AC DIGITAL CLAMP METER
M-2101+

INSTRUCTION MANUAL

Ver1. 10

Thank you very much for selecting our AC Digital Clamp Meter M-2101+.

This model is complex instrument and employ a very reliable mechanical/ electronic design.

Before you use your new instrument, read this Instruction

Manual completely and familiarize yourself thoroughly with all functions.

Keep this manual carefully to take out whenever you need.

MULTI
Let's Create
New Concepts of
Instruments

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SAFETY SUMMARY

observe by all means

● To use this instrument safely, read this “SAFETY SUMMARY” carefully and apply the instrument correctly.

● The CAUTIONs and WARNINGs which appear on the following pages are stated to prevent the operator & other people from the dangers and their properties from the damages beforehand.

⚠ WARNING : This symbol indicates the contents "Possibilities of the death or the serious wound can be supposed" caused from mis-operations.

⚠ CAUTION : This symbol indicates the contents "Possibilities of the injury or only the material damage can be supposed" caused from mis- operations.

IEC directive: Do not install or remove around uninsulated, hazardous live conductors that may cause electric shock, electrical burns, or arc flash.

⚠WARNING

- Do not make measurements of power lines outside the specification range.
  IN SOME CASES, POWER LINES MAY CARRY VOLTAGE SPIKES OF SEVERAL TIMES OF THE NORMAL SUPPLY VOLTAGE. THIS INSTRUMENT SHOULD NOT BE USED TO MEASURE POWER LINES.
  *The term of “POWER LINE” means the electrical circuit providing the power to factories, buildings, and etc.
- Before operating this instrument, familiarize yourself with all instructions outlined in this manual.
- Always check to make sure that the function switch is set to the proper position.
- When making measurements, use CAUTION as dangerous voltages may be present in normally safe areas.
- To avoid electrical shock, use CAUTION when working outside the specification range (Within the scope of work described in the category, 1000V).
  Such voltages pose a shock hazard.
- Never make measurements with the case opened.
- Never fail to keep the maximum tolerable input.
- Never operate this instrument if it becomes wet, damp or has any liquid condensation build-up on any part of the instrument.
- Apply only the covered cables and do not clamp the bare cables. When measuring bare wires, use insulating gloves and be careful to avoid electric shock. To prevent electric shock accidents, users should ensure a safe work area and avoid contact with live parts when opening and closing the CT before using it.

1. GENERAL

- Low cost high performance and True RMS reading AC2000A clamp-on tester.
- Additional AC/DC 1000V voltage, resistance, diode test and continuity check.
- Data hold and auto power off function.

2. CAUTION BEFORE USE

After open the box, check the appearance of instrument and confirm whether standard accessories are contained. Once if you found a damage or shortage, contact the sales agent or contact us directly.

3. SPECIFICATIONS

AC conversion Measuring method	:	AC coupled true rms reading Dual integration mode
Sampling	:	3 times/sec.
Display	:	Reading of ±1999 display with unit and symbols
Over range indication	:	Blinking of the most significant digit "1" (except for AC/DC 1000V And AC 2000A ranges)
Data Hold	:	"D·H" mark appears on the LCD, and the measured value is held.
Low battery indication	:	"B" mark appears on the LCD.
Input polarity indicator	:	"-" appears on the LCD only when the DC current/voltage is input with reverse polarity.
Auto power off	:	The power is automatically turned off when the tester has not been used for approx. 10 minutes.
Buzzer	:	The buzzer sounds in the following situations *Power switch on, power switch off, range switch, data hold switch on, overrange indicated, continuity check below 50Ω.
Overvoltage Category	:	CAT-IV 600V or CAT-III 1000V For safety, clamp on the insulated wire and make sure that you measure voltage no higher than AC1000V (max. AC1000V)
Standard	:	(Safety) IEC 61010-1, EN 61010, IEC61010-2-32 (EMC) IEC 61326-1, (Environment) RoHS Directive
Withstanding voltage	:	AC 5500V, 1 minute (between outer case and core of CT)
Operating & storage temp & RH	:	0°C to 40°C (-10°C to 60°C), <80% RH (non-condensing)
Battery	:	AAA 1.5V x2, Consumption:4.3mW, Life:400 hours continuous.
Jaw opening capability	:	Φ55mm
Size and weight	:	85(W)x240(H)x34(D)mm, Approx. 350g (w/o batteries)

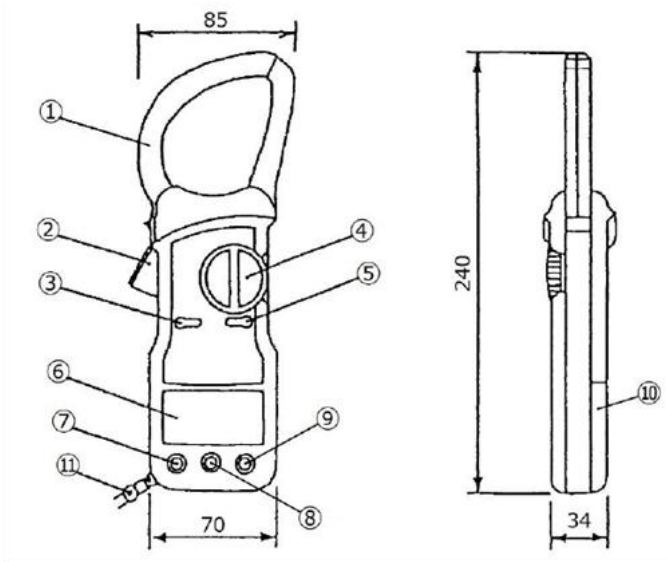
Measuring range and accuracy

Accuracy-guaranteed temperature and humidity: 23° C ± 5° C, < 80% RH , non-condensing.

Range		Accuracy	Max input
AC (50/60Hz) A	20A	±1.2% rdg±10 dgt	AC 2000A (within 3 s)
	200A		
	2000A	±1.2% rdg±8 dgt	
AC (50/60Hz)V DC V	2V	±0.7%rdg±5dgt	AC 1000V rms DC 1000V
	20V	±1.2%rdg±5dgt	
	200V		
	1000V		
Insulation Resistance Ω	200Ω	±1.2% rdg±5 dgt	250V rms (within 10 s)
	2kΩ		
	20kΩ		
	200kΩ		
	2000kΩ		
	20MΩ	±3% rdg±10 dgt	
Continuity check ·)))	2kΩ	<Approx. 50Ω	250V rms
Diode test ⊣▶	2V	±10% rdg±3 dgt	250V rms

4. NAME OF PART & EXPLANATION

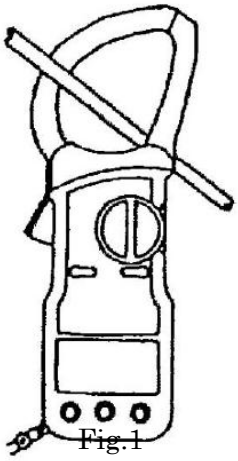
①Current transducer(Jaw)
②Jaw opening lever
③Power switch
④Range selector switch
⑤Data hold switch
⑥LCD display
⑦Input terminal(V)
⑧COM terminal
⑨Input terminal(Ω)(⊣▶)
⑩Battery cover
⑪Wrist strap



5. OPERATION

5-1 Measurement of AC Current

① Press the power switch to turn it ON.
② Set the range selector switch to the proper ACA range. Start the measurement at top range and then work down to lower range.
③ Open the CT and clamp it to the conductor to be measured at the center of CT. Close CT completely.
④ Read the current value in the display.
⑤ If you make measurements in a dark place or in a place where it is difficult to see the readings, use the data hold switch.


Fig.1

Note : Clamp around only one conductor of the circuit to be measured. (See Fig.1)
When making the clamp measurements for high AC current, the noise sound of CT may be caused. However, this is not abnormal.

⚠WARNING

● To avoid electrical shock or damage, the measurement is limited to the circuit under 1000V AC.
Such voltages pose a shock hazard.
● Never fail to keep the maximum 2000A input to avoid electrical shock or damage.
● Apply only the covered cables and do not clamp the bare cables. When measuring bare wires, use insulating gloves and be careful to avoid electric shock. To prevent electric shock accidents, users should ensure a safe work area and avoid contact with live parts when opening and closing the CT before using it.

5-2. Measurement of Voltage

5-2-1. Measurement of AC Voltage

① Press the power switch to turn it ON.
② Connect the plug of red test lead into the "V" terminal and the plug of black test lead into the "COM" terminal.
③ Set the range selector switch to "AC" range. The auto ranging mode is selected.
④ Make the tips of the test leads contact the circuit under test.
⑤ Read the voltage value in the display.

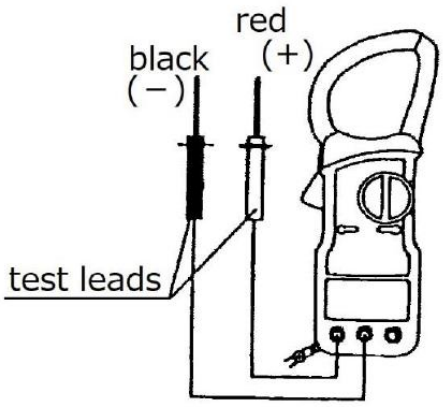


Fig. 2

5-2-2. Measurement of DC Voltage

① Press the power switch to turn it ON.
② Connect the plug of red test lead into the "V" terminal and the plug of black test lead into the "COM" terminal.
③ Set the range selector switch to "DC" range. The auto ranging mode is selected.
④ Make the tips of the test leads contact the circuit under test.
⑤ Read the voltage value in the display.

⚠WARNING

● To avoid electrical shock, act with CAUTION when working outside the specification range (Within the scope of work described in the category, 1000V). Such voltages pose a shock hazard.
IN SOME CASES, POWER LINES MAY CARRY VOLTAGE SPIKES OF SEVERAL TIMES OF THE NORMAL SUPPLY VOLTAGE. THIS INSTRUMENT SHOULD NOT BE USED TO MEASURE POWER LINES.
* The term of "POWER LINE" means the electrical circuit providing the power to factories, buildings and etc.

● POSSIBLE ELECTRICAL SHOCK. Do not make measurements if the case is damaged or the rear case is removed. Remove all electrical inputs before removing the rear case.

● POSSIBLE ELECTRICAL SHOCK or FIRE HAZARD. Do not expose this tester to rain or moisture. Do not operate the tester in the presence of flammable gases or fumes.

⚠CAUTION

To avoid damage to the tester, disconnect test leads before changing functions. Do not exceed the maximum input limits.

5-3. Measurement of Resistance and Continuity Check

① Press the power switch to turn it ON.
② Connect the plug of red test lead into the "Ω" terminal and the plug of black test lead into the "COM" terminal.
③ Set the range selector switch to "Ω" or "•)) " range.
④ Make the tips of the test leads contact the circuit under test.
⑤ Read the resistance value in the display.
In continuity check, if the circuit under test has a resistance of less than approximately 50Ω, the continuity beeper will sound.

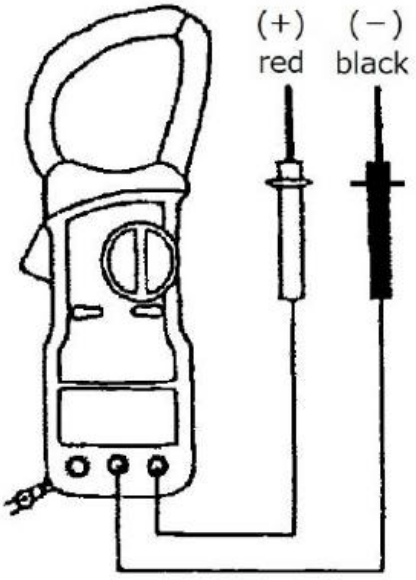


Fig.3

⚠CAUTION

Be sure all voltage is turned OFF in the circuit before making resistance measurement.

5-4. Measurement of Diode

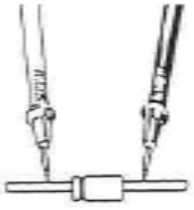
① Press the power switch to turn it ON.
② Connect the plug of red test lead into the " ⊣◀ " terminal and the plug of black test lead into the "COM" terminal.
③ Set the range selector switch to " ⊣◀ " range.
④ Make the tips of the test leads contact the diode under test.

Fig.4

(a) Forward voltage Measurement
Black Red



(b) Reverse Voltage Measurement
Red Black



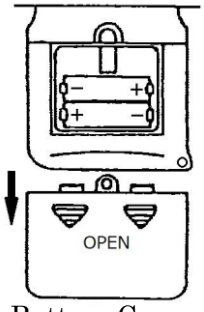
As shown in Fig.4 (a), when measuring the forward voltage across the diode, a normal diode will indicate 0.4 to 0.7V and, as shown in Fig.4 (b) the reverse voltage will indicate over-range. For a short-circuited diode, a value near 0mV will be displayed.

⚠CAUTION

Be sure all voltage is turned OFF in the circuit before making diode test.

6. REPLACEMENT OF BATTERIES

When the battery voltage falls below a specified voltage value, the "B" mark will appear in the display. If this occurs, replace the two batteries with new ones as quickly as possible.
Turn the power switch to "OFF", prior to installing batteries.
To install the batteries, remove the battery cover located on the unit back.
Loosen the screw on the battery cover.
Replace the two batteries (UM-4 or type AAA) with new ones, observing polarity. Use high-quality batteries which are guaranteed against leakage.
If the instrument is to be left unused for long periods of time, to prevent damage from leakage, remove the batteries.



Battery Cover

⚠WARNING

POSSIBLE ELECTRICAL SHOCK AND FIRE HAZARD
Do not replace the batteries when clamping CT to the conductor or during voltage measurement.
Do not use the instrument with the battery cover off.

7.REPAIR SERVICE

When making requests for repair service, please bring the instrument directly to the dealer. If this is impossible, please send the instrument directly to our sales office. When mailing this instrument, always pack it in its original or equivalent packing material and pack together with name, address, telephone number and the warranty documentation.

- To ensure speedy and reliable repair, always include information such as the type of failure and cause.
- If required, always return accessories with the instrument.
- When contacting us, provide the model number and serial number of your instrument.

8. WARRANTY

This instrument is sent out from our factory after the sufficient internal inspections but if you find any defect due to the fault in our workmanship or the original parts, please contact the dealer where you bought the instrument.

The warranty period is 12 months from the date of purchase. If the cause of the defect is determined to be attributable to our responsibility, the product will be repaired free of charge.

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