

# AC True RMS Clamp Meter

## User Manual



**Part Number: 72-14425**

## Safety

### International Safety Symbols



This symbol, adjacent to another symbol or terminal, indicates the user must refer to the manual for further information.



This symbol, adjacent to a terminal, indicates that, under normal use, hazardous voltages may be present



Double insulation

## Safety Notes

- Do not exceed the maximum allowable input range of any function
- Do not apply voltage to meter when resistance function is selected.
- Set the function switch OFF when the meter is not in use.

## Warnings

- Set function switch to the appropriate position before measuring.
- When measuring volts do not switch to current/resistance modes.
- When changing ranges using the selector switch always disconnect the test leads from the circuit under test.
- Do not exceed the maximum rated input limits.

## Cautions

Improper use of this meter can cause damage, shock, injury or death. Read and understand this user manual before operating the meter.

Always remove the test leads before replacing the battery. Inspect the condition of the test leads and the meter itself for any damage before operating the meter. Repair or replace any damage before use.

Use great care when making measurements if the voltages are greater than 25V AC rms or 35V DC. These voltages are considered a shock hazard.

Remove the battery if the meter is to be stored for long periods.

Always discharge capacitors and remove power from the device under test before performing Diode, Resistance or Continuity tests.

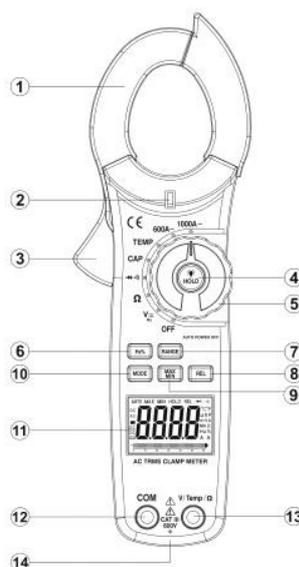
- Voltage checks on electrical outlets can be difficult and misleading because of the uncertainty of connection to the recessed electrical contacts. Other means should be used to ensure that the terminals are not "live".
- If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

Input Limits	
Function	Maximum Input
A AC	1000A
V DC, V AC	1000V DC/AC

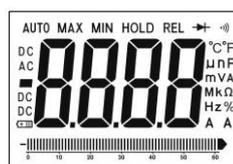
Input Limits	
Function	Maximum Input
Frequency, Resistance, Diode, Continuity, Capacitance Test	1000V DC/AC
Temperature (°C/°F)	1000V DC/ AC

## Meter Description

1. Current clamp
2. Non-contact AC voltage indicator light
3. Clamp trigger
4. Data Hold and Backlight button
5. Rotary Function switch
6. Hz% Hlod button
7. RANGE select button
8. Relative button
9. MIN/MAX Hlod button
10. MODE select button
11. LCD display
12. COM input jack
13. V ΩCAP TEMPHz jack
14. Battery Cover



- |                                |   |
|--------------------------------|---|
| 1. AC DC                       | AC (alternating current) and DC (direct current)                            |
| 2.                             | Minus sign  |
| 3. 8.8.8.8                     | 6000 count (0 to 5999) measurement reading with 61 segments Analog Bargraph |
| 4. <b>AUTO</b>                 | Auto Range mode   |
| 5. <b>REL</b>                  | Relative mode   |
| 6.                             | Diode test mode   |
| 7.                             | Audible Continuity  |
| 8. <b>HOLD</b>                 | Data Hold mode  |
| 9. °C, °F, μ, m, V, A, K, M, Ω | Units of measure list   |
| 10. <b>MAX MIN</b>             | MAX/MIN mode  |
| 11. <b>Hz%</b>                 | Frequency/duty cycle mode   |



## Specifications

Function	Range & Resolution	Accuracy (% of reading)
AC Current (50/60Hz)	600.0AAC	± (2.8 % + 8 digits)
	1000AAC	± (3.0 % + 8 digits)
AC Current (400Hz)	600.0AAC	± (5.0 % + 10 digits)
	1000AAC	± (5.0 % + 10 digits)
DC Voltage	600.0mV DC	± (0.8% + 2 digits)
	6.000V DC	± (1.5% + 2 digits)
	60.00V DC	
	600.0V DC	
AC Voltage (50-400Hz)	6.000V AC	± (1.8% + 8 digits)
	60.00V AC	
	600.0V AC	
Resistance	600.0Ω	± (1.0% + 4 digits)
	6.000kΩ	± (1.5% + 2 digits)
	60.00kΩ	
	600.0kΩ	
	6.000MΩ	± (2.5% + 3 digits)
	60.00MΩ	± (3.5% + 5 digits)
Capacitance	40.00nF	±(4.0% reading + 20 digits)
	400.0nF	±(3% reading + 5 digits)
	4.000μF	
	40.00μF	
	400.0μF	±(4.0% reading + 10 digits)
	4000μF	±(5.0% reading + 10 digits)
Frequency Sensitivity: 15Vrms	10-10kHz	±(1.5% reading + 2 digits)
Temp (type-K) (probe accuracy not included)	-20.0 to 760.0°C	±(3% rdg +5°C)
	-4.0 to 1400.0°F	±(3% rdg+9°F)

Clamp size	Opening 1.5" (40mm) approx
Diode Test	Test current of 0.3mA typical; Open circuit voltage 1.5V DC typical.
Continuity Check	Threshold <40Ω; Test current < 0.5mA
Low Battery Indication	"  " is displayed
Over range Indication	"OL" is displayed
Measurements Rate	2 per second, nominal
Input Impedance	10MΩ (V DC and V AC)
Display	6000 counts LCD
AC Current	50-400Hz (AAC)
AC Voltage bandwidth	50-400Hz (VAC)
Operating Temperature	41 to 104°F (5 to 40°C)
Storage Temperature	-4 to 140°F (-20 to 60°C)

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Operating Humidity	Max 80% up to 87°F (31°C) decreasing linearly to 50% at 104°F (40°C)
Storage Humidity	<80%
Operating Altitude (2000meters) maximum.	7000ft.
Over voltage	Category III 600V
Battery	One 9V Battery
Auto OFF	approx. 15 minutes
Dimensions/Weight	232×77×39mm / 271g
Safety	For indoor use and in accordance with Over voltage Category II, Pollution Degree 2. Category II includes local level, appliance, portable equipment, etc., with transient over voltages less than Over voltage Cat. III

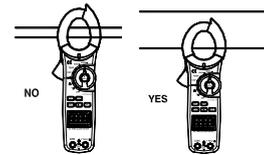
### Operation

NOTICES: Read and understand all warning and precaution statements listed in the safety section of this operation manual prior to using this meter. Set the function select switch to the OFF position when the meter is not in use.

### AC Current Measurements

WARNING: Ensure that the test leads are disconnected from the meter before making current clamp measurements.

1. Set the Function switch to the 1000 or 600A range.
2. If the range of the measured is not known, select the higher range first then move to the lower range if necessary.
3. Press the trigger to open jaw. Fully enclose one conductor to be measured. The clamp meter LCD will display the reading.



### DC/AC Voltage Measurements

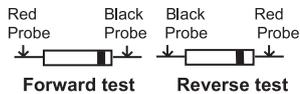
1. Insert the black test lead into the negative COM terminal and the red test lead into the positive V terminal.
2. Set the function switch to the V position.
3. Select AC or DC with the MODE button.
4. Connect the test leads in parallel to the circuit under test.
5. Read the voltage measurement on the LCD display.

### Resistance Measurements

1. Insert the black test lead into the negative COM terminal and the red test lead into the positive terminal.
2. Set the function switch to the  $\Omega$  position.
3. Touch the test probe tips across the circuit or component under test. It is best to disconnect one side of the device under test so the rest of the circuit will not interfere with the resistance reading.
4. For Resistance tests, read the resistance on the LCD display.

### Diode and Continuity Measurements

1. Insert the black test lead banana plug into the negative **COM** jack and the red test lead banana plug into the positive diode jack.
2. Turn the rotary switch to the  $\rightarrow \bullet \cdot \cdot \cdot$  position.
3. Press the MODE button until " $\rightarrow \bullet$ " appears in the display.
4. Touch the test probes to the diode under test. Forward voltage will indicate 0.4V to 0.7V. Reverse voltage will indicate "**OL**". Shorted devices will indicate near 0mV and an open device will indicate "**OL**" in both polarities.



For Continuity tests, if the resistance is  $< 40\Omega$ , a tone will sound.

### Capacitance Measurements

**WARNING:** To avoid electric shock, disconnect power to the unit under test and discharge all capacitors before taking any capacitance measurements. Remove the batteries and unplug the line cords.

1. Set the rotary function switch to the cap position.
2. Insert the black test lead banana plug into the negative (COM) jack. Insert the red test lead banana plug into the positive (V) jack.
3. Touch the test leads to the capacitor to be tested.
4. Read the capacitance value in the display

### Frequency/duty cycle Measurements (electronic)

1. Set the rotary function switch to “V” position.
2. Select ACV with the **MODE** button
3. Press the Hz/% button to indicate “Hz” in the display.
4. Insert the black lead banana plug into the negative **COM** jack and the red test lead banana plug into the positive **Hz** jack.
5. Touch the test probe tips to the circuit under test.
6. Read the frequency on the display.
7. Press the **Hz/%** button again to indicate “%” on the display. Read the % of duty cycle on the display.

### Temperature Measurements

**WARNING:** To avoid electric shock, disconnect both test probes from any source of voltage before making a temperature measurement.

1. Set the function switch to TEMP.
2. Insert the Temperature Probe into the negative (COM) and the V jacks, making sure to observe the correct polarity.
3. Select °C or °F with the **MODE** button.
4. Touch the Temperature Probe head to the part whose temperature you wish to measure. Keep the probe touching the part under test until the reading stabilizes (about 30 seconds).
5. Read the temperature in the display. The digital reading will indicate the proper decimal point and value.

**WARNING:** To avoid electric shock, be sure the thermocouple has been removed before changing to another measurement function

### Non-Contact AC Voltage Measurements

**WARNING:** Risk of Electrocution. Before use, always test the Voltage Detector on a known live circuit to verify proper operation

1. Touch the probe tip to the hot conductor or insert into the hot side of the electrical outlet.
2. If AC voltage is present, the detector light will illuminate.

**NOTE:** The conductors in electrical cord sets are often twisted. For best results, rub the probe tip along a length of the cord to assure placing the tip in close proximity to the live conductor.

**NOTE:** The detector is designed with high sensitivity. Static electricity or other sources of energy may randomly trip the sensor. This is normal operation

## MODE BUTTON

To select DC/ACV,OHM/ Diode/Continuity/CAP, °C/°F

## MIN & MAX Recording Button

Press MIN/MAX to enter MIN, MAX Recording mode (manual range only ). Select the proper range before selecting MIN MAX to ensure that the MIN/MAX reading will not exceed the testing range. Press once to select MIN. Press again to select MAX. and press again release MIN/MAX recording function.

## REL BUTTON

For Offset adjustment

## Data Hold Button

To freeze the LCD meter reading, press the data hold button. The data hold button is located on the left side of the meter (top button). While data hold is active, the HOLD display icon appears on the LCD. Press the data hold button again to return to normal operation.

Note: The HOLD feature will activate when the Backlight is turned on. Press the HOLD key again to exit Hold.

## RANGE BUTTON

When the meter is first turned on, it automatically goes into AutoRanging. This automatically selects the best range for the measurements being made and is generally the best mode for most measurements. For measurement situations requiring that a range be manually selected, perform the following:

1. Press the RANGE button. The “Auto Range” display indicator will turn off, The “Manual Range” display indicator will turn on
2. Press the RANGE button to step through the available ranges until you select the range you want.
3. Press and hold the RANGE button for 2 seconds to exit the Manual Ranging mode and return to Auto Ranging.

## Backlight Button

The backlight function illuminates the display and is used when the ambient light is too low to permit viewing of the displayed readings. Press the  button for two seconds to turn the backlight on and press the button a second time to turn the backlight off.

## Battery Replacement

1. Remove the one rear Phillips head screw
2. Open the battery compartment
3. Replace the Requires One 9V battery
4. Re-assemble the meter

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