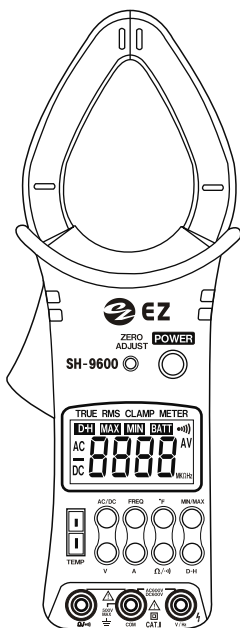


SH-9600

True RMS digital
AC/DC Clamp Meter
Owner's Manual



Digital Clamp Meter

 EZ Digital Co.,Ltd.

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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 600V DC.
 - B. 600A AC or 600A DC.
2. **USE EXTREME CAUTION** when working with higher voltages.
3. **DO NOT** make measurements where the voltage on the black test lead exceeds 500V above earth ground.
4. **NEVER** connect the meter leads across a voltage source while the function switch is in the resistance mode.
Doing so can damage the meter.
5. **ALWAYS** discharge filter capacitors in power supplies and disconnect the power when making resistance tests.
6. **ALWAYS** turn off the power before opening the back of the meter to replace the battery. Remove the leads from any product under test.
7. **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 (in this case) 500 AC or 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 AutoRanging DC / True RMS AC Digital LCD Clamp-On Ammeter / Digital Multimeter is designed to:

- Measure AC/DC Current
- Measure Resistance
- Measure AC/DC Voltage
- Measure Frequency
- Check Continuity
- Measure Temperature
(With optional thermocouple, sold separately)

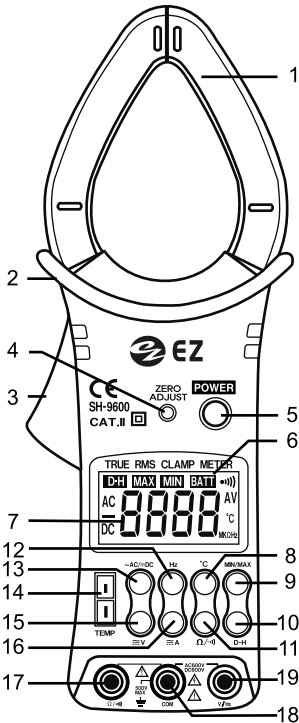
The clamp-on feature makes it ideal for making both AC and DC current measurements without having to open up the circuit. In addition, both the current and voltage measurements of AC are True RMS measurements.

Most clamp and other type meters make current and voltage measurements assuming the AC wave form is a pure sine wave. If the wave form being measured is not a perfect sine wave, the measurement may have significant errors. The True RMS feature measures the actual current or voltage no matter what the wave form is and displays the value in terms of RMS.



The meter is AutoRanging with an accurate digital readout. It is ideal for use where measurements must not load the circuit being tested.

It features a high-input impedance and the latest in IC and display technology. The meter has an " Auto Off" feature that automatically shuts the meter OFF if 30 minutes elapse between uses. To turn the meter back ON if " Auto Off " has occurred, press and release the Power Pushbutton twice.

CONTROLS AND JACKS



1. Transformer Jaw...use to measure AC and DC current by clamping the Jaw around a single current-carrying wire.
2. Barrier...provides a protective distance from the Jaws.
3. Jaw Trigger...use to open the Jaw for clamping around a wire by pressing the trigger towards the meter.
4. DC A Zero Adjust...use to adjust the display reading to 000.0 in the DC A mode before making measurements.
5. Power Pushbutton...use to turn the meter ON and OFF.
6. Low Battery Indicator...BATT is displayed if the battery voltage drops below operating voltage.
7. 3 3/4 Digit Liquid Crystal Display with maximum reading of 3999 and symbolic signs.
8. °F Temperature Measurement Pushbutton...Use to select the temperature Measurement function (measures in°C)
9. Min/Max Pushbutton... use to select the Min or Max measurement function. (Will not work in the °F range).
10. D-H Pushbutton...use Data Hold 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 appear in the display. Changes in the input signal will not change the display. It can be used in all measurement modes. Press the pushbutton again to release this function and the D-H will disappear.
11. Ω/∞)...Use this pushbutton to choose between resistance measurements (Ω) or continuity check (∞).
12. Hz Pushbutton...use to select the Frequency Measurement function.

13. AC / DC Pushbutton...use this to select AC or DC for current (A) or voltage (V) measurements.
14. Socket for Temperature Thermocouple (sold separately)...
Be sure to observe the correct polarity of the plug and socket.
Otherwise, a negative reading will appear.
16. A Pushbutton use this to select the Current Measurement function. Use the AC / DC Pushbutton to select AC or DC.
15. V Pushbutton...use this to select the Voltage Measurement function. Use the AC / DC Pushbutton to select AC or DC.
17. Ω /  Jack...plug-in connection for the red (positive) test lead for Resistance Measurements (Ω) and Continuity Check ().
18. COM Jack...plug-in connection for the black (negative) test lead for all measurements.
19. V / Hz Jack...plug-in connection for the red (positive) test lead for AC and DC voltage and Frequency measurements.

SPECIFICATIONS


Function	Range	Resolution	Accuracy
V DC	4V 40V 400V 600V	0.001V 0.01V 0.1V 1V	$\pm(1.0\%$ of reading + 4 digits)
V AC	40V 400V 600V	0.01V 0.1V 1V	$\pm(1.5\%$ of reading + 4 digits) @50 Hz and 60 Hz $\pm(3.5\%$ of reading + 4 digits) 40 to 400Hz
A DC	400A 600A	0.1A 1A	$\pm(1.5\%$ of reading + 4 digits)
A AC	400A 600A	0.1A 1A	$\pm(1.5\%$ of reading + 4 digits) @50 Hz and 60Hz $\pm(3.5\%$ of reading + 4 digits) 40 Hz to 400Hz
Resistance	400 Ω 4k Ω 40k Ω 400k Ω	0.1 Ω 1 Ω 10 Ω 100 Ω	$\pm(1.0\%$ of reading + 4 digits) 0 to 300k Ω $\pm(2.0\%$ of reading + 4 digits) 300k Ω to 400k Ω
Frequency	-30 $^{\circ}\text{C}$ to 300 $^{\circ}\text{C}$	1 $^{\circ}\text{C}$	$\pm(3.0\%$ of reading + 4 digits)
Frequency	5-100Hz 1000Hz 10kHz	0.01Hz 0.1Hz 0.001kHz	$\pm(1.0\%$ of reading + 4 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 (AD) converter.

Input Impedance - 10M Ω

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

Overrange Indication in Continuity Check - 400.0 Ω and  will appear in the display with the " 4 " flashing

Overrange Indication in Resistance Measurement - 40.00M Ω will appear in the display with the " 4 " flashing

Low Battery Indication - BATT is displayed in the left part of the display if battery voltage drops below operating voltage

Continuity - Audible signal will sound if the resistance is less than 36 Ω .

NOTE: The display will read up to 400 Ω in the continuity mode

Frequency Range Sensitivity - The meter will read frequency from 10 to 600V input

Overload Protection - The meter is protected in the Resistance Range by PTC (Positive Temperature Coefficient) Thermistor up to 600V

Battery - Requires one 9V 6F22,006P or equivalent.

Weight - 12 1/3 oz.

Size - (W)3 1/2 x (D)9 1/8 x (H)1 4/3 in. (90 mm x 232mm x 45mm)

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

Optional Accessories - Temperature Probe (Model No: KP-1), sold separately
Line Splitter (Model No: LS-6), sold separately

INSTALLING BATTERIES

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 back of the meter by removing screws and lifting up on the door.
3. Insert batteries into the battery holder and put the battery holder back into the battery compartment.
4. Put the battery door back in place. Insert screws and tighten them 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 batteries to make sure it is still good and properly inserted.

5. Battery type : 9V Battery type 6F22, 006p or equivalent.


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 turn the meter OFF when not in use. The meter also has an "Auto Off" feature that automatically shuts the meter OFF if 30 minutes elapse between uses. To turn the meter back ON if "Auto Off" has occurred, press and release the Power pushbutton twice.
NOTE: Do not leave the meter in the "Auto Off" mode as there is a slight drain on the battery in this mode. Press and release the Power pushbutton once to turn the meter fully OFF.
2. Operation of the meter should be restricted to temperatures between 32° to 122°F (0° to 50°C) and humidities below 85% RH.
3. For input impedance and other data for each function and range, see Specifications section of this manual.
4. For measurement of AC / DC voltage and Frequency, insert the black test lead banana plug into the negative (-) jack (COM) and the red test lead banana plug into the positive (+) jack (V / Hz).
5. For measurement of Resistance and Continuity Check, insert the black test lead banana plug into the negative (-) jack (COM) and the red test lead banana plug into the positive (+) jack (Ω / ).

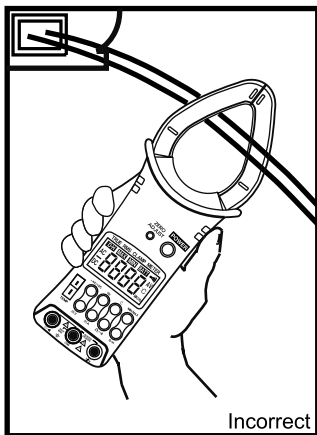
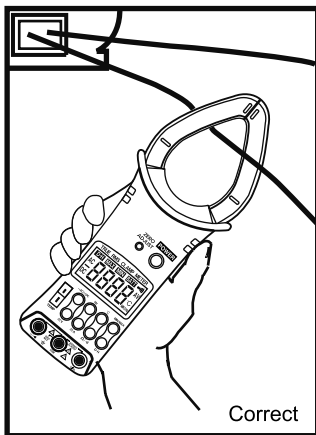
AC CURRENT MEASUREMENTS

WARNING: To avoid electric shock, do not measure current on any circuit whose voltage exceeds 600V AC.

1. Press and release the Power pushbutton (400.0Ω and  will appear in the display with "4" flashing).
2. Press and release the A pushbutton. (AC and A will appear in the display).
3. Press the trigger to open the transformer jaw and insert the wire whose current is to be measured into the jaw. Release the trigger to close the jaw. The ends of the jaw must be fully closed and free of dirt or other contaminants to make accurate readings.

NOTE: Do not put more than one wire inside the transformer jaw. If a line cord with both hot and neutral wires is to be measured, purchase Line splitter at your local store and use this Line Splitter to perform this separation into individual wires.

5. Read the current in the display. The display will indicate the proper decimal point, value and symbols (AC and A).



DC CURRENT MEASUREMENTS

WARNING: To avoid electric shock, do not measure current on any circuit whose voltage exceeds 600V DC.

1. Press and release the Power pushbutton. (400.0 Ω and A) will appear in the display with the "4" flashing).
2. Press and release the A pushbutton. (AC and A will appear in the display).
3. Press and release the AC / DC pushbutton. (DC and A will appear in the display).
4. If the display is other than 000.0, use a small screwdriver and adjust the Zero Adjust control until the display reads 000.0.
5. Press the trigger to open the transformer jaw and insert the wire whose current is to be measured into the jaw. Release the trigger to close the jaw. The ends of the jaw must be fully closed and free of dirt or other contaminants to make accurate readings.
NOTE: Do not put more than one wire inside the transformer jaw.
6. Read the current in the display. The display will indicate the proper decimal point, value and symbols (DC and 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. Insert the black test lead banana plug into the negative (-) jack (COM) and the red test lead banana plug into the positive (+) jack (V/Hz).
2. Press and release the Power pushbutton. (400.0 Ω and A) will appear in the display with the "4" flashing).
3. Press and release the V pushbutton. (AC and V will appear in the display).
4. Press and release the AC / DC pushbutton. (DC and V will appear in the display).
5. 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).
6. Read the voltage in the display. The display will indicate the proper decimal point, value and symbols (DC 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. Insert the black test lead banana plug into the negative (-) jack (COM) and the red test lead banana plug into the positive (+) jack (V/ Hz)
2. Press and release the Power pushbutton. (400.0 Ω and V) will appear in the display with the "4" flashing).
3. Press and release the V pushbutton. (AC and V will appear in the display).
4. Touch the test probe tips to the circuit under test.
5. Read the voltage in the display. The display will indicate the proper decimal point, value and symbols (AC 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 battery and unplug the line cord.

1. Insert the black test lead banana plug into the negative (-) jack (COM) and the red test lead banana plug into the Ω/V jack.
2. Press and release the Power pushbutton. (400.0 Ω and V) will appear in the display with the "4" flashing).
3. Press and release the Ω/V pushbutton. (40.00M Ω will appear in the display with the "4" flashing).
4. Touch the test probe tips across the circuit or part under test.
5. Read the resistance in the display. The display will indicate the proper decimal point, value and symbols (Ω or k Ω).

CONTINUITY CHECK

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

1. Insert the black test lead banana plug into the negative (-) jack (COM) and the red test lead banana plug into the Ω / diode jack.
2. Press and release the Power pushbutton. (400.0 Ω and diode) will appear in the display with the "4" flashing).
3. Touch the test probe tips to the circuit or wire you wish to check.
4. If the resistance is less than 36, the audible signal will sound. The display will also show the actual resistance. The display will indicate the proper decimal point, value and symbols (Ω and diode).

NOTE: The display will read up to a maximum of 400 ohms in the continuity mode.

FREQUENCY MEASUREMENTS

NOTE: The meter will read frequency of voltages from 10V to 600V.

1. Insert the black test lead banana plug into the negative (-) jack (COM) and the red test lead banana plug into the positive (+) jack (V / Hz).
2. Press and release the Power pushbutton. (400.0 Ω and diode) will appear in the display with the "4" flashing).
3. Press and release the Hz pushbutton. (Hz will appear in the display).
4. Touch the test probe tips across the component under test.
5. Read the frequency in the display. The display will indicate the proper decimal point, value and symbols (Hz or kHz).

TEMPERATURE MEASUREMENTS

WARNING: To avoid electric shock, and damage to the meter, do not measure temperatures of metal parts with a voltage present on them.
To avoid electric shock and damage to the meter, do not measure the temperature of any conductor over 30V rms (V AC) or 60V (V DC).

NOTE: Temperature measurements require the purchase of the Temperature Probe from your local store.

1. Insert the Temperature Probe into the socket for Temperature Probe, making sure to observe the correct polarity.
2. Press and release the Power pushbutton. (400.0 Ω and diode) will appear in the display with the "4" flashing).
3. Press and release the °C push button.(°C will appear in the display).
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 value.

MIN / MAX MEASUREMENTS

The MIN function allows you to store the value of the lowest value measured. The MAX function allows you to store the value of the highest value measured.

NOTE: When you press and release the MIN / MAX pushbutton to go into MIN or MAX, the AutoRanging feature is canceled and the meter will stay in the range it was in when the MIN / MAX pushbutton was pressed. If a measurement being taken exceeds this range, the meter will display the maximum value of that range with the far left-hand digit flashing.

1. Follow the instructions for insertion of the leads and range selection for the type of measurement you wish to take.
2. Touch the test probes to the component or clamp the jaws around the wire whose variable you wish to measure.
3. Press and release the MIN / MAX pushbutton once for MIN (D-H and MIN will appear in the display). Press and release the MIN / MAX pushbutton second time for MAX (D-H and MAX will appear in the display). Press and release the MIN/MAX pushbutton third time to cancel the MIN/MAX mode.

As the value changes, the meter will show the lowest value measured if in the MIN mode, or the highest value measured if in the MAX mode.

NOTE: If you move the test leads to another component, the value may or may not change, depending upon the range the meter is in. If moving to another component, turn the meter OFF and start again.

4. To cancel the MIN/MAX mode, turn the meter OFF. Using the MIN/MAX pushbutton will cancel the MIN/MAX feature, but will not restore the AutoRanging feature. The meter must be turned OFF to return to standard operation with AutoRanging.

CAUTION : Do not turn off the power (press and release the power pushbutton) after use the Min/Max measurement function to prolong batteries. In Min/Max function, the Auto power off function is not working.

DATA HOLD

When the D-H pushbutton is pressed, the data being displayed will be " frozen " in the display and D-H will appear in the display. Changes in the input signal will not change the display. The Data Hold feature can be used for all measurements.

1. Follow the instructions for insertion of the leads and range selection for the type of measurement you wish to take.
2. When you have a value you wish to " freeze" , press and release the D-H pushbutton. The value will remain in the display until canceled.
3. To cancel the DATA HOLD mode, press and release the D-H pushbutton.

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 batteries 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 BATTERIES

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, BATT will appear in the upper left
The batteries should be replaced.
2. Follow instructions for installing batteries. 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.



The specifications are subjected to change without notice.