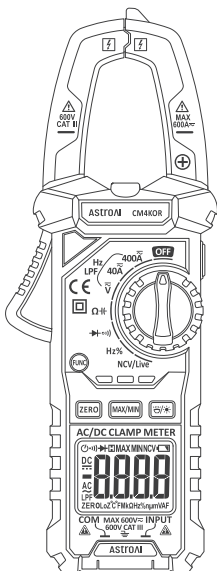


Astrom



CM4KOR

DIGITAL CLAMP METER

USER MANUAL

CATALOG

INTRODUCTION	03
WARNING	04
PACKAGE INCLUDES	06
ELECTRICAL SYMBOLS	06
DIMENSIONS	07
DIAGRAM	07
BUTTON FUNCTIONS	09
PREPARATION	11
OPERATION INSTRUCTIONS	11
MAINTENANCE	24
SPECIFICATIONS	25
DETAILED SPECIFICATIONS	26
RECYCLING	30
WARRANTY PERIOD	30

INTRODUCTION

Thank you for purchasing the AstroAI Auto Ranging 4000 Counts Digital Clamp Meter. This clamp meter is designed to be safely and accurately used by professionals and DIYers alike.

This manual provides all safety information, operation instructions, specifications and maintenance information for the meter.

The instrument performs AC/DC Voltage, AC/DC Current, Resistance, Audible Continuity, Diode, Frequency, Capacitance, NCV, Live Wire test and Duty Cycle testing.

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



Fully read and understand this manual before using this digital clamp meter.

WARNING

To avoid electric shocks, personal injury and damage to the clamp meter/equipment being tested, adhere to the following rules:

- Use the meter strictly in accordance with this manual, failure to do so may weaken or damage the meter's internal protections.
- 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 an 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 if the meter is damaged.
- Before using the meter, please check if there is any damage to the plastic parts of its casing. Do not use the meter if any part of the exterior casing is damaged.
- Before using the meter, please check if the test leads are cracked or damaged. If the test leads are damaged, please immediately replace them with leads of the same model and electrical specifications.
- Only use this meter within the measurement ranges listed in this manual and on the meter.
- 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 in humid environments.

- Comply with local and national safety regulations. Wear personal protective equipment (such as approved rubber gloves, masks flame-resistant clothing, etc.) to prevent injury from electric shocks and arcs when hazardous live conductors are exposed.
- When using the test leads, keep your fingers behind the finger guards.
- Do not measure the current when the test lead is inserted into the INPUT Terminal.
- Do not let the meter operate alone, someone should be supervising this device whenever it is in use.
- 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 wire and finally the ground wire.
- Before opening the case or battery cover, first remove the test leads from the meter. 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 electrical specifications.

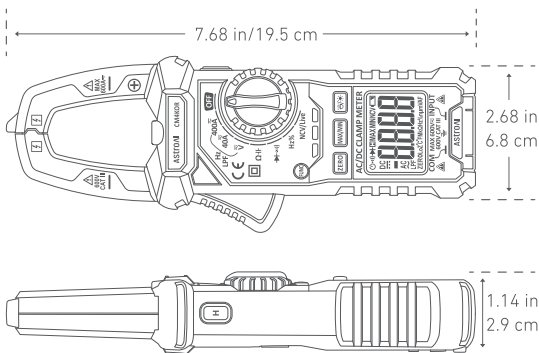
PACKAGE INCLUDES

User Manual	× 1
Pair of Test Leads	× 1
Storage Bag	× 1
AstroAI 4000 Counts Clamp Meter	× 1

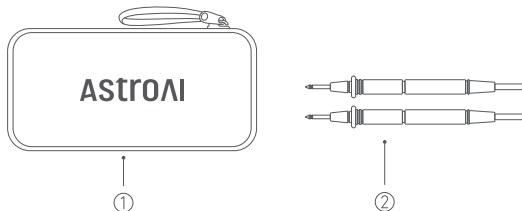
ELECTRICAL SYMBOLS

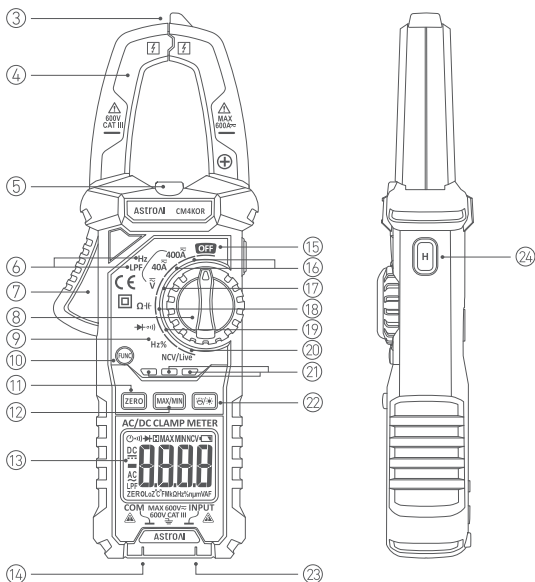
	AC (Alternating Current)		Low Battery Symbol
	DC (Direct Current)		Audible Continuity Test
	AC and DC		Diode Test
	Capacitance Test		Earth Ground
	Resistance Test		Frequency
	Double Insulation		Warning
NCV	Non-Contact Voltage Setting		Duty Cycle
mV/V	Voltage	mA/A	Current
Live	Live Wire Detection		Compliant with EU Standards

DIMENSIONS



DIAGRAM





- | | |
|-------------------------------------|-----------------------------|
| ① Storage Bag | ⑦ Trigger |
| ② Test Leads | ⑧ Rotary Switch |
| ③ NCV Detector | ⑨ Frequency Test/Duty Cycle |
| ④ Transformer Jaws | ⑩ FUNC Button |
| ⑤ Flashlight | ⑪ ZERO Button |
| ⑥ Frequency Test/Low Pass Filtering | ⑫ MAX/MIN Button |

- | | |
|--------------------------|--------------------------------------|
| ⑬ LCD Screen | ⑲ Diode Test/ Continuity Test |
| ⑭ COM Terminal | ⑳ NCV Detection |
| ⑮ OFF | ㉑ Indicator Light |
| ⑯ AC/DC Current Test | ㉒ Flashlight Button/Backlight Button |
| ⑰ AC/DC Voltage Test | ㉓ INPUT Terminal |
| ⑱ Resistance/Capacitance | ㉔ HOLD Button |

BUTTON FUNCTIONS

Button Function



Use the FUNC Button to further select the function if there are multiple functions in one rotary setting.

Note:

Pay special attention to ensure the selected setting is correct before performing any test.



Press the HOLD Button to hold or cancel the data.

Press this button while performing a test to hold (freeze) the reading for recording. While the hold function is active, the screen will keep the reading displayed. Press the HOLD Button again to turn off this function.

Note:

The screen will display " " when the data hold function is activated.



Press the MAX/MIN Button to toggle the maximum value record. Use this function to record the maximum/minimum value in the measurement scale. First, connect the meter to the circuit, then press the MAX/MIN Button (please do not remove test leads during this measurement) to turn on the maximum/minimum value function. The LCD display will show the maximum/minimum value of all the measured data. Press and hold the button for more than two seconds to exit this function.

Note:

The screen will display " MAX " when the maximum value function is turned on. The screen will display " MIN " when the minimum value function is turned on.



Press and hold the "Flashlight" Button to turn on the flashlight. Press the "Flashlight" Button to turn on the backlight; this makes it easier to read the screen in dim light.

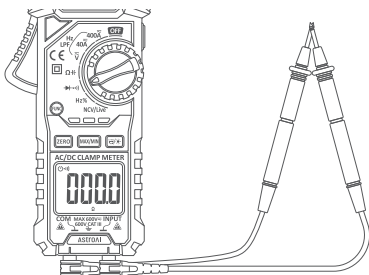
Press the "Flashlight" Button again to turn off the backlight. Press and hold the "Flashlight" Button again to turn off the flashlight.



Press the "ZERO" Button to reset the reading in DC mode.

PREPARATION

1. Insert the red test lead into the INPUT terminal and the black test lead into the COM terminal.
2. Turn the rotary dial to the continuity test and touch the red and black test leads together to check whether they are functioning normally. The buzzer will beep and the indicator light will illuminate if the test leads are normal.

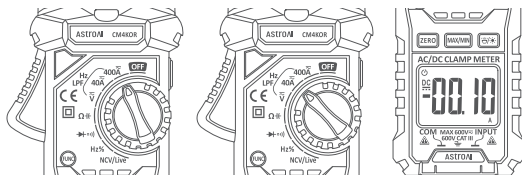


OPERATION INSTRUCTIONS

- To avoid damaging the meter, do not measure voltage exceeding 600 V.
- Pay special attention to safety when measuring high voltages to avoid electric shock and personal injury.
- Before using the meter, test a known voltage or current to confirm that the meter functions properly.

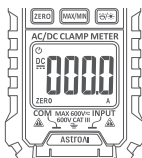
I. Measuring AC/DC Current

1. Turn the rotary dial to the “ $400\bar{A}$ ” or “ $40\bar{A}$ ” setting. The screen will display “ $\bar{DC}$ ”.

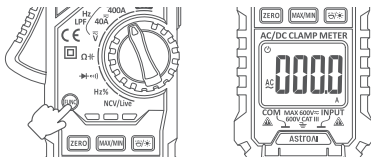


Note:

In DC mode, press the “ZERO” Button to reset the reading on the screen before measuring, “ZERO” will be displayed.

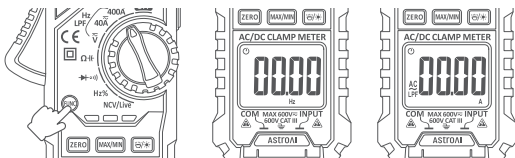


2. Press the FUNC Button to switch to AC current mode. The screen will display “ $\bar{AC}$ ”.

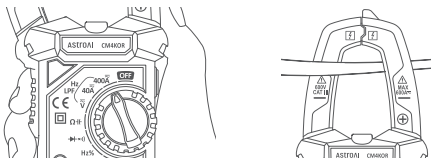


Note:

When measuring AC current, press the FUNC Button to check the frequency and enter the low-pass filtering (LPF) mode. The screen will display " Hz " and " $\overline{\text{AC}}$ LPF ", respectively.



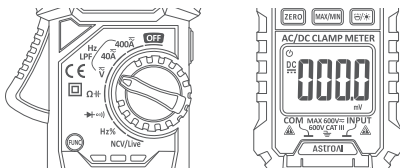
3. Press the trigger to open the transformer jaws. Then, clamp the conductor to be tested and slowly release the trigger until the clamp head is completely closed. Ensure the conductor to be tested is in the center of the clamp head. Measurement errors will occur if the conductor is not placed in the center of the clamp head.



4. After the reading stabilizes, record the reading from the LCD screen.
5. Turn the rotary switch to the OFF position to turn off the meter.

II. Measuring AC/DC Voltage

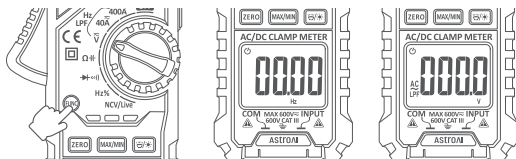
1. Turn the rotary dial to the " $\overline{\text{V}}$ " setting. The screen will display " $\overline{\text{DC}}$ " indicating that the meter is measuring DC voltage.



2. Press the FUNC Button to switch to the AC voltage test. The screen will display " $\overline{\text{AC}}$ " indicating that the meter is measuring AC voltage.

Note:

When measuring AC voltage, press the FUNC Button to view the frequency and enter the low-pass filtering (LPF) function. The screen will display "Hz" and " $\overline{\text{AC}}$ LPF", respectively.



3. Connect the meter in parallel to the circuit under test.

Note:

If the reading is negative when measuring the DC voltage, it means that the positive and negative poles of the test leads are reversed, please put the test leads in the appropriate position.

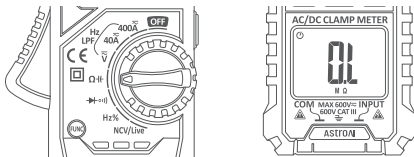
4. After the reading stabilizes, record the reading from the LCD screen.
5. Turn the rotary switch to the OFF position to turn off the meter.

Voltage Notes

- To avoid damaging the meter, do not measure voltage exceeding 600 V DC or 600 V AC CAT III.
- Pay special attention to which voltage mode the clamp meter is in. The LCD screen will indicate whether the setting is in AC. Use the "FUNC" Button to choose the correct setting.
- If the AC setting is used to measure DC and vice versa, an overflow symbol will be displayed. Performing this has the potential to damage the meter and any components you are attempting to test.
- 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.

III. Measuring Resistance

1. Turn the rotary dial to the " Ω " setting. The screen will display " Ω " indicating that the meter is measuring resistance.



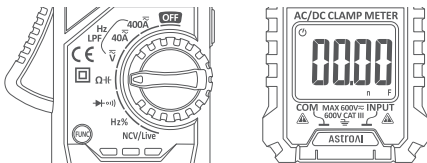
2. Connect the test leads to both ends of the circuit or resistor under test in parallel.
3. After the reading stabilizes, record the reading from the LCD screen.
4. Turn the rotary switch to the OFF position to turn off the meter.

Resistance Notes

- 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.

IV. Measuring Capacitance

1. Turn the rotary dial to the " Ω +" setting. Press the FUNC Button to switch to the capacitance test. The screen will display "nF" indicating that the meter is testing capacitance.



2. Connect the test leads to both ends of the circuit or resistor under test in parallel.
3. After the reading stabilizes, record the reading from the LCD screen.
4. Turn the rotary switch to the OFF position to turn off the meter.

Capacitance Tips

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

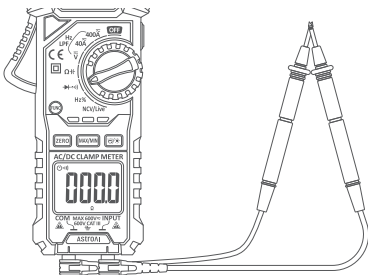
Capacitance Notes

- Before measuring the capacitance, discharge the capacitor to avoid damaging the meter. Do so by connecting the capacitor to a high-powered resistor.
- Discharge the capacitor after measurement to avoid any potential safety hazards.
- If the capacitance is large, it may take a long time for the reading to stabilize.

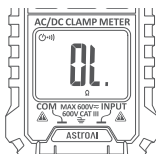
V. Continuity Test

1. Insert the red test lead into the INPUT terminal and the black test lead into the COM terminal.

2. Turn the rotary dial to the “ ” setting. The screen will display “ ” indicating that the meter is testing continuity. Touch the red and black test leads together to check whether they are functioning normally. The buzzer will beep and the indicator light will illuminate if the test leads are normal.



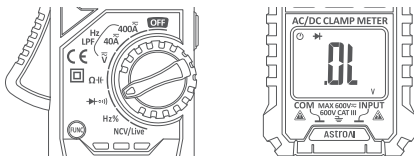
3. Connect the test leads to both ends of the circuit or resistor under test in parallel. If the resistance of the circuit or resistor under test is connected and less than $50\ \Omega$, the buzzer will emit a beep and the measured resistance value will be displayed on the LCD display.
4. If the circuit or resistor under test is disconnected, or the resistance value is greater than $50\ \Omega$, the LCD screen will display “OL”.



5. Turn the rotary switch to the OFF position to turn off the meter.

VI. Diode Test

1. Turn the rotary dial to the " $\rightarrow|<$ " setting. Press the FUNC Button to switch to the diode test. The screen will display " $\rightarrow|<$ " indicating that the meter is testing the diode.



2. Connect the red test lead to the anode of the diode under test and the black test lead to the cathode of the diode.

Note:

Usually the anode of the diode is the longer end.

3. The LCD screen will display the approximate voltage drop reading of the diode. If the test leads are connected reversely, "OL" will be displayed on the LCD screen. Please reposition the test leads to the correct position to measure again.
4. Turn the rotary switch to the OFF position to turn off the meter.

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 the negative, then the diode should be in a forward conduction state. If so, the displayed value is the forward voltage drop.

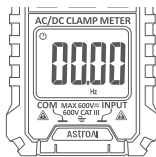
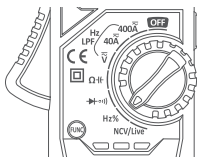
- Normal diode forward pressure drops: the general silicon tube is 0.5-0.7 V, a germanium tube is 0.15-0.3 V.
- If "0000" is displayed, the diode is broken.
- You can also verify that the red test lead is connected to the negative pole of the tested diode and the black test lead is connected to the positive pole. The meter should display "OL".

Polarity Judgment Method

1. Switch the clamp meter 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.

VII. Frequency Test

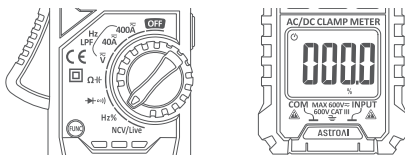
1. Turn the rotary dial to the " Hz/% " setting. The screen will display " Hz " indicating that the meter is testing frequency.



2. Connect the test leads in parallel to both ends of the power supply or circuit to be tested.
3. After the reading stabilizes, record the reading from the LCD screen.
4. Turn the rotary switch to the OFF position to turn off the meter.

VIII. Duty Cycle Test

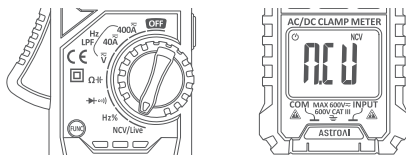
1. Turn the rotary dial to the " Hz/% " setting. Press the FUNC Button to switch to the duty cycle test. The screen will display " % " indicating that the meter is testing the duty cycle.



2. Connect the test leads in parallel to both ends of the power supply or circuit to be tested.
3. After the reading stabilizes, record the reading from the LCD screen.
4. Turn the rotary switch to the OFF position to turn off the meter.

IX. Non-Contact Voltage

1. Turn the rotary dial to the "NCV/Live" setting. The screen will display "NCV" indicating that the meter is testing non-contact voltage.



2. Move the NCV detector close to the point to be tested:

When the meter senses a weak AC signal, the green indicator light will illuminate, the buzzer will emit a slow, audible beep and the screen will display "---L". When the meter senses a strong AC signal, the red indicator light will illuminate, the buzzer will emit a rapid beep and the screen will display "---H".

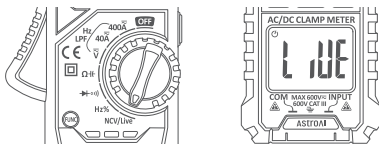
Note:

When the indicator light is on, it means there is voltage, please pay attention to your safety!

3. Turn the rotary switch to the OFF position to turn off the meter.

X. Live Wire Detection

1. Insert the red test lead into the INPUT terminal.
2. Turn the rotary dial to the "NCV/Live" setting. Press the FUNC Button to switch to live wire detection. The screen will show "Live" indicating that the meter is testing live wire detection.



3. Touch the point to be measured with the tip of the red test lead:

When the indicator light is on, it means that the measured position is a live wire, please pay attention to your safety! The reason that the green light is on may be that the test lead is not fully connected to the socket. Please test again after the test lead is fully connected.

Note:

When the meter senses a weak AC signal, the LCD screen will display "---L" and the buzzer will emit a slow beep. When the meter senses a strong AC signal, the LCD screen will display "---H" and the buzzer will emit a rapid beep.

4. Turn the rotary switch to the OFF position to turn off the meter.

Auto Power Off

Rotating the rotary switch from the OFF Button to any gear will turn on the meter. After 15 minutes of standby, the meter will automatically power off. To turn it on again, just rotate the range switch or press the button.

MAINTENANCE

Cleaning the Meter

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

1. Turn off the power to the meter and remove the test leads.
2. Turn the meter over and shake out the accumulated dust in the input terminal. Then, wipe the case with a damp cloth or mild detergent. Wipe the contacts in each terminal with a clean cotton swab dampened in alcohol.

Replacing the Battery

1. Turn off the meter and remove the test leads.
2. Unscrew the screws securing the battery cover with a screwdriver and remove the battery cover.
3. Remove the old battery and replace it with a new battery of the same specification.
4. Put the battery cover back in its original position and secure the battery cover with the removed screws.

Battery Type: 2 x 1.5 V AAA Batteries

SPECIFICATIONS

Digital Display	4000, 3 $\frac{3}{4}$
Sampling Speed	3 Times/Second
LCD Dimensions	35 × 25 mm
Range Selection	Automatic
Polarity Indication	"-" Automatically Displayed
Overload Indication	"OL" Displayed
Low Battery Indication	"  " Displays when battery voltage is lower than normal
Operating Temperature	32~104 °F (0~40 °C; <80 % RH, <10 °C Non-Condensing)
Storage Temperature	14~122 °F (-10~6 °C; <70 % RH, Remove the Battery)
Power	2 × 1.5 V AAA Batteries
Weight	Approximately 205 g
Dimensions	195 × 68 × 29 mm
Safety/Compliance	CAT III 600 V; Pollution Level: 2; Altitude <2000 m.

DETAILED SPECIFICATIONS

Operating Temperature Range: 18 °C to 28 °C

Relative Humidity: $\leq 80\%$

Accuracy: $\pm (\%rdg + dgts)$

The accuracy is applicable within one year after calibration.

I. DC Voltage

Range	Resolution	Accuracy
400 mV	0.1 mV	$\pm (0.5\% + 5)$
4 V	0.001 V	
40 V	0.01 V	
400 V	0.1 V	
600 V	1 V	

- Input Impedance: 10 M Ω
- Overload Protection: 600 V
- Maximum Measuring Voltage: 600 V

II. AC Voltage

Range	Resolution	Accuracy
4 V	0.001 V	$\pm (1.0\% + 5)$
40 V	0.01 V	
400 V	0.1 V	
600 V	1 V	

- Input Impedance: 10 M Ω
- Overload Protection: 600 V

- Maximum Measuring Voltage: 600 V
- Frequency Range: 40 Hz ~ 1 kHz
- Response: True RMS

III. DC Current

Range	Resolution	Accuracy
40 A	0.01 A	$\pm (2.5\% + 5)$
400 A	0.1 A	

IV. AC Current

Range	Resolution	Accuracy
40 A	0.01 A	50~60 Hz: $\pm (2.5 + 5)$
400 A	0.1 A	Other: $\pm (3.0\% + 10)$

- Frequency Range: 40 Hz ~ 400 Hz
- Response: True RMS

V. Resistance

Range	Resolution	Accuracy
400 Ω	0.1 Ω	$\pm (1.0\% + 5)$ Overload Protection: 250 V;
4 k Ω	0.001 k Ω	
40 k Ω	0.01 k Ω	
400 k Ω	0.1 k Ω	
4 M Ω	0.001 M Ω	
40 M Ω	0.01 M Ω	

VI. Capacitance

Range	Resolution	Accuracy
4 nF	0.001 nF	± (4.0% + 5) Overload Protection: 250 V;
40 nF	0.01 nF	
400 nF	0.1 nF	
4 µF	0.001 µF	
40 µF	0.01 µF	
400 µF	0.1 µF	
4 mF	0.001 mF	

VII. Frequency/Duty Cycle

Range	Resolution	Accuracy
40 Hz	0.01 Hz	± (1.0% + 3)
400 Hz	0.1 Hz	
4 kHz	0.001 kHz	
40 kHz	0.01 kHz	
400 kHz	0.1 kHz	
4 MHz	0.001 MHz	
1~99%	0.1%	± (3.0% + 3)

Frequency measurement by “Hz” setting:

- Measuring Range: 0 ~ 4 MHz
- Voltage Range: 0.2~10 V AC (The higher the measured frequency, the higher the voltage should be.)
- Overload Protection: 250 V;

Frequency measurement by “V” setting:

- Measuring Range: 0 ~ 100 kHz
- Voltage Range: 0.5~600 V AC (The higher the measured frequency, the higher the voltage should be.)
- Overload Protection: 250 V;

Frequency measurement by “A” setting:

- Measuring Range: 0 ~ 1 kHz
- Signal Range: $\geq 1/4$ range (The higher the measured frequency, the higher the current should be.)

VIII. Continuity Test

	• The buzzer inside the meter will beep if the resistance $< 50 \Omega$ • Open Circuit Voltage: Approximately 1.0 V • Overload Protection: 250 V
---	--

IX. Diode Test

	• The approximate diode forward voltage value will be displayed • Reverse DC Voltage: Approximately 2.0 V • 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 Digital Clamp Meter 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 over-voltage failures caused by use outside the clamp meter'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

V2.1