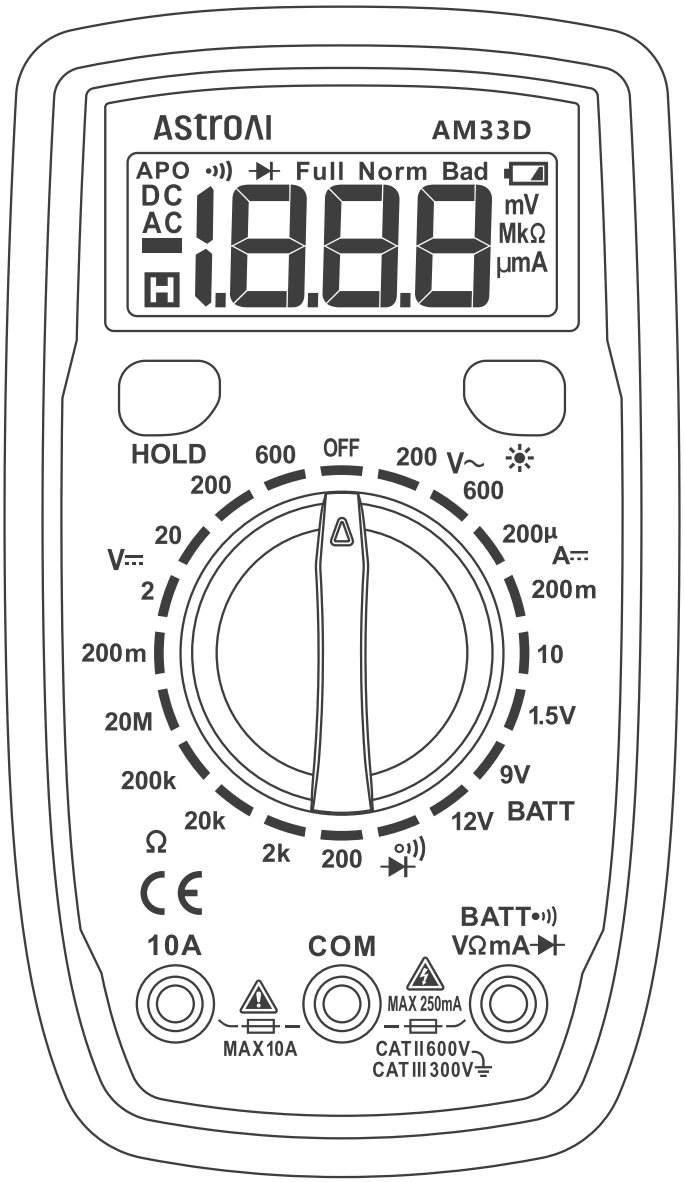
AstroAI



AM33D

DIGITAL MULTIMETER

USER MANUAL

EN

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INTRODUCTION

Thank you for purchasing the AstroAI AM33D 2000 Counts Digital Multimeter.

AstroAI digital multimeters are designed to safely and accurately troubleshoot a wide range of automotive and home electrical issues in schools, laboratories, factories, and other areas.

This manual provides all safety information, operation instructions, detailed specifications, and maintenance procedures for the meter. This instrument performs AC/DC Voltage, DC Current, Resistance, Battery, Diode, and Continuity Testing.

Thank you again for choosing AstroAI. If you have any questions or concerns regarding your product, please contact us via support@astroai.com.

Please fully read and understand this manual before using this product and keep it for future reference.

WARNING

To avoid possible electric shock, personal injury, and other safety accidents, always adhere to the following rules:

- Please read through this manual before using this multimeter. Failure to follow the instructions may result in damaging or weakening the meter.
- Be cautious when measuring voltages beyond 60 V in DC, 30 V in AC RMS, or 42 V peak. There is a risk of getting shocked when working with these voltages.
- Do not measure voltages higher than the rated value between the terminals or between any terminal and grounding.
- Measure a known voltage to check if the meter is functioning normally. Do not use it if the readings are incorrect or the meter is damaged.
- Before using the meter, inspect it for any defects. Do not use the meter if there are cracks or other damage to the plastic case.
- Inspect the test leads for any defects before using this product. If they are damaged, replace the test leads with those of the same model number and the same electrical specifications as the original.
- Always use this meter within the measurement ranges listed on the meter and in this manual.
- Always comply with local and national safety regulations. Wear personal protective equipment (such as approved rubber gloves, masks, fireproof clothing, etc.) to prevent injury from electrical shocks and electric arcs when hazardous live conductors are exposed.

- To avoid false readings, please replace the battery as soon as the low battery symbol appears on the screen. Using the meter with a low battery may cause inaccurate readings.
- Do not use the meter in an environment where explosive gasses/vapors are present, or in high levels of humidity.
- When using the test leads, always keep your fingers behind the finger guards.
- When taking measurements, connect the neutral wire (ground) first. Then, connect the live wire. When disconnecting, remove the live wire first. Then, disconnect the neutral (ground) wire.
- Remove the test leads from the meter before opening its case or battery cover. Do not use the meter if it is disassembled or if the battery cover is open.
- To ensure safe operation, only use the meter with the included test leads. If the test leads are damaged and need to be replaced, they must be replaced with the same model number or identical electrical specifications as the original.

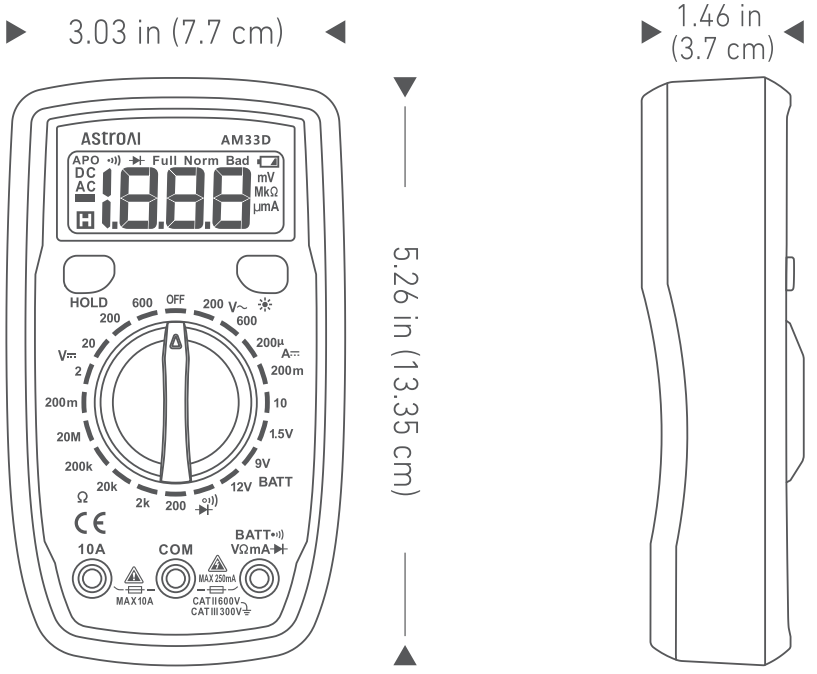
INCLUDED IN BOX

User Manual	× 1
Pair of Test Leads	× 1
AstroAI 2000 Counts Multimeter	× 1

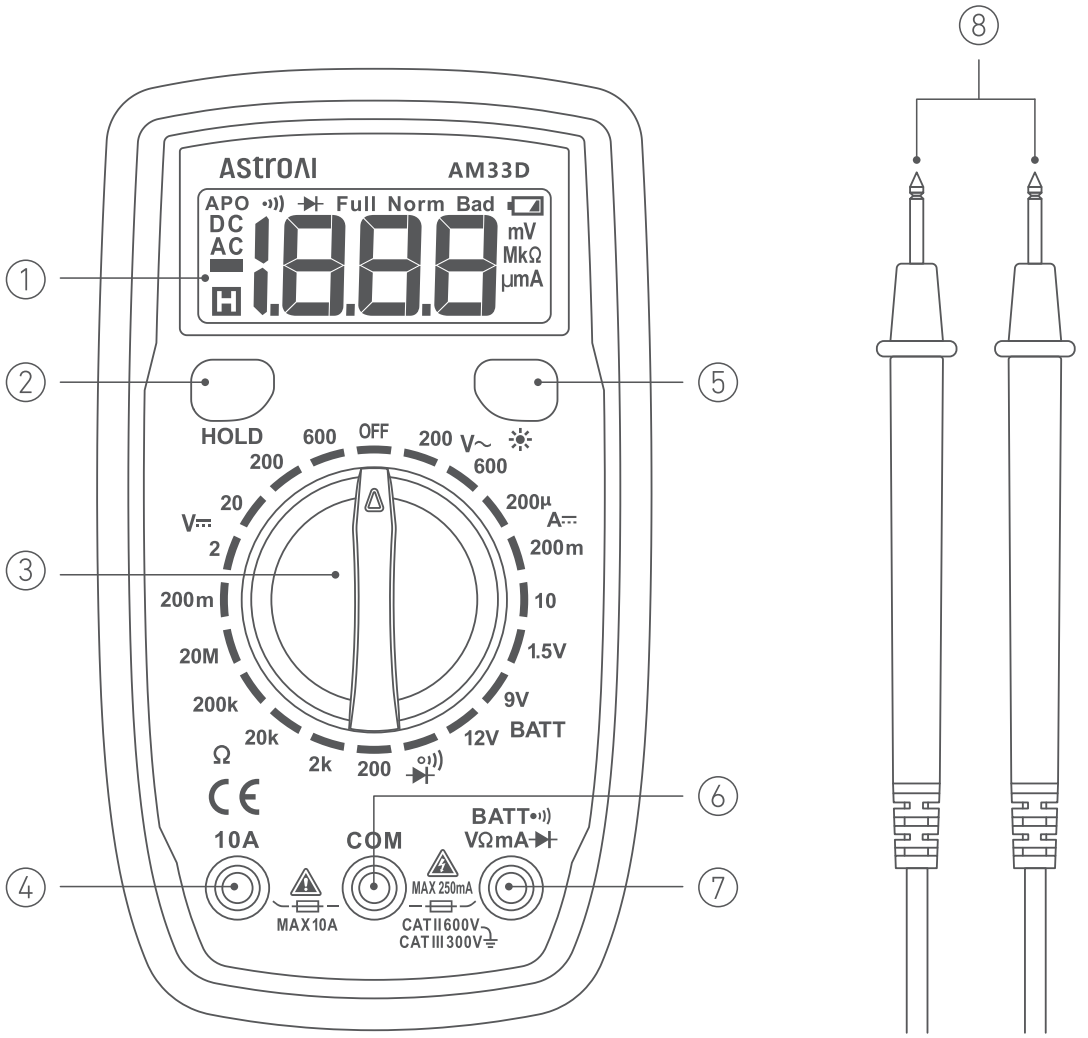
ELECTRICAL SYMBOLS

APO	Automatic Power Off
⎓	DC (Direct Current)
Full	Full Battery
Bad	Drained Battery
▬	Negative Reading
⏛	Fuse
•))	Continuity Test
▶|◀	Diode Test
⚠	Warning
~	AC (Alternating Current)
H	Data Hold
Norm	Normal Battery Level
Ω	Resistance Test
⏚	Earth Ground
▭	Low Battery
▣	Double Insulation
CE	Compliance with EU Directives

DIMENSIONS



DIAGRAM



① Screen

② Hold Button

③ Rotary Switch

④ 10 A Terminal

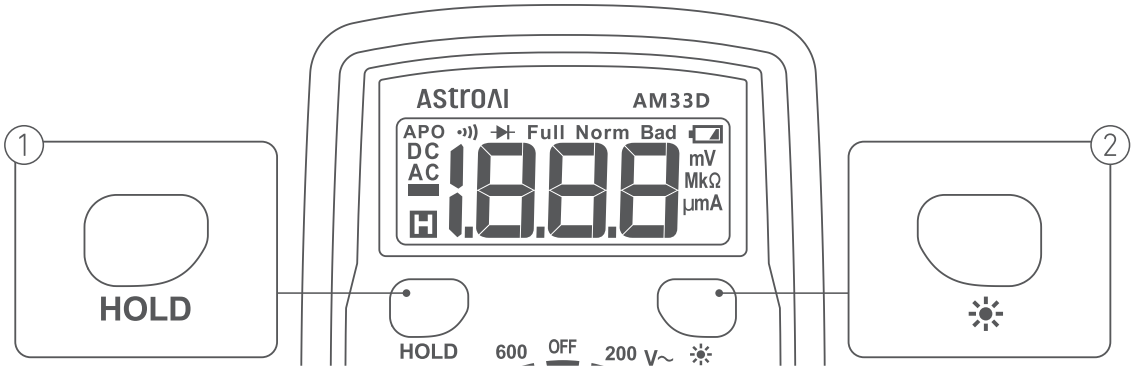
⑤ Backlight Button

⑥ COM Terminal

⑦ BATT VΩmA Terminal

⑧ Test Leads

FUNCTION BUTTONS



① Hold Button

Press the HOLD Button to activate or deactivate the data hold function.

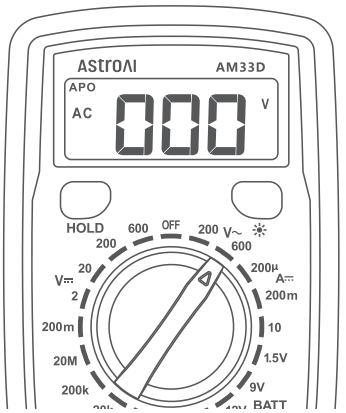
② Backlight Button

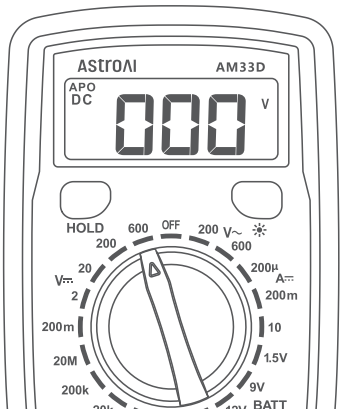
Press this button to turn the screen's backlight on/off.

OPERATING INSTRUCTIONS

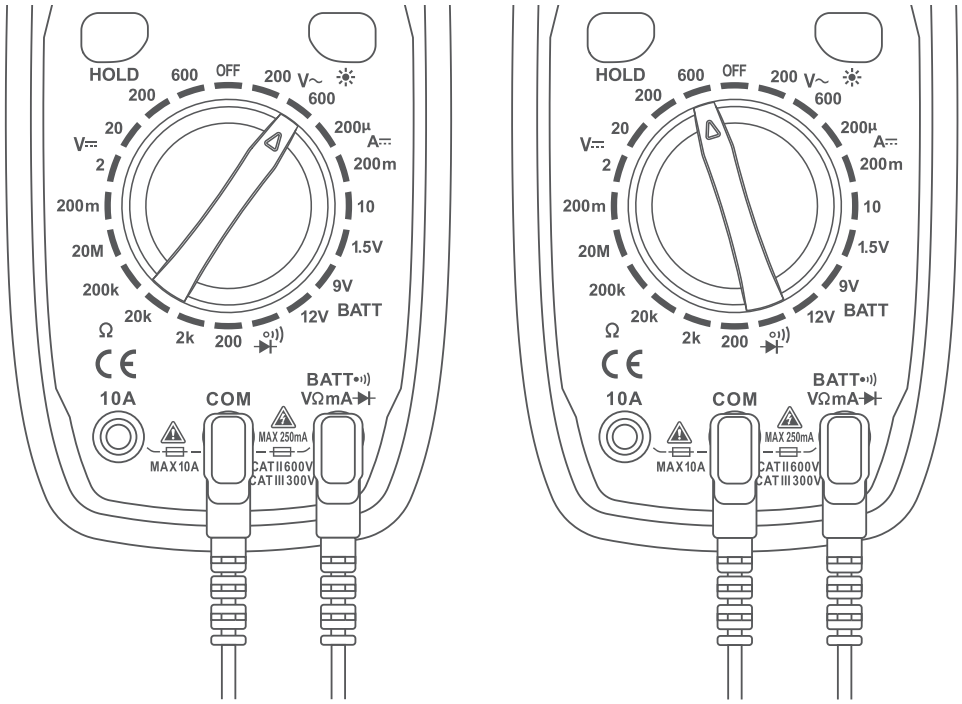
Measuring DC/AC Voltage

1. Turn the rotary switch to the DC or AC setting and choose the appropriate voltage range.





2. Insert the red test lead into the BATT VΩmA terminal, and the black test lead into the "COM" terminal.



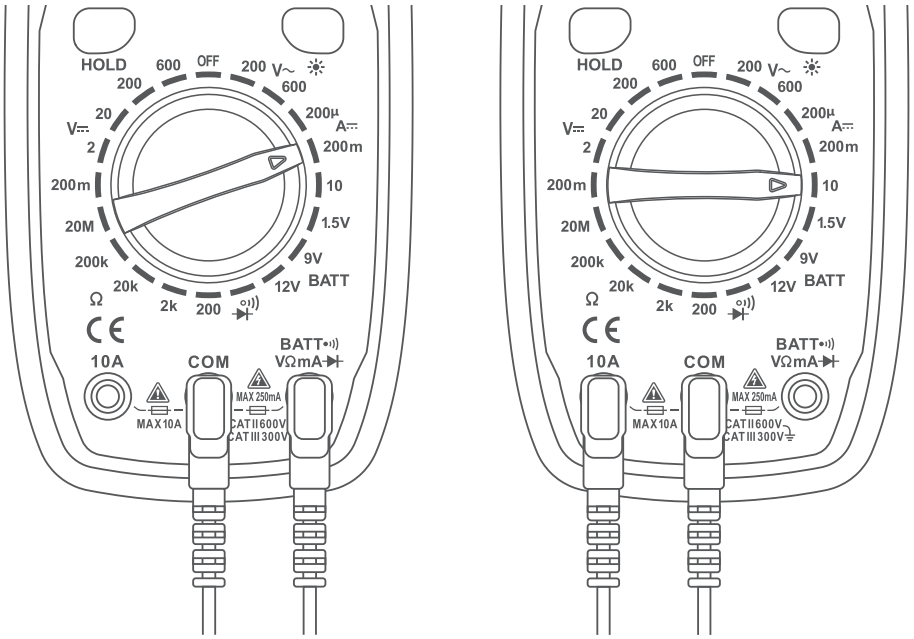
3. Connect the test leads to the power supply or the circuit being tested in parallel.
4. The reading will appear on the screen. When measuring DC voltage, the screen will display the polarity of the voltage to which the red test lead is connected.

Warning

- To avoid damaging the meter and getting shocked, do not measure voltages exceeding 600 V DC or 600 V AC.
- Before using the meter, test the known voltage to confirm the meter is functioning normally.

Measuring DC Current

1. Turn the rotary switch to the DC current setting and choose the appropriate current range.
2. Insert the red test lead into the BATT VΩmA terminal or the "10 A" terminal and the black test lead into the "COM" terminal according to the current level to be measured.



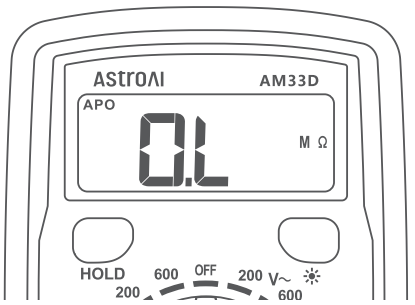
3. Disconnect the power supply of the circuit being tested. Connect the meter in series to the circuit being tested. Then, turn on the circuit's power supply.
4. The reading will appear on the screen.

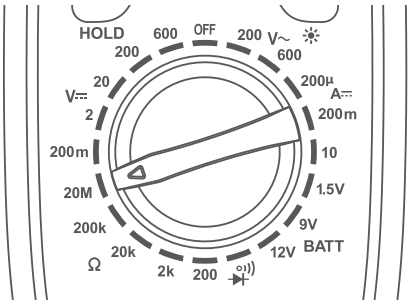
Note

To avoid damaging the meter or equipment, check the fuse before performing measurements and ensure the measured current does not exceed the rated maximum current. Be sure to put the test leads into the correct terminal.

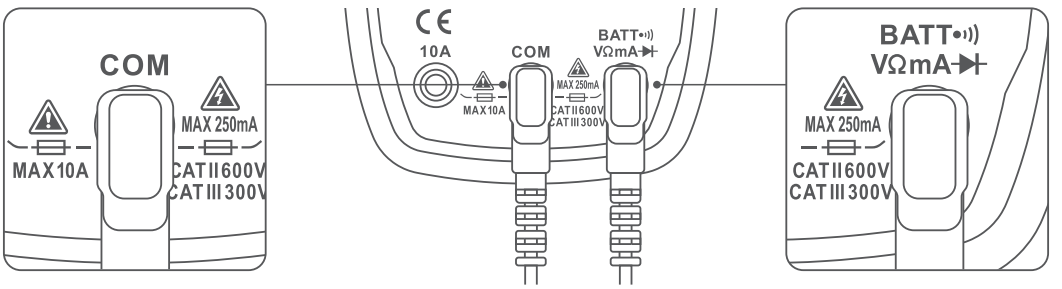
Measuring Resistance

1. Turn the rotary switch to the desired resistance setting and choose the appropriate range.





2. Insert the red test lead into the BATT VΩmA terminal and the black test lead into the "COM" terminal.



3. Connect the test lead probes to both ends of the circuit or resistor that needs to be measured.
4. The reading will appear on the screen.

Warning

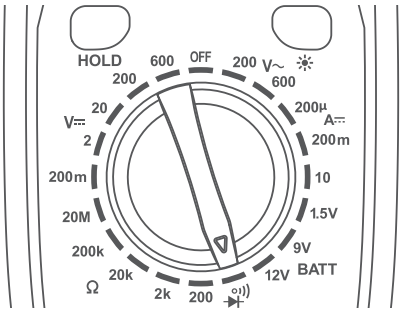
Safely disconnect the power supply and discharge high-voltage capacitors before measuring resistors on a circuit board. Failure to do so may damage the meter and increase the risk of electrical shock.

Note

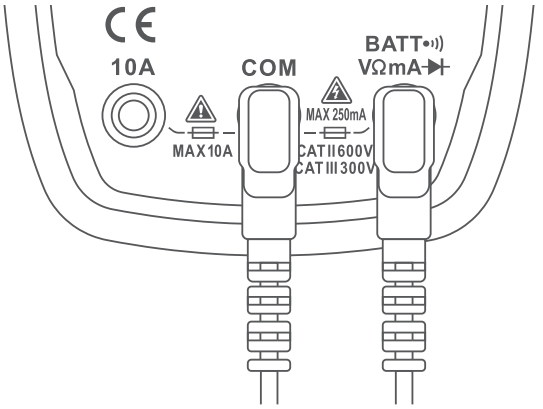
When measuring resistors on a circuit board, the reading may be affected by other electrical paths between the test leads.

Continuity Test

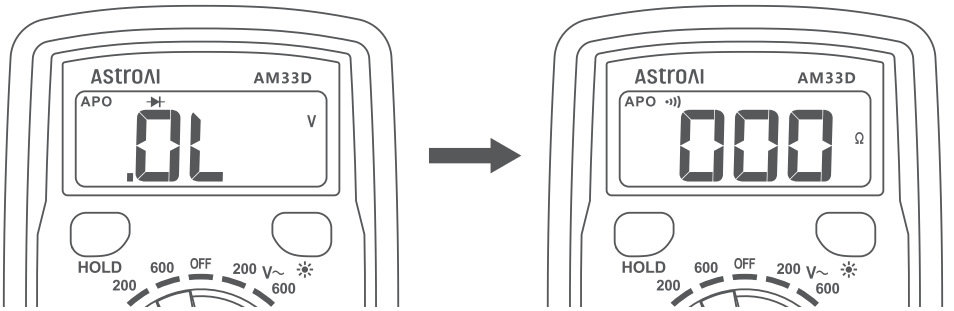
1. Turn the rotary switch to the setting.



2. Insert the red test lead into the BATT VΩmA terminal and the black test lead into the "COM" terminal.



3. Connect the test lead probes to both ends of the circuit or resistor that needs to be measured.
4. If the resistance value of the measured resistor or circuit is less than 30±20 Ω, the buzzer will beep. The screen will display the resistance value of the resistor or circuit.



Warning

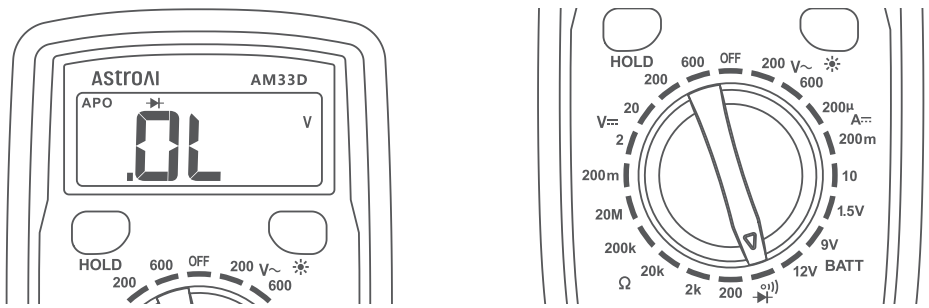
Safely disconnect the power supply and discharge high-voltage capacitors before measuring the meter's continuity. Failure to do so may damage the meter and increase the risk of electrical shock.

Note

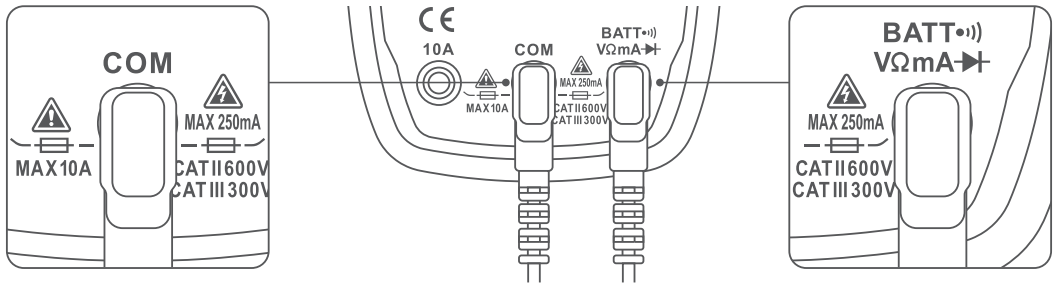
When measuring the meter's continuity, the reading may be affected by other electrical paths between the test leads.

Diode Test

1. Turn the rotary switch to the setting.



2. Insert the red test lead into the BATT VΩmA terminal and the black test lead into the "COM" terminal.



3. Connect the red test lead to the positive end of the diode and the black test lead to the negative end.
4. The reading will appear on the screen.
5. If the polarity of the test leads is the opposite of the diode's polarity, the meter will display "OL", which can be used to distinguish between the anode and cathode of the diode.

Warning

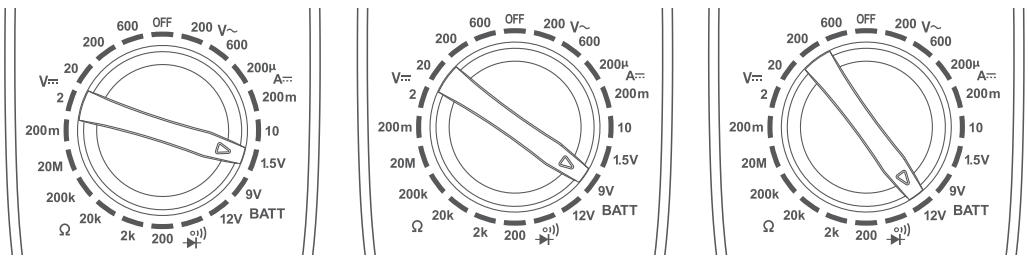
Safely disconnect the power supply and discharge high-voltage capacitors before performing diode tests on the circuit board. Failure to do so may damage the meter and increase the risk of electrical shock.

Note

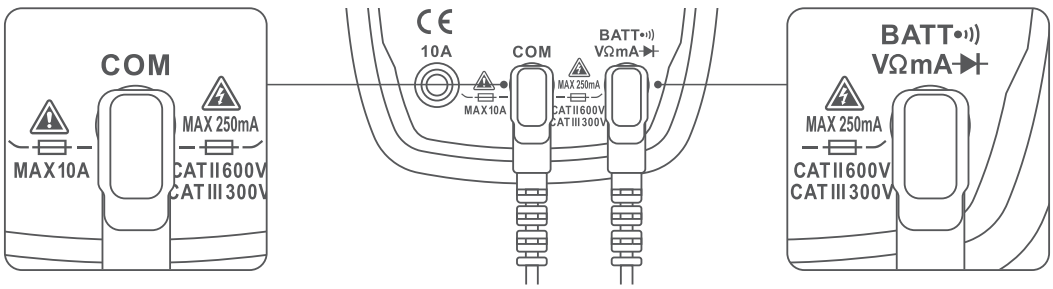
When performing a diode test on the circuit board, the reading may be affected by other electrical paths between the test leads.

Battery Test

1. Turn the rotary switch to the "**BATT**" setting and choose the appropriate range.



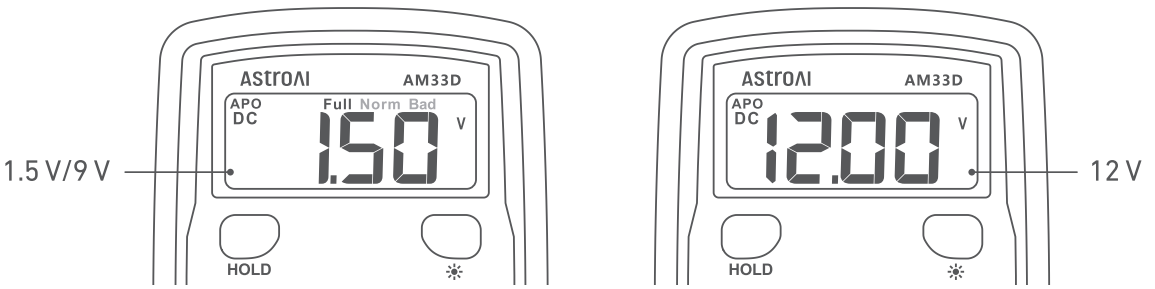
2. Insert the red test lead into the BATT VΩmA terminal and the black test lead into the "**COM**" terminal.



3. Connect the red test lead to the positive end of the tested battery and the black test lead to the negative end.
4. The present voltage reading of the tested battery will appear on the screen.

Note

When measuring 1.5 V and 9 V batteries, the screen will display both the battery voltage and the corresponding battery status (Full, Norm, Bad); however, the screen will only display battery voltage when measuring 12 V batteries.



Auto Power Off

- If the meter is on and not in use, it will shut off after 15 minutes to preserve battery life. Press the button or turn the rotary to turn it back on.
- To cancel the automatic power-off function, press and hold the HOLD Button. Then, turn on the meter. To resume the automatic power-off function, turn off the meter and then turn it back on.

MAINTENANCE

Cleaning the Meter

If the terminals are dusty or wet, incorrect measurements may occur. Please clean the meter as follows:

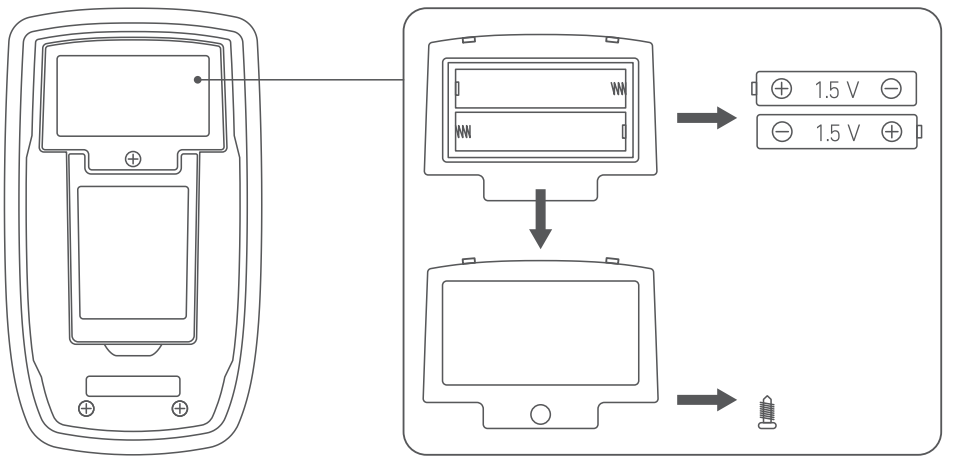
1. Turn off the meter and remove the test leads.
2. Flip the meter over and shake out any dust that has built up in the terminals. Wipe the case with a damp cloth or mild detergent. Do not use abrasives or solvents. Wipe the contacts in each terminal with a clean cotton swab and alcohol.

Warning

Always keep the inside of the meter clean and dry to prevent electrical shock or damage.

Battery Replacement

1. Turn off the meter and remove the test leads.
2. Remove the screws on the battery cover with a screwdriver. Then, remove the cover.
3. Remove the old battery and replace it with a new battery of the same specification. Pay attention to the polarity of the battery, there are positive and negative polarity markings for each battery in their compartments.
4. Put the battery cover back in its original position and secure the battery cover with its screws.



Warning

Replace the battery as soon as it gets low. This will help prevent false readings, electrical shocks, and even injuries. Do not discharge the battery by short-circuiting it or reversing its polarity.

Note

To ensure safe operation and maintenance of the meter, remove the battery when not used for a long time. Doing so will prevent battery leakage and possible damage to the multimeter.

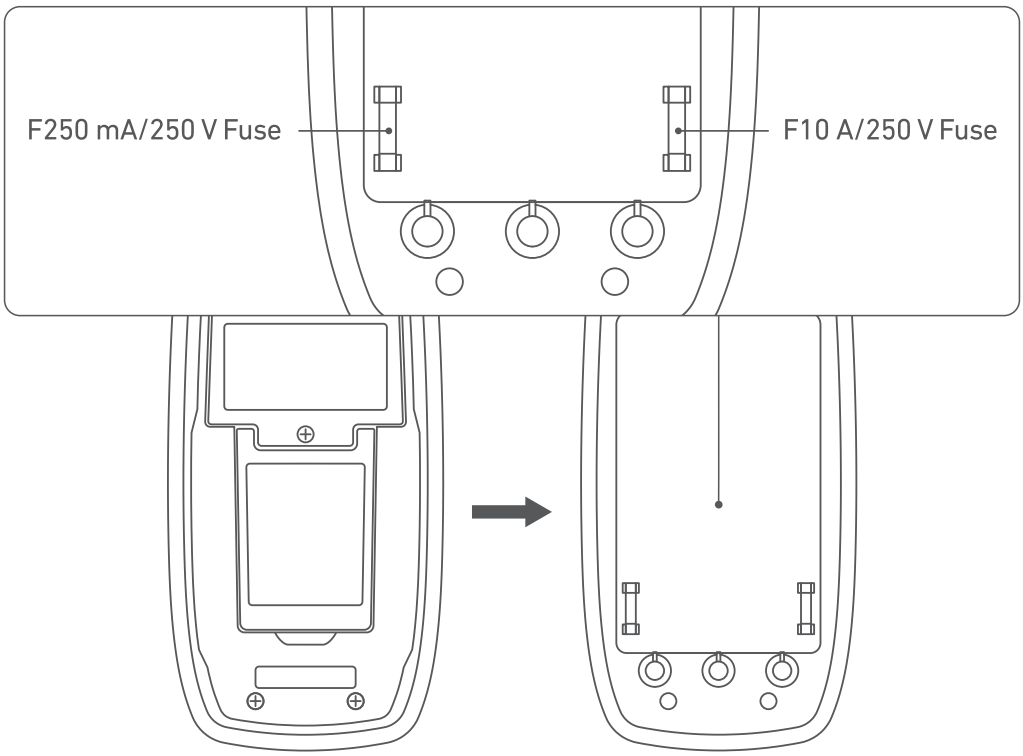
Fuse Replacement

1. Turn off the meter and remove the test leads.
2. Remove the screws on the meter's back cover. Then, remove the back cover.
3. Remove the blown fuses and replace them with new fuses of the same specification; make sure that the fuse is loaded into the fuse holder and clamped tightly.
4. Put the back cover back on and secure it with the removed screws.
5. Fuse specifications

- **Fuse 1: F250 mA/250 V, φ 5 x 20 mm**
- **Fuse 2: F10 A/250 V, φ 5 x 20 mm**

Warning

Please use fuses of the same or specified rating to prevent electrical shock, injury, or damage to the meter.



SPECIFICATIONS

Environmental Conditions: CAT II 600 V; CAT III 300 V

Pollution Level: 2

Altitude: 6562 ft (<2000 m)

Temperature and Humidity: 32~104 °F (0~40 °C);
(<80% RH, <10 °C RH)

Storage Temperature and Humidity: 14~140 °F (-10~60 °C);
(<70% RH, take out battery)

Temperature Coefficient: 0.1 x Accuracy/°C, <64 °F or > 82 °F (<18 °C or >28 °C)

Maximum voltage between the measuring terminals and the ground: DC/AC 600 V

Range Selection: Manual

Fuse Protection: mA: F250 mA/250 V Fuse 10 A: F10 A/250 V Fuse

Sample Speed: 3 Times Per Second

Digital Display: 2000 Counts. The unit symbols will automatically appear according to the measured functions.

Overload Indication: "OL" Displayed

Low Battery Indication: The  symbol will appear when the battery voltage is lower than its normal operating voltage.

Input Polarity Indication: "-" Automatically Displayed

Power: 2 x 1.5 V AAA Batteries

DETAILED SPECIFICATIONS

Accuracy Note: Accuracy is guaranteed within one year of calibration.

Operating Conditions: The ambient temperature is between 64.4 °F to 82.4 °F (18 °C to 28 °C), and the relative humidity is less than or equal to 80%.

Accuracy: ± (% rdg + dgts) (rdg for reading and dgts for digits)

DC Voltage

Range	Resolution	Accuracy
200.0 mV	0.1 mV	± (0.5% rdg + 3 dgts)
2.000 V	0.001 V	
20.00 V	0.01 V	
200.0 V	0.1 V	
600 V	1 V	

Input Impedance: 10 MΩ

Overload Protection: 600 V DC

AC Voltage

Range	Resolution	Accuracy
200.0 V	0.1 V	± (0.8% rdg + 5 dgts)
600 V	1 V	

Input Impedance: 10 MΩ

Overload Protection: 600 V AC

Frequency Range: 40 Hz ~ 1kHz

DC Current

Range	Resolution	Accuracy
200.0 µA	0.1 µA	± (1.2% rdg + 3 dgts)
200.0 mA	0.1 mA	
10 A	0.01 A	

Overload Protection

- µA/mA: F250 mA/250 V Fuse
- 10 A: F10 A/250 V Fuse

Maximum Input Current: 200 mA; 10 A

When measuring high currents, the continuous measuring time does NOT exceed 15 seconds.

Resistance

Range	Resolution	Accuracy
200.0 Ω	0.1 Ω	± (1.0% rdg + 3 dgts)
2.000 kΩ	0.001 kΩ	
20.00 kΩ	0.01 kΩ	
200.0 kΩ	0.1 kΩ	
20.00 MΩ	0.01 MΩ	± (1.5% rdg + 3 dgts)

Overload Protection: 250 V

Battery Test

Range	Full	Normal	Bad
1.5 V	>1.5 V	1.2 V-1.5 V	<1.2 V
9 V	>9 V	7.2 V-9 V	<7.2 V

Diode Test

Range	Function	Note
	Displays the approximate diode forward voltage value.	Overload Protection: 250 V

Continuity Test

Range	Function	Note
	If the value of the measured resistance or circuit is less than 30±20 Ω, the inbuilt buzzer will beep.	Overload Protection: 250 V

RECYCLING

You may dispose of the product when its service life has ended. Please recycle the recyclable parts according to local guidelines.

WARRANTY PERIOD

3-Year Limited Warranty from AstroAI

Each AstroAI AM33D 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, alterations, accidents, 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.

AstroAI

Web: www.astroai.com

E-Mail: support@astroai.com