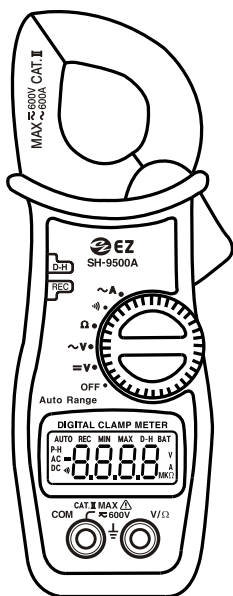




# Digital Clamp Meter

## SH-9500A

Digital Clamp Meter  
Operation manual



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**WARNING: USE EXTREME CAUTION IN THE USE OF THIS DEVICE.**

Improper use of this device can result in injury or death. Follow all safeguards suggested in this manual, in addition to the normal safety precautions used in working with electrical circuits. **DO NOT** service this device, if you are not qualified to do so.

## SAFETY INSTRUCTIONS

This meter has been designed to be safe in use, but the operator must use caution in its operation. The rules listed below should be carefully followed for safe operation.

1. **NEVER** apply voltage or current to the meter that exceeds these specified maximums:
  - A. 600V AC or DC
  - B. 600A AC.
2. **USE EXTREME CAUTION** when working with high voltages.
3. **NEVER** connect the meter leads across a voltage source while the function switch is in the current or resistance mode. Doing so can damage the meter.
4. **ALWAYS** discharge filter capacitors in power supplies and disconnect the power when making resistance tests.
5. **ALWAYS** turn off the power and disconnect the test leads before opening the back to replace the battery.
6. **NEVER** operate the meter unless the back cover and the battery door are in place and fastened securely.

## SAFETY SYMBOLS



This symbol adjacent to another symbol, terminal or operating device indicates that the operator must refer to an explanation in the Operating Instructions to avoid personal injury or damage to the meter.

**WARNING**

This **WARNING** symbol indicates a potentially hazardous situation, which if not avoided, could result in death or serious injury.

**CAUTION**

This **CAUTION** symbol indicates a potentially hazardous situation, which if not avoided, may result in minor or moderate injury, or damage to the product or other property.



This symbol advises the user that the terminal(s) so marked must not be connected to a circuit point at which the voltage, with respect to earth ground, exceeds maximum AC/DC Volts.



This symbol adjacent to one or more terminals identifies them as being subjected to hazardous voltages. For maximum safety, the meter and its test leads should not be handled when these terminals are energized.

## DESCRIPTION

This Clamp-On Ammeter / Digital Multimeter is designed to:

- Measure AC Current
- Check Continuity
- Measure AC/DC Voltage
- Measure Resistance

The clamp-on feature makes it ideal for making AC current measurements without having to open up the circuit.

It features a high-input impedance and the latest in IC and display technology. It has an OFF and an "Auto Sleep" feature that automatically Sleep the meter to save the battery consumption if 30 minutes elapse between uses.

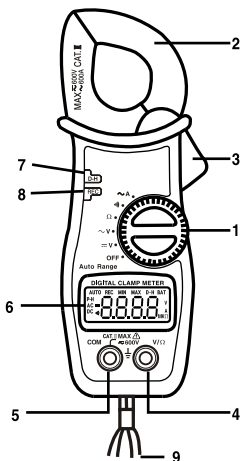
When the auto sleep start with beep sound, LCD will show "off" blinking.

To turn the meter back ON if "Auto Sleep" has occurred, switch to the function you desire or press pushbuttons (D-H pushbutton or REC pushbutton).

To use without this auto sleep, switch to OFF first and then to the other function you desire while press D-H pushbutton.

To turn the meter back with auto sleep, switch to off and to the other function you desire without press D-H pushbutton.

## CONTROLS AND JACKS



1. Function Switch...use to select the type of measurement and the range with beep sound.
2. Transformer Jaw...use to measure AC current by clamping the Jaw around a single current-carrying wire.
3. Jaw Trigger...use to open the jaw for clamping around a wire by pressing the trigger towards the meter.
4. V/Ω Jack...plug-in connection for the red (positive) test lead for AC and DC voltage and resistance measurements and continuity check.
5. COM Jack...plug-in connection for the black (negative) test lead for all measurements.
6. 3 3/4 Digit Liquid Crystal Display with maximum 4000 reading and symbolic signs.

7. D-H Pushbutton...use to hold a reading. When this pushbutton is pressed, the data being displayed at the time will be “frozen” in the display and D-H will be displayed with beep sound. Changes in the input signals will not change the display. It can be used in all measurement modes Without Continuity mode. Press the pushbutton again to release this function and the D-H will disappear.
8. REC Pushbutton...use this to obtain a peak reading.  
 Press the REC pushbutton once, the record function will be operated but current reading will be display and rec will be displayed in the upper left with beep sound. Press the REC pushbutton a second time, the lowest reading will be display and REC MIN will be displayed in the upper center with beep sound. Press the REC pushbutton a third time, the high test reading will be display and REC MAX will be displayed in the upper center with beep sound. Press REC pushbutton again, the record function will be operated but current reading will be displayed and REC will be displayed in the upper left with beep sound. To cancel this mode, press the REC pushbutton more than 1.5 second. Changed reading minimum or maximum value in REC mode, it will be with beep sound.
9. Safety Hand Strap...use to prevent the meter from falling if it is accidentally dropped while using it.

## SPECIFICATIONS

Function	Range	Resolution	Frequency	Accuracy
A AC	400.0A 600A	0.1A 1A	50/60 Hz	$\pm(1.5\% \text{ reading} + 4 \text{ digits})$ : 18 - 28°C $\pm(2\% \text{ reading} + 4 \text{ digits})$ :0 - 18 C , -28 - 40 C°
			40-400 Hz	$\pm(2.5\% \text{ reading} + 4 \text{ digits})$
V AC	4.000V 40.00V 400.0V 600V	1mV 0.01V 0.1V 1V	50/60 Hz	$\pm(1.2\% \text{ reading} + 4 \text{ digits})$
			40-400 Hz	$\pm(2.5\% \text{ reading} + 4 \text{ digits})$
V DC	4.000V 40.00V 400.0V 600V	1mV 0.01V 0.1V 1V	DC	$\pm(1\% \text{ reading} + 2 \text{ digits})$
$\Omega$	400 $\Omega$ 4.000 $\Omega$ 40.00 $\Omega$ 400.0 $\Omega$	0.1 $\Omega$ 1.0 $\Omega$ 10 $\Omega$ 0.1K $\Omega$	DC	$\pm(1\% \text{ reading} + 2 \text{ digits})$
	4.000M $\Omega$ 40.00M $\Omega$	1K $\Omega$ 10K $\Omega$	DC	$\pm(1.5\% \text{ reading} + 3 \text{ digits})$

**NOTE:** Accuracy specifications consist of two elements:

- “% reading” - This is the accuracy of the measurement circuitry.
- “+ digits” - This is the accuracy of the analog-to-digital (A/D) converter.

**Continuity** – Audible signal will sound if the resistance is less than 50  $\Omega$

**Input Impedance** – 10M $\Omega$

**Polarity** – Automatic (no indication for positive polarity); minus (-) sign for negative polarity.

**Overrange Indication** – OL is displayed

**Low Battery Indication** – "BAT" is displayed in the upper right corner if battery voltage drops below operating voltage.

## SPECIFICATIONS

**Battery** – Requires two 1.5V "AAA" batteries (sold separately).  
Alkaline battery prefer.

**Weight** – 10 1/2 oz. (300g)

**Size** – 3 1/8 x 8 x 5/8 in. (80mm x 204mm x 43mm)

**Accessories Included** – One pair 44-in. shielded banana-type plug test leads with screw-on alligator clips and carrying case.

## INSTALLING THE BATTERY

**WARNING:** To avoid electric shock, disconnect the test leads from any source of voltage before removing the back of the meter or the battery door.

1. Disconnect the test leads from the meter.
2. Open the battery door by removing the screw and lifting up on the door.
3. Insert the battery into the connector and put them back into the battery compartment.
4. Put the battery door back in place. Insert the screw and tighten it securely.

**WARNING:** To avoid electric shock, do not operate your meter until the back cover and the battery door are in place and are fastened securely.

**NOTE:** If your meter does not work properly, please check the battery to make sure it is still good and properly inserted.

## OPERATING INSTRUCTIONS

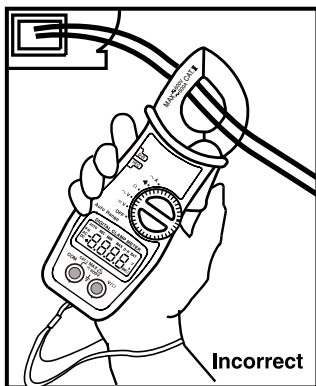
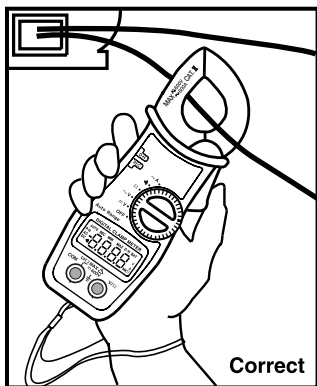
**WARNING:** Risk of electrocution. High-voltage circuits, both AC and DC, are very dangerous and should be measured with great care.

- 1. ALWAYS** set the function switch to OFF when the meter is not in use. The meter also has an "Auto Sleep" feature that automatically sleeps the meter to save the battery consumption if 30 minutes pass between uses. When the auto sleep starts with a beep sound, LCD will show "off" blinking. To turn the meter back ON if "Auto Sleep" has occurred, switch to the other function you wish to use or press any pushbuttons (D-H pushbutton or REC pushbutton). To use without this auto sleep, switch to OFF first and then to the function you desire while pressing D-H pushbutton. To turn the meter back with auto sleep, switch to OFF and to the function you desire without pressing D-H pushbutton.  
**NOTE:** Do not leave the meter in the "Auto Sleep" mode as there is a slight drain on the battery in this mode. Set the function switch to OFF if you are done using the meter.
- 2.** Operation of the meter should be restricted to temperatures between 32° to 104° F (0° to 40° C).
- 3.** For input impedance and other data for each function and range, see Specifications section of this manual.
- 4.** If OL appears in the display, the value you are measuring exceeds the range you have selected.
- 5.** For measurements of AC/DC voltage, resistance and to check continuity, insert the black test lead banana plug into the negative (-) jack (COM) and the red test lead banana plug into the positive (+) jack (V/Ω).

## AC CURRENT MEASUREMENTS

**WARNING:** To avoid electric shock, do not measure current on any circuit whose voltage exceeds 250V AC.

1. Set the function switch to the A AC range.
2. Press the trigger to open the transformer jaws and insert the wire whose current is to be measured into the jaw. Release the trigger to close the jaws. The ends of the jaws must be fully closed and free of dirt or other contaminants to make accurate readings.
3. Read the current in the display. The display will indicate the proper decimal point value and symbol (A)





## DC VOLTAGE MEASUREMENTS

**CAUTION:** Do not measure DC voltage if a motor on the circuit is being switched ON or OFF. Large voltage surges that can damage the meter may occur during the ON or OFF operations.

1. Set function switch to V DC .
2. Insert the black test lead banana plug into the negative (-) jack (COM) and the red test lead banana plug into the positive (+) jack (V/ $\Omega$ ).
3. Touch the test probe tips to the circuit under test. Be sure to observe the correct polarity. (Red lead to positive, black lead to negative).
4. Read the voltage in the display. The display will indicate the proper decimal point, value and V. If the polarity is reversed, the display will show a minus (-) before the value.

## AC VOLTAGE MEASUREMENTS

**WARNING:** Risk of Electrocution. The probe tips may not be long enough to contact the live parts inside some 240V outlets for appliances because the metal contacts are recessed deep in the outlets. As a result, the reading may show 0 volts when the outlet actually has voltage on it. Make sure the probe tips are contacting the metal contacts inside the 240V outlet before assuming that no voltage is present.

**CAUTION:** Do not measure AC voltage if a motor on the circuit is being switched ON or OFF. Large voltage surges that can damage the meter may occur during the ON or OFF operations.

1. Set function switch to V AC .
2. Insert the black test lead banana plug into the negative (-) jack (COM) and the red test lead banana plug into the positive (+) jack (V/ $\Omega$ ).
3. Touch the test probe tips to the circuit under test.
4. Read the voltage in the display. The display will indicate the proper decimal point, value and V.

## RESISTANCE MEASUREMENTS

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

1. Set the function switch to  $\Omega$ .
2. Insert the black test lead banana plug into the negative (-) jack (COM) and the red test lead banana plug into the positive (+) jack (V/ $\Omega$ ).
3. Touch the test probe tips across the circuit or part under test.
4. Read the resistance in the display. The display will indicate the proper decimal point, value and symbol ( $\Omega$ , k $\Omega$  or M $\Omega$ ).

## CONTINUITY CHECK

**WARNING:** To avoid electric shock, never measure continuity on circuits or wires that have voltage on them.

1. Set the function switch to  $\rightarrow$ ).
2. Insert the black test lead banana plug into the negative (-) jack (COM) and the red test lead banana plug into the positive (+) jack (V/ $\Omega$ ).
3. Touch the test probe tips to the circuit or wire you wish to check.
4. If the resistance is less than  $50\Omega$ , the audible signal will sound. The display will also show the actual resistance. The display will indicate the proper decimal point, value and symbol ( $\Omega$ ).

**NOTE:** The display will read up to a maximum of  $50\Omega$  in the continuity mode.

## MAINTENANCE

This Multimeter is designed to provide years of dependable service, if the following care instructions are performed:

- 1. KEEP THE METER DRY.** If it gets wet, wipe it off.
- 2. USE AND STORE THE METER IN NORMAL TEMPERATURES.** Temperature extremes can shorten the life of the electronic parts and distort or melt plastic parts
- 3. HANDLE THE METER GENTLY AND CAREFULLY.** Dropping it can damage the electronic parts or the case.
- 4. KEEP THE METER CLEAN.** Wipe the case occasionally with a damp cloth. **DO NOT** use chemicals, cleaning solvents or detergents.
- 5. USE ONLY A FRESH BATTERY OF THE RECOMMENDED SIZE AND TYPE.** Remove an old or weak battery so it does not leak and damage the unit.
- 6. IF THE METER IS TO BE STORED FOR A LONG PERIOD OF TIME,** the battery should be removed to prevent damage to the unit.

## REPLACING THE BATTERY

**WARNING:** To avoid electric shock, disconnect the test leads from any source of voltage before removing the back cover or the battery door.

1. When the battery become exhausted or drops below the operating voltage, "BAT" will appear in the upper right-hand side of the display. The battery should be replaced.
2. Follow instructions for installing the battery. See Installing the Battery section of this manual.
3. Dispose of the old battery properly.

**WARNING:** To avoid electric shock, do not operate your meter until the back cover and the battery door are in place and fastened securely.

**CAUTION:** Read, understand and follow all Safety Rules and Operating Instructions in this manual before using this product.