

ASTROAI USER MANUAL

DT132A 4000 Count Auto-Ranging Multimeter

Thank you for purchasing the AstroAI DT132A 4000 Count Auto-Ranging Multimeter. It is a 3 ³/₄ digit, 3999 counts, auto-ranging digital multimeter. This multimeter is designed to be safely and accurately used by anyone to measure AC/DC Voltage, AC/DC Current, Resistance Continuity, Temperature, Frequency, and test Diodes. This manual provides all safety information, operation instructions, specifications, and maintenance for the meter.

Helpful functions include polarity indication, data hold, relative data measurements, and overload indication. This digital multimeter has been designed according to EN61010-1 oncoming electronic measuring instruments with an overload category (CAT III 600V) and pollution degree 2.

Thank you again for choosing AstroAI, if you have any questions or concerns regarding your product, please contact us at [**support@astroai.com**](mailto:support@astroai.com).
















NOTE: Fully read and understand this manual before using this Digital Multimeter.

WARNING: To avoid possible electric shock or personal injury, and to avoid possible damage to the Meter or to the equipment being tested, adhere to the following rules:

- Before using the Meter, inspect the exterior casing. Do not use the Meter if it is damaged or if all or part of the exterior casing is removed. Look for cracks or missing plastic. Pay special attention to the insulation around the connectors.
- Inspect the test leads for damaged insulation or exposed metal. Check the test leads for continuity.
- Do not apply more than the rated voltage, as marked on the Meter, between the terminals or between any terminal and grounding.
- The manual rotary switch should be placed in the correct position before measurement and should NOT be moved during measurement to prevent damage to the Meter.
- When the Meter is working at an effective voltage over 60V in DC or 30V rms in AC, special care should be taken because there is a danger of electric shock.
- Use the proper terminals, function, and range for your measurements.
- Do not use or store the Meter in a high-temperature environment, do not expose to high levels of humidity, or near strong magnetic fields. The performance of the Meter may deteriorate after dampening.
- When using the test leads, keep your fingers behind the finger guards.
- Disconnect circuit power and discharge all high-voltage capacitors before testing resistance, continuity or diodes.
- Replace the battery as soon as the battery indicator appears. With a low battery, the Meter might produce false readings that can lead to electric shock and personal injury.
- Remove the connection between the testing leads and the circuit being tested and turn the Meter power off before opening the Meter case.

- When servicing the Meter, use only the same model number or identical electrical specifications replacement parts.
- The internal circuit of the Meter shall not be altered at will to avoid damage of the Meter and any accident.
- Clean using a soft cloth and mild detergent for the surface of the Meter. Do not use abrasive materials or solvents to prevent the surface of the Meter from corrosion and damage.
- Turn the Meter off when not in use and take out the battery when it is not going to be used for an extended period of time. Regularly check the battery as it may leak when it has not been used for some time. Replace the battery as soon as leaking appears. A leaking battery will damage the Meter.

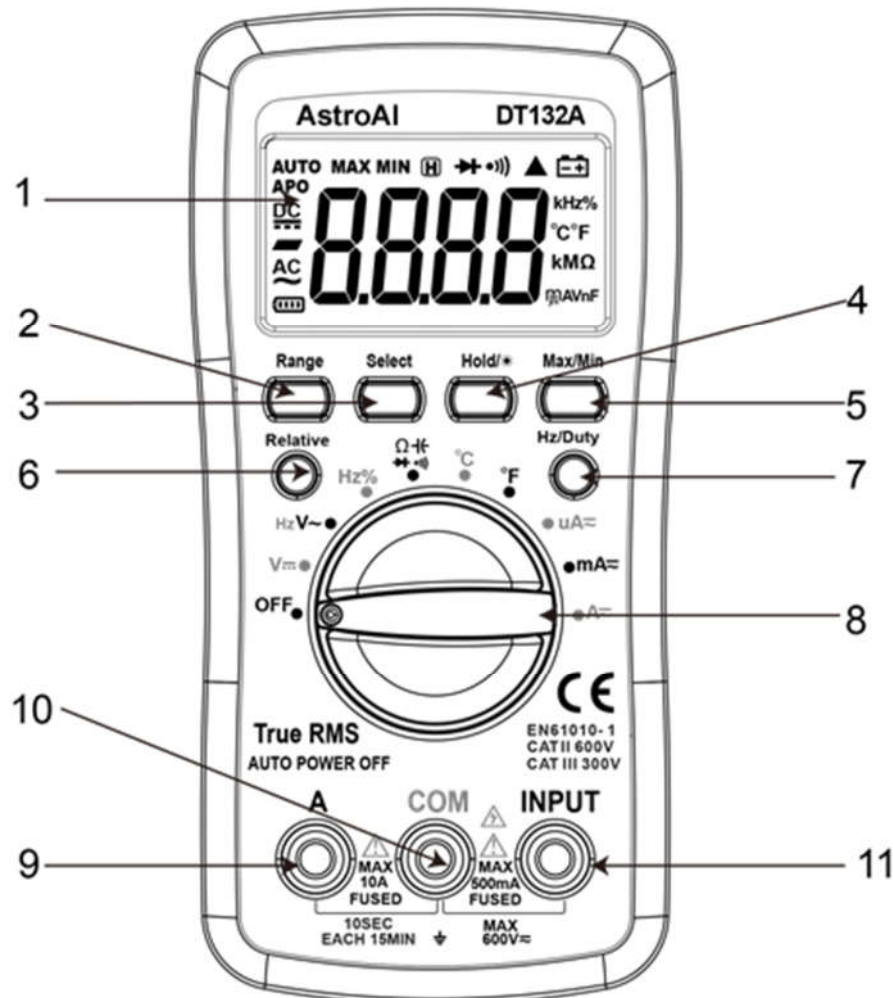
ELECTRICAL SYMBOLS

	AC (Alternating Current)		Low Battery
	DC (Direct Current)		Diode
	AC and DC		Fuse
	Earth Ground		Continuity Test
	Double Insulated		Warning
AUTO	Auto Range		Dangerous Voltage may be present
	Complies with EU Directives	APO	Auto Power Off
	Battery Capacity		Relative Test
	Data Hold		

MULTIMETER DESCRIPTION

Digital Display	3 ³ / ₄ , 3999
Sampling Speed	2 times per second
LCD Size	55 x 31mm
Range Selection	Auto or Manual
Polarity Indication	"-" displayed
Overload Indication	"OL" displayed
Low Battery Indication	Yes
Operating Environment	32°F~104°F (0°C~40°C); <80% RH
Storage Temperature	14°F~122°F (-10°C~50°C); <85% RH
Power	3 x 1.5V, AAA battery
Dimensions	145x70x35mm
Weight	Approx 157g
Temperature Test	Yes
Diode Test	Yes
Continuity Test	Yes
Frequency	Yes

MULTIMETER DIAGRAM



1. LCD Screen

3 ³/₄ digit LCD screen with a maximum reading of 3999

2. Range Button

The meter defaults to auto range mode when measuring voltage, current, resistance, or capacitance. When the meter is in auto range mode, “AUTO” is displayed on the screen.

To enter or exit manual range mode press the “RANGE” button. When entering manual range mode, “AUTO” will disappear from the screen. When exiting manual range mode, press and hold the “RANGE” button for 2 seconds.

3. Select Button

When measuring current, press the "SELECT" button two switch the meter between DC and AC mode.

When measuring diodes and/or continuity, press the button to switch between the two functions.

4. Data Hold / Backlight Button

Press this button to activate Data Hold. During Data Hold, the results will freeze, even after there is no longer input into the multimeter. To turn off Data Hold, simply press the button again.

Activate the Backlight by pressing and holding this button for 2 seconds. To turn off the backlight, simply press and hold the button for 2 seconds again.

5. Max/Min Button

Press this button to display either the maximum or minimum value the multimeter records during a measurement test. The maximum and minimum values will be cleared after cleared when the test function changes or the meter is turned off.

6. Relative Test

Press this button to store the current reading and resets the display to '0'. Using this function sets a relative reference point for the next reading.

This meter will display relative measurements in all functions except frequency.

7. Hz/Duty Button

This button switches between the Hz Function and Duty Cycle Functions.

When measuring AC Voltage, pressing this button will display the frequency of the AC Voltage.

8. Function Select/Range Switch

Use this switch to select the desired function and range for measurement.

9. "A" Terminal

Plug-in connector for the red test lead for the Current Measurement Function (200mA~10A).

10. "COM" Terminal

Plug-in connector for black (negative) test lead.

11. INPUT Terminal

Plug-in connector for the red test lead for all measurements except Current ($\geq 200\text{mA}$).

SPECIFICATIONS

Accuracy is guaranteed for 1 year (73°F ±9°F, less than 80% RH)

DC Voltage (Auto Ranging)

Range	Resolution	Accuracy
400mV	0.1mV	± (0.8% of rdg + 5 dgts)
4V	1mV	± (0.8% of rdg + 3 dgts)
40V	10mV	
400V	100mV	
600V	1V	± (1.0% of rdg + 5 dgts)

Input Impedance: 10MΩ

Overload Protection: 600V DC or 600V AC rms
(200mV range: 250V DC/AC rms)

Max. Input Voltage: 600V DC

AC Voltage (Auto Ranging)

Range	Resolution	Accuracy
400mV	1mV	± (1.2% of rdg + 5 dgts)
4V	1mV	± (1.0% of rdg + 8 dgts)
40V	10mV	
400V	100mV	
600V	1V	± (1.2% of rdg + 5 dgts)

Input Impedance: 10MΩ

Frequency Range: 40Hz ~ 400Hz

Overload Protection: 600V DC or 600V AC rms

Response: Average, calibrated in rms of sine wave

Max. Input Voltage: 600V AC rms

Temperature

Range	Resolution	Accuracy
-40~1370°C	1°C	-40°C~150°C: $\pm (2.5\% + 4)$
		150°C~1370°C: $\pm (2.5\% + 4)$
-40~2000°F	1°F	-40°F~302°F: $\pm (2.5\% + 4)$
		302°F~2000°F: $\pm (2.5\% + 4)$

NOTE: Different temperature sensors are configured in different temperature test ranges and normal temperature sensors are provided for standard configuration.

DC Current

Range	Resolution	Accuracy
400μA	0.1μA	$\pm (1.2\% \text{ of rdg} + 8\text{dpts})$
4000μA	1μA	
40mμA	10μA	
400mμA	100μA	
4A	1mA	
10A	10mA	

Overload Protection: μA and mA ranges: F0.5A/600V fuse
4A and 10A ranges: F10A/600V fuse

Max. Input Current: "INPUT" Terminal: 200mA

"A" Terminal: 10A

(For measurements >5A: only measure in durations less than 10 seconds, in intervals greater than 15 minutes.)

Voltage Drop: 400μA, 40mA and 4A ranges: 40mV

4000μA, 400mA and 10A ranges: 400mV

AC Current

Range	Resolution	Accuracy
400 μ A	0.1 μ A	\pm (1.5% of rdg + 8dgts)
4000 μ A	1 μ A	
40m μ A	10 μ A	
400m μ A	100 μ A	
4A	1mA	\pm (2.0% of rdg +10dgts)
10A	10mA	

Overload Protection: μ A and mA ranges: F0.5A/600V fuse
 4A and 10A ranges: F10A/600V fuse

Max. Input Current: "INPUT" Terminal: 200mA
 "A" Terminal: 10A

(For measurements >5A: only measure in durations less than 10 seconds,
 in intervals greater than 15 minutes.)

Voltage Drop: 400 μ A, 40mA and 4A ranges: 40mV
 4000 μ A, 400mA and 10A ranges: 400mV

Frequency Range: 40Hz ~ 400Hz

Response: Average, calibrated in rms of sine wave



Resistance (Auto Ranging)

Range	Resolution	Accuracy
400 Ω	0.1 Ω	\pm (1.5% of rdg + 3dgts)
4K Ω	1 Ω	
40K Ω	10 Ω	
400K Ω	100 Ω	
4M Ω	1K Ω	
40M Ω	10K Ω	

Open Circuit Voltage: ~0.25V

Overload Protection: 250V DC/AC rms

Diode and Continuity

Range	Description	Remark
	The approximate forward voltage drop will be displayed	Open circuit voltage: about 1.5V
	The built-in buzzer will sound if the resistance is less than about 30Ω	Open circuit voltage: about 0.5V

Overload Protection: 250V DC/AC rms

For continuity test: When the resistance is between 50Ω and 100Ω, the buzzer may sound or may not sound. When the resistance is more than 100Ω, the buzzer will not sound.

Capacitance

Range	Resolution	Accuracy
40nF	10pF	± (8% of rdg + 10 dgts)
400nF	100pF	± (5% of rdg + 5 dgts)
4uF	1nF	
40uF	10nF	
100uF~2mF	100nF	

Frequency

Range	Accuracy
5/50/500/5K 50K/500K/5MHz	± (1.0% of rdg + 3dgts)

OPERATION INSTRUCTIONS

Measuring Voltage

1. Connect the black test lead to the "COM" Terminal and the red test lead to the "INPUT" terminal.
2. Set the function switch to V~ or V= range. Select Auto or Manual range with the "RANGE" button.
3. In manual range, if the voltage magnitude to be measured is not known beforehand, set the ranges switch to the highest range position and then reduce it range by range until satisfactory resolution is obtained.
4. Connect the test leads across the source or load to be measured.
5. Results are displayed on the LCD display. The polarity of the red lead connection will be indicated when making a DC measurement.

Note:

- a. In small ranges, the meter may display an unstable reading when the test leads have not been connected to the load to be measured. It is normal and will not affect the results.
- b. In manual range mode, when the meters show the Overload symbol, "OL", a higher range must be selected.
- c. To avoid damage to the meter, do not measure a voltage which exceeds 600V DC (for DC voltage measurement) or 600V AC (for AC voltage measurement).

Measuring Current

1. Connect the black test lead to the "COM" jack. If the current to be measured is less than 200mA, connect the red test lead to the "INPUT" jack. If the current is between 200mA and 10A, connect the red test lead to the "10A" jack instead.
2. Set the range switch to desired " $\mu\text{A}\approx$ ", " $\text{mA}\approx$ ", or " $\text{A}\approx$ " range. If the current magnitude to be measured is not known beforehand, set the ranges switch to the highest range position and then reduce it range by range until satisfactory resolution is obtained.
3. Select DC current measurement or AC current measurement with the "Select" Button.
4. Select auto range or manual range with the "Range" button. In manual range, if the current magnitude to be measured is not known beforehand, select the highest range.
5. Connect test leads in series with the circuit to be measured.
6. Results are displayed on the LCD display. For DC current measurement, the polarity of the red test lead connection will be indicated as well.

Note:

- a. When the display shows the Overload symbol "OL", a higher range must be selected.

Measuring Resistance



1. Connect the black test lead to the "COM" jack and the red to the "INPUT" jack (Note: The polarity of the red test lead is positive "+").
2. Set the range switch to " $\Omega\approx$ " position.
3. Set the "Select" button to " $\Omega\approx$ " range.
4. Select auto range or manual range with the "Range" button. In manual range, if the current magnitude to be measured is not known beforehand, select the highest range.
5. Connect the test leads across the load to be measured.
6. Results are displayed on the LCD display.

Note:



- a. For resistance measurements $>1\text{M}\Omega$, the meter may take a few seconds to stabilize reading. This is normal for high-resistance measurement.

- b. When the input is not connected, i.e. at open circuit, the symbol “OL” will be displayed as an over range indicator.
- c. Before measuring in-circuit resistance, be sure that the circuit under test has all power removed and all capacitors are fully discharged.


Continuity Test

1. Connect the black test lead to the “COM” jack and the red to the “INPUT” jack (Note: The polarity of the red test lead is positive “+”).
2. Set the range switch to “ Ω  ” position
3. Press the “Select” Button to select continuity measurement mode, and the symbol “ ” will appear as an indicator.
4. Connect the test leads across the load to be measured.
5. If the circuit resistance is lower than about 30 Ω , the built-in buzzer will sound.

Diode Test

1. Connect the black test lead to the “COM” jack and the red to the “INPUT” jack (Note: The polarity of the red test lead is positive “+”).
2. Set the range switch to “ Ω  ” position.
3. Press the “Select” Button to select continuity measurement mode, and the symbol “ ” will appear as an indicator.
4. Connect the red test lead to the anode of the diode to be tested and the black test lead to the cathode.
5. The meter will show the approximate forward voltage of the diode. If the connections are reversed, “OL” will be shown on the display.

Capacitance Measurement

1. Connect the black test lead to the COM jack and the red to the “INPUT” jack.
2. Set the range switch to “ Ω  ” position
3. Press the “Select” Button to select continuity measurement mode, and the symbol “mF” will appear as an indicator.
4. Connect test leads across the capacitor under measure and be sure the polarity of connection is observed.

Note:

- a. When the capacitance under measure is above 100 μ F, it needs at least 10 seconds to make readings stable.

Measuring Temperature

1. Set the range switch to “ $^{\circ}$ C” or “ $^{\circ}$ F” range.
2. Insert the black (or “-”) plug of the K type thermocouple to the “COM” jack, and the red (or “+”) plug to the “INPUT” jack.
3. Carefully touch the end of the thermocouple to the object to be measured.
4. The results will be displayed after several moments.

Measuring Frequency/Duty Cycle

1. Connect the black test lead to the COM jack and the red to the “INPUT” jack.
2. Set the range switch to “Hz/Duty Cycle” range.
3. Press the “Select” Button to select “Hz” or “duty cycle” mode

4. Connect test leads across the source or load under measurement.

Note:

- a. The input voltage should be between 200mV and 10V rms AC. If the voltage is more than 10V rms, reading may be out of the accuracy range.

BATTERY REPLACEMENT

If the low battery icon appears on the display, it indicates the battery should be replaced immediately. Remove the screws on the back of the meter and open the back of the case. Replace the empty battery with new batteries (3 x AAA, 1.5V)

ACCESSORIES

User Manual, Test Leads, Thermocouple Adapter

FUSE REPLACEMENT

Fuses rarely need to be replaced and is blown almost as a result of operator error. This meter uses a fuse: F1:500mA/600V and F2: 10A/600V fast action. To replace the fuses, open the meter back cover, replace the damaged fuse with a new fuse of the specified ratings. Then reinstall the battery cover and lock the cover.

DISPOSAL OF THIS ARTICLE

If you at some point intend to dispose of this article, please keep in mind that many of its components consist of valuable materials, which can be recycled. Please do not discard it in the garbage bin or check with your local authorities for recycling facilities in your area.

3 Year Warranty 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.