
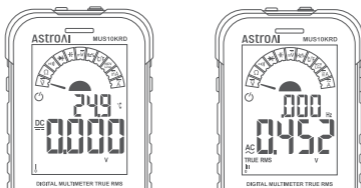
2. Insert the red test lead into the " V Hz%℃/F ⊕┫┤╢┤╢⊨╢ " Jack,and the black test lead into the "COM" Jack.

3. Touch the red and the black test leads together to verify their functionality. The buzzer will beep and the indicator light will come on if the test leads are functioning normally.



4. Press the 'AUTO / FUNC' button to the "m$\overline{\text{V}}$" setting, "$\underset{\sim}{\text{DC}}$" and "mV" will be displayed on the screen, indicating DC mV voltage measurement.

   Press the "SEL" button, "AC" and "mV" will be displayed on the screen, indicating the AC"mV" voltage measurement.

**Note**: When measuring AC voltage, the frequency will be displayed at the same time. When measuring DC voltage, the ambient temperature will be displayed on the screen.
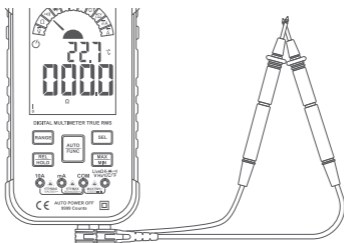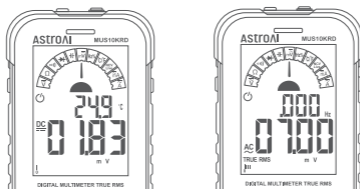
5. Connect the test leads with both ends of circuit (in parallel).

6. Record the stable reading on the screen.

7. Press and hold the "⏻" button to turn off the meter after measurement.

## Voltage Notes

• To avoid damaging the meter, do not measure voltage exceeding 1000 V DC or 750 V AC.

• Do not use the AC voltage test function to test DC voltage or vice versa. Doing this may damage the meter and any components being tested.

• When measuring voltage, the result will fluctuate depending on the power supply. Generally speaking, the result will fluctuate ±10 V, which is NOT an inaccurate result.

## AC / DC Current Testing

1.  Press and hold the "⏻" button to turn on the meter, "Auto" will be displayed on the screen, and the pointer will move by itself, indicating the SMART measurement mode.
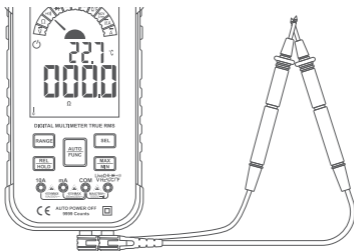
2.  Insert the red test lead into the "V Hz%C/F " Jack, and the black test lead into the "COM" Jack.

3.  Touch the red and the black test leads together to verify their functionality. The buzzer will beep and the indicator light will come on if the test leads are functioning normally.

4. Press the "AUTO / FUNC" button to the " Ā " setting, insert the red test lead into the 10 A Jack, " $\underline{\underline{DC}}$ " and "A" will be displayed on the screen, indicating DC current measurement.

   Press the "SEL" button, " $\underset{\sim}{AC}$ " and "A" will be displayed on the screen, indicating AC current measurement.
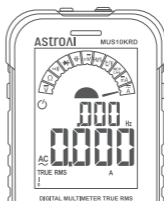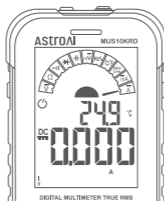


Note: a. When measuring AC current, the frequency will be displayed at the same time. When measuring DC current, the ambient temperature will be displayed on the screen.

Note: b. "LEAd" will be displayed on the screen and the indication light will turn red when the test leads are connected incorrectly. Please insert the red test lead into the 10 A Jack.

**Note**: c. The meter will turn on the current testing function when you insert the red test lead into the 10 A Jack and the black test lead into the "COM" Jack in any mode. For safety reasons, users cannot press the "AUTO / FUNC" button to switch the functions. The meter will beep regularly to remind users to use the current testing function correctly.

5. Connect the meter in series to the circuit being tested.

6. Record the stable reading on the screen.

7. Press and hold the " ⏻ " button to turn off the meter after measurement.

## AC / DC mA Current Testing

1. Press and hold the " ⏻ " button to turn on the meter, "Auto" will be displayed on the screen, and the pointer will move by itself, indicating the SMART measurement mode.



2. Insert the red test lead into the " V Hz%°C/F " Jack, and the black test lead into the "COM" Jack.

3. Touch the red and the black test leads together to verify their functionality. The buzzer will beep and the indicator light will come on if the test leads are functioning normally.
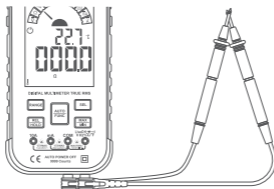
4. Press the "AUTO / FUNC' button to the "$\overline{m}A$" setting. Then, insert the red test lead into the "mA" Jack, "$\underline{DC}$" and "mA" will be displayed on the screen, indicating DC current measurement.

Press the "SEL" button, "$\overset{AC}{\sim}$" and "mA" will be displayed on the screen, indicating AC current measurement.
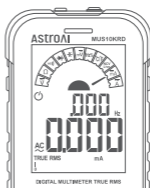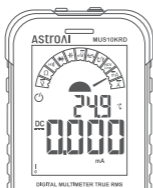


Note: a. When measuring AC current, the frequency will be displayed at the same time. When measuring DC current, the ambient temperature will be displayed on the screen.

b. "LEAd" will be displayed on the screen and the indicator light will turn red when the test leads are connected incorrectly. Please insert the red test lead into "$\overline{m}A$" Jack.

**Note**: c. The meter will turn on the current testing function when you insert the red test lead into the "mA" Jack and the black test lead into the "COM" Jack in any mode. For safety reasons, users cannot press the "AUTO / FUNC" button to switch the functions. The meter will beep regularly to remind users to use the current testing function correctly.

5. Connect the meter in series to the circuit being tested.

6. Record the stable reading on the screen.

7. Press and hold the "⏻" button to turn off the meter after measurement.

## Automotive Parasitic Battery Drain

1. Check if the battery voltage and power generation are within the normal range. The battery voltage is generally around 12.7 V and the power generation is around 14 V.

2. Turn off all electrical accessories inside and outside the car and close the doors.

3. Remove the negative electrode of the battery. Set the multimeter to the maximum current level and connect the meter in series to the battery. Connect the red test lead to the negative line and the black test lead to the battery terminal.

4. Adjust the meter, if necessary, to a lower range.

5. Wait for about 30 minutes; after all the modules of the vehicle enter their sleep state. Then read the accurate static discharge current. The discharge current is generally 0.02 A (20 mA), however, this can vary depending on the vehicle. Generally, it is normal to not exceed 50 mA.

6. If the drain is larger than 50 mA, begin checking fuses individually for which circuit is carrying the excess load. If a removed fuse reduces the battery draw to below 50 mA, it can be determined that the corresponding circuit is drawing the excess discharge.

## Current Notes

• When testing an unknown current, please choose the " $\overline{\overline{A}}$ " setting first. Then, switch to the "$\overline{m}A$" setting if necessary to avoid damaging the meter.

• If you insert the red test lead into the 10A / mA jack, be sure to insert the test lead back into the  jack after the test to avoid forgetting to switch the jack for the next operation and burning the multimeter.

• When testing a high current, for safety reasons, each measurement time should be less than 10 seconds. The interval time between tests should be greater than 15 minutes.

• When testing the current, there must be a load in the circuit. Do not connect the multimeter in series with the circuit without a load to measure; doing so can potentially damage the meter.

• Do not apply a current exceeding the meter's range. Doing so may damage the meter.
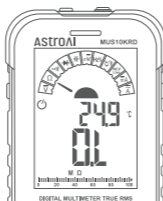
## Resistance Testing

1. Press and hold the "⏻" button to turn on the meter, "Auto" will be displayed on the screen, and the pointer will swing by itself, indicating the SMART measurement mode.



2. Insert the red test lead into "VΩ℃℉" Jack, and the black test lead into the "COM" Jack.

3. Touch the red and the black test leads together to verify their functionality. The buzzer will beep and the indicator light will come on if the test leads are functioning normally.
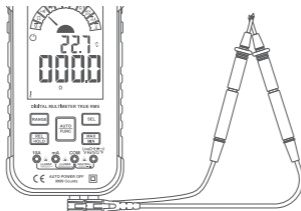
4. Press the "AUTO / FUNC" button to the "Ω" setting. The "Ω" signal will be displayed on the screen, indicating resistance measurement.



5. Connect the test leads to the circuit being tested (in parallel) or to both ends of the resistor.

6. Record the stable reading on the screen.

7. Press and hold the " ⏻ " button to turn off the meter after measurement.

## Resistance Testing

· Do not change the resistance while taking a measurement. Doing so may damage the meter and affect the test results.

· Do not test parallel circuits. The accuracy of the measurement will be affected, and the results may not be accurate.

· Do not directly measure the internal resistance of micrometers, galvanometers, batteries, and other instruments.
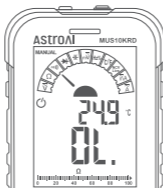
## Continuity Testing

1. Press and hold the " ⏻ " button to turn on the meter, "Auto" will be
displayed on the screen, and the pointer will swing by itself, indicating
the SMART measurement mode.



2. Insert red test lead into "VHz%CΩ·F" Jack, black test lead into "COM" Jack.
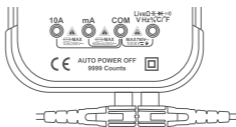


3. Press the "AUTO / FUNC" button to "•))" setting, entering the continui-
ty testing.

4. Touch the red and the black test leads together to verify their function-ality. The buzzer will beep and the indication light will come on if the test leads are functioning normal.
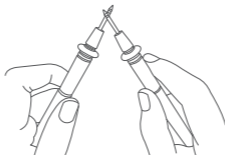


5. Connect the test leads to the both ends of the circuit being tested (in parallel). If the resistance of the circuit or resistor being tested is less than 50Ω and the circuit is in position, the buzzer will beep and an indication light will light up. The screen will display the measured resistance value.

6. If the circuit or the resistor is open, or if the resistance is more than 50 Ω, "OL" will be displayed on the screen.



7. Press and hold the " ⏻ " button to turn off the meter after measure-ment.

## Diode Testing

1. Press and hold the " ⏻ " button to turn on the meter, " Auto " will be displayed on the screen, and the pointer will swing by itself, indicating the SMART measurement mode.
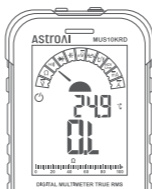


2. Insert the red test lead into the " V Hz%°C/F " Jack, and the black test lead into the "COM" Jack.

3. Touch the red and the black test leads together to verify their functionality. The buzzer will beep and the indicator light will come on if the test leads are functioning normally.
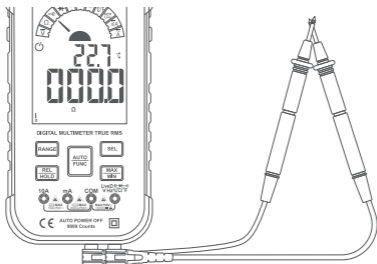
4. Press "AUTO / FUNC" to " ⯈⊢ " setting, indicating Diode testing.



5. Connect the red test lead with the positive polarity of the diode. Connect the black test lead with the negative polarity of the diode.

   Note: Usually, the positive polarity of the Diode is longer.

6. When the diode voltage drop is <1 V, the meter will beep, then record the reading on the screen.

   Note: If the test leads are connected reversely with the diode polarity, "OL" will be displayed on the screen.

7. Press and hold the "⏻" button to turn off the meter after measurement.

## Diode Test Tips

· Is the diode functioning correctly? If the red test lead is connected to the positive pole of the diode and the black lead is connected to negative, then the diode should be in a forward conduction state, and the displayed value is the forward voltage drop.

· Normal diode forward pressure drop: the general silicon tube is 0.5 - 0.7 V, germanium tube is 0.15-0.3 V.

· You can also verify that the red test lead is connected to the negative pole of the tested diode and the black test rod is connected to the positive pole. The meter should display "OL" .

## Polarity Judgment Method

1. Switch the Multimeter to the Resistance setting.

2. Connect the two test leads to the two electrodes of the diode.

3. Measure one result, then swap the positions of the test leads, then measure the second result.

4. The larger result is the reverse resistance and the smaller result is the forward resistance. The smaller resistance is when the black test lead is connected to the positive end of the diode and the red lead is connected to the negative end.

## Capacitance Testing

1. Press and hold the " ⏻ " button to turn on the meter, " Auto " will be displayed on the screen, and the pointer will swing by itself, indicating the SMART measurement mode.



2. Insert the red test lead into the " LiveOHm... V Hz%Ω°F " Jack, and the black test lead into the "COM" Jack.

3. Touch the red and the black test leads together to verify their functionality. The buzzer will beep and the indicator light will come on if the test leads are functioning normally.

4. Press "AUTO / FUNC " to the " -⊢⊢- " setting, "nF" will be displayed on the screen, indicating Diode testing.
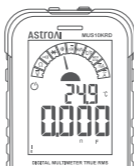


5. Connect the meter with both ends of the capacitor being tested (parallel to the capacitor).

6. Record the stable reading on the screen.

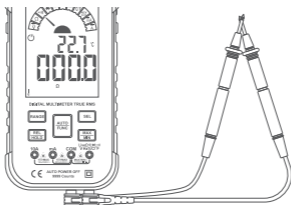7. Press and hold the "⏻" button to turn off the meter after measurement.

## Capacitance Tips

If the measured value is significantly different from the value marked on the capacitor, the capacitor is damaged.

## Capacitance Notes

1. Before measuring the capacitor, discharge the capacitor to avoid damage to the meter. Doing so by connecting the capacitor to a high-powered resistor.

2. Discharge the capacitor after measurement to avoid any potential safety hazards.

3. If the capacitance is large, it may take a long time for the reading to stabilize.


## Frequency / Duty Ratio Testing

1. Press and hold the " ⏻ " button to turn on the meter, "Auto" will be displayed on the screen, and the pointer will swing by itself, indicating the SMART measurement mode.



2. Insert red test lead into the " LiveΩHↂↃↄↅ⎍ " Jack, and the black test lead into the "COM" Jack.

3. Touch the red and the black test leads together to verify their functionality. The buzzer will beep and the indicator light will come on if the test leads are functioning normally.
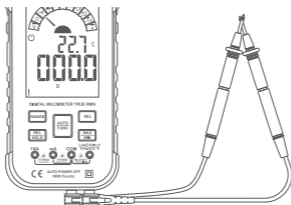
4. Press the "AUTO / FUNC" button to "Hz%" setting, "Hz" and "%" will
   be displayed on the screen, indicating Frequency / Duty Ratio testing.



5. Connect the meter with both ends of the circuit (in parallel).

6. Record the stable reading on the screen.

7. Press and hold the " ⏻ " button to turn off the meter after measure-
   ment.

## Temperature Testing

1. Press and hold the " ⏻ " button to turn on the meter, "Auto" will be
   displayed on the screen, and the pointer will swing by itself, indicating
   the SMART measurement mode.

2. Press the "AUTO / FUNC" button to "°C / °F" setting, "°C" and "°F" will be displayed on the screen, indicating temperature testing.



3. Insert the positive polarity of the K-Type thermocouple into " Live⌀ ⊖⊕ " Jack, and negative polarity into "COM" Jack.

4. Touch the end of the K-Type thermocouple to the object being measured.

5. Record the stable result on the LCD screen.

   Note: The reading may take few seconds to be stable.

   When the K-Type thermocouple is not in contact with the object being tested, it will read the ambient temperature.

6. Press and hold the "⏻" button to turn off the meter after measurement.

## NVC Testing

1.  Press and hold the " ⏻ " button to turn on the meter, "Auto" will be displayed on the screen, and the pointer will swing by itself, indicating the SMART measurement mode.



2.  Press the "AUTO / FUNC" button to the "NCV / Live" setting, "NCV" will be displayed on the screen, indicating the NCV testing.



3.  Gradually move the NCV probe closer to the point to be tested.

4.  When the meter detects a weak AC signal, the green indicator will light up and the buzzer will beep in a slow tone. "---L" will be displayed on the screen. When the meter detects a strong AC signal, the red indicator will light up and the buzzer will beep in a fast tone. "---H" will be displayed on the screen.

**Note**: When the indicator light illuminates, that means there is voltage present. Please pay attention to safety.

5. Press and hold the " ⏻ " button to turn off the meter after measurement.

## Live Testing

1. Press and hold the " ⏻ " button to turn on the meter, "𝐴𝑢𝑡𝑜" will be displayed on the screen, and the pointer will swing by itself, indicating the SMART measurement mode.



2. Press the "AUTO / FUNC" button to the "NCV / Live" setting, "NCV" will be displayed on the screen. Press the "SEL" button, "Live" will be displayed on the screen.

3.  Insert the red test lead into the " V Hz%°C/°F " Jack and remove the black test lead.

4.  Touch the object being tested with the red test lead point.

5.  When the indication light illuminates,that means the measured position is for the live wire, please pay attention to safety! When the green light lights up, that means the test leads may not be fully connected to the socket, please test again after ensuring they are fully connected.

    Note: When the meter detects a weak AC signal, the green indicator will light up. And the buzzer will beep with a slow tone. "---L"  will be displayed on the screen; when the meter detects a strong AC signal, the red indicator will light up. The buzzer will beep with a fast tone and "---H" will be displayed on the screen.

6.  Press and hold the  " ⏻ " button to turn off the meter after measurement.

## MAINTENANCE

### Cleaning the Meter

If there is dust or humidity in the terminals, it may produce erroneous measurements. Please clean the meter as follows:

1.  Turn off the power to the meter and remove the test leads.

2.  Turn the meter over and shake out the dust accumulated in the input jack, wipe the case with a damp cloth or mild detergent. Wipe the contacts in each terminal with a clean cotton swab dampened in alcohol.

## I. Battery Replacement

1. Turn off the power and remove the test leads plugged into the meter.

2. Remove the insulating sleeve and screws on the meter's back cover.

3. Remove the back cover.
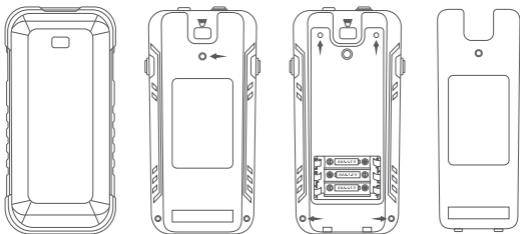


4. Remove the old battery and replace it with a new battery of the same specification.

5. Put the battery cover back to its original position and attach the battery cover with the removed screws.

Note: To avoid damaging the meter, please put the battery in place as instructed on the battery box.

• Battery specification: 3 x 1.5 V AAA Batteries
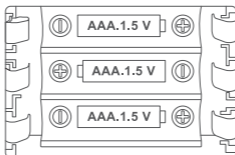
- Replace the battery as soon as the battery indicator appears. With a low battery, the meter may produce false readings that could lead to electric shock and personal injury. Do not discharge the battery by short-circuiting it or reversing its polarity.

- To avoid damaging the meter, take out the batteries when it is not going to be used for an extended period of time.

## II. Fuse Replacement

"⊟" will be displayed on the screen when the fuses are blown. When choosing current testing, and "FUSE" are displayed on the screen, this means that the current testing function will not work, the fuses need to be replaced.

1. Turn off the power and remove the test leads plugged into the meter.
2. Remove the insulating sleeve and screws on the back cover of the meter.
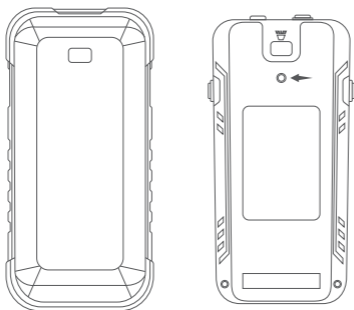
3. Remove the back cover and take out the battery.
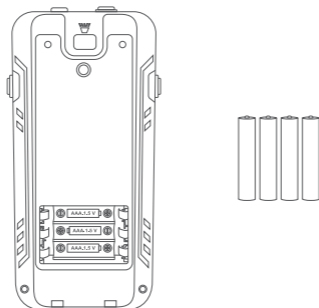
4. Remove the screws on the battery cover with a screwdriver, and remove the cover.

5. Remove the blown fuses and replace them with new fuses of the same specification. Make sure that the fuses are loaded into the fuse clip and clamped tightly.
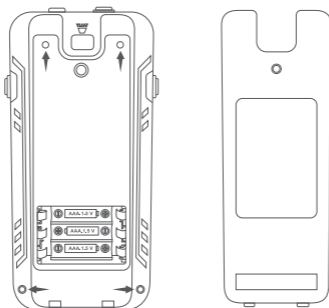
6. Put the batteries,battery cover, and insulation cover back. Then lock the cover with screws.

Fuse specifications

mA: F600 mA / 250 V fuse; Size: φ6 × 32 mm

A: F10 A / 250 V fuse; Size: φ6 × 32 mm

**Note**: To prevent possible electric shock, personal injury or damage to the meter, please be sure to replace fuses with those of the same or specified specifications.

## SPECIFICATIONS

| | |
|---|---|
| Digital Display | 10000 |
| Sampling Speed | 3 Times / Second |
| LCD Dimensions | 54 x 73 mm |
| Range Selection | Auto and Manual |
| Polarity Indication | "-" Automatically Displayed |
| Overload Indication | "OL" Displayed |
| Low Battery Indication | "▭" displayed when battery voltage is lower than normal |

| Damaged Fuse | " ⊟ " displayed when fuses are damaged |
|---|---|
| Jack Indication | Jack indication light will flash 5 times |
| Work Environment | 32~104 °F; 0~40 °C, at <80% RH |
| Storage Temperature | 14~122 °F; -10~60 °C, at <70%RH |
| Power | 3 x 1.5 V AAA |
| Weight | Approximately 265 g |
| Dimensions | 165 x 83 x 25 mm |

## DETAILED SPECIFICATION

Accuracy are guaranteed for 1 year, with storage conditions of 23 °C ± 5 °C, less than 80%RH.

### I. DC Voltage

| Range | Resolution | Accuracy |
|---|---|---|
| 99.99 mV | 0.01 mV | |
| 999.9 mV | 0.1 mV | ± (0.5% + 3); |
| 9.999 V | 0.001 V | Input impedance: |
| 99.99 V | 0.01 V | around10 MΩ |
| 999.9 V | 0.1 V | |

## II. AC Voltage

| Range | Resolution | Accuracy |
| --- | --- | --- |
| 99.99 mV | 0.01 mV | ± (0.8% + 3); Input impedance: 10 MΩ; Response frequency: 40 Hz ~ 1 kHz true RMS |
| 999.9 mV | 0.1 mV | |
| 9.999 V | 0.001 V | |
| 99.99 V | 0.01 V | |
| 750 V | 0.1 V | |

## III. DC Current

| Range | Resolution | Accuracy |
| --- | --- | --- |
| 9.999 mA | 0.001 mA | ± (0.8% + 3) |
| 99.99 mA | 0.01 mA | |
| 600.0 mA | 0.1 mA | |
| 9.999 A | 0.001 A | ± (1.2% + 3) |

## IV. AC Current

| Range | Resolution | Accuracy |
| --- | --- | --- |
| 9.999 mA | 0.001 mA | ± (0.8% + 3) |
| 99.99 mA | 0.01 mA | |
| 600.0 mA | 0.1 mA | |
| 9.999 A | 0.001 A | ± (1.5% + 3) |

# V. Resistance

| Range | Resolution | Accuracy |
|---|---|---|
| 99.99 Ω | 0.01 Ω | ± (1.0% + 5) |
| 999.9 Ω | 0.1 Ω | |
| 9.999 KΩ | 0.001 KΩ | |
| 99.99 KΩ | 0.01 KΩ | |
| 999.9 KΩ | 0.1 KΩ | |
| 9.999 MΩ | 0.001 MΩ | |
| 99.99 MΩ | 0.01 MΩ | ± (2.0% + 10) |
| 250 V Overload Protection: 250 V | | |

# VI. Capacitance

| Range | Resolution | Accuracy |
|---|---|---|
| 9.999 nF | 0.001 nF | ± (4.0% + 3) |
| 99.99 nF | 0.01 nF | |
| 999.9 nF | 0.1 nF | |
| 9.999 µF | 0.001 µF | |
| 99.99 µF | 0.01 µF | |
| 999.9 µF | 0.1 µF | |
| 9.999 mF | 0.001 mF | ± (5.0% + 5) |
| 99.99 mF | 0.01 mF | |
| 250 V Overload Protection: 250 V | | |

## VII. Frequency/Duty Ratio

| Range | Resolution | Accuracy |
|---|---|---|
| 9.999 Hz | 0.001 Hz | ± (1.0% + 3) |
| 99.99 Hz | 0.01 Hz | |
| 999.9 Hz | 0.1 Hz | |
| 9.999 KHz | 0.001 KHz | |
| 99.99 kHz | 0.01 kHz | |
| 999.9 kHz | 0.1 kHz | |
| 9.999 MHz | 0.001 MHz | |
| 1.0~99.0% | 0.1% | ± (1.0% + 2) |

## VIII. Diode/Duty Ratio

| ✦ | The approximate forward voltage drop will be displayed. Open circuit around 3.3 V |
|---|---|
| ·ɪ)) | Built-in buzzer sounds and indication light will light up if resistance is less than 30 ± 20 Ω |

## IX. Temperature

| Range | Resolution | Accuracy | |
|-------|-----------|----------|---|
| °C | 1 °C | -40 °C~ 0 °C | ± 5.0% Accuracy or ± 3 °C |
| | | 0 °C ~ 400 °C | ± 1.0% Accuracy or ± 2 °C |
| | | 400 °C ~ 1000 °C | ± 2.0% Accuracy |
| °F | 1°F | -40 °F~ 32 °F | ± 5.0% Accuracy or ± 6 °F |
| | | 32 °F~ 752 °F °C | ± 1.0% Accuracy or ± 4 °F |
| | | 752 °F~ 1832 °F | ± 2.0% Accuracy |

**Note**: Please use k-type thermocouple.

# WARRANTY PERIOD

3 Year Limited Warranty from AstroAI.

Each AstroAI Digital Multimeter will be free from defects in material and workmanship. This warranty does not cover fuses, disposable batteries and damage from neglect, misuse, contamination, alteration, accident, or abnormal conditions of operation or handling, including overvoltage failures caused by use outside the Multimeter's specified rating, or normal wear and tear of mechanical components. This warranty covers the original purchaser only and is not transferable.

If this product is defective, please contact AstroAI Customer Support at support@astroai.com

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