

**AC LEAKAGE/LINE CURRENT  
DIGITAL CLAMP-ON TESTER**

**MODEL MCL-550D**

**INSTRUCTION MANUAL**

Thank you very much for selecting our digital AC Clamp-on Tester MCL-550D.

This model is complex instrument, employing 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.

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## 1. FEATURES

- Multi functional clamp-on tester.
- Additional AC/DC voltage, resistance, diode test and continuity check.
- Data hold and auto power off function.

### 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.

#### **△ WARNING**

##### **POSSIBLE ELECTRICAL SHOCK**

- This instrument is for the use of low voltage circuit.  
Do not make measurements in the circuit more than AC 600V.  
Before use, check and confirm the voltage of circuit to be measured.
- Apply only the coated cables and do not clamp bare cables.

##### **POSSIBLE ELECTRICAL SHOCK OR ACCIDENT**

- Do not handle the instrument in the rain, at humid place, with a drop of water and or with wet hands.
- Do not use the instrument if the CT or CT case are damaged and if something is wrong with the CT cables. Also, do not use leaving the battery cover off.
- Do not give the shock to tip of CT.
- When replacing batteries, remove the instrument from all circuits to be measured. It may cause damage of the instrument.
- Do not disassemble the instrument.
- Do not make measurement of power lines carrying more than 250V for safety.
- Do not apply voltage to the both ends of test leads when measuring resistance and testing diode.

## 2. SPECIFICATIONS

Safety standard : Meets the requirements for double insulation to IEC 61010-1,  
IEC 61010-2-032 installation Category III 600V phase to earth.

E.M.C. standard : The instrument meets EN 61326 and EN 61000.

Withstanding voltage : AC 5500V, 1 minute (between outer case and core of CT)

Measuring method : Dual integration mode

Jaw opening capability : 55mm  $\phi$

Display : 3 1/2 digit LCD max. reading of 1999 and annunciators

Over range indication : Blanking of all digits except MSD1

Low battery indication : "B" mark on LCD readout

Sampling : 2 times/s

Data hold indication : "D·H" mark on LCD readout

Auto power off : The meter is set to power off mode approx. 10 minutes after the  
power switch on.

Operating temperature : 0°C to 40°C, < 80%RH (non-condensing)

Storage temperature : - 10°C to 60°C, < 70%RH (non-condensing)

Power supply : 1.5V ("AAA" size, R03) x2

Power consumption and battery life : Approx. 5mW, 500 hours continuous.

Size : 85(W)x240(H)x34(D)mm

Weight : Approx. 350g

Accessories : Carrying case.....1

Instruction manual.....1

Batteries.....2

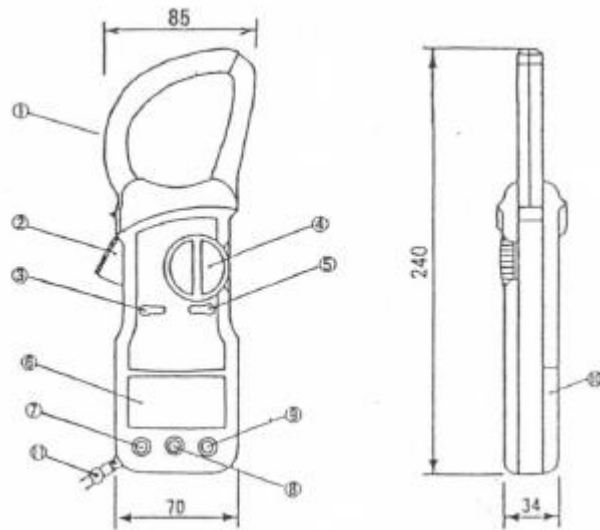
Test lead.....1set

Measuring range (23°C  $\pm$  5°C, < 80% RH without condensation) :

Range		Accuracy	Max. input
~A (50/60Hz) Manual range	2000mA	$\pm 1.2\%$ rdg $\pm 10$ dgt	AC2000A (30 sec.)
	200A	"	
	1000A	$\pm 1.2\%$ rdg $\pm 8$ dgt	
~V (50/60Hz) ... V Auto range	2V	$\pm 0.7\%$ rdg $\pm 5$ dgt	AC/DC 750V
	20V	$\pm 1.2\%$ rdg $\pm 5$ dgt	
	200V	"	
	600V	"	
$\Omega$ (OHM) Auto range	200 $\Omega$	$\pm 1.2\%$ rdg $\pm 5$ dgt	Input protection  250V rms (30 sec.)
	2K $\Omega$	"	
	20K $\Omega$	"	
	200K $\Omega$	"	
	2000K $\Omega$	"	
	20M $\Omega$	$\pm 3\%$ rdg $\pm 10$ dgt	
·)) Continuity check	2K $\Omega$	Continuity beeper < Approx. 300 $\Omega$	250V rms (30 sec.)
→.1 Diode test	2V	$\pm 10\%$ rdg $\pm 3$ dgt	250V rms (30 sec.)

### 3. DIMENSIONS AND PANEL FUNCTION

- ① Current transducer(Jaw)
- ② Jaw opening lever
- ③ Power switch
- ④ Range selector switch
- ⑤ Data hold switch
- ⑥ LCD display
- ⑦ Input terminal(V)
- ⑧ COM terminal
- ⑨ Input terminal( $\Omega$ )(  $\rightarrow$  | )
- ⑩ Battery cover
- ⑪ Wrist strap



### 4. METHOD OF MEASUREMENT

#### 4-1. Measurement of AC Current ( $\sim$ A)

##### 4-1-1 Measurement of Line Current

- ① Press the power switch "ON".
- ② Set the range selector switch to the proper ACA range to be measured.  
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 on 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.

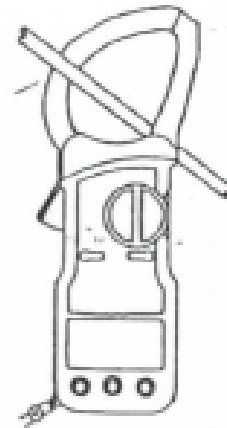


Fig.1

**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.

##### 4-1-2 Measurement of Leakage Current

- ① For leakage current measurement, clamp CT to the grounding line in the same manner as for line current measurement.
- ② This model cannot measure zero phase current accurately by clamping CT to the plural conductors together (2 wires for single phase, 3 wires for 3 phase, etc.).

**Note :** The display may show some value even without clamping CT nearby the conductor and or transformer carrying big current due to the influence of outer magnetic fields. In such case, operate the instrument in the place apart from the source of strong magnetism as much as possible.

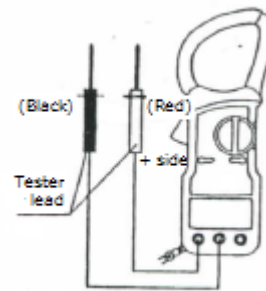
### △WARNING

- To avoid electrical shock or damage, the measurement is limited to the circuit under 600V AC. Such voltages may cause a shock hazard.
- Never fail to keep the maximum 1000A input to avoid electrical shock or damage.
- Never make measurements for uninsulated conductors or bus bars.

## 4-2. Measurement of Voltage

### 4-2-1. Measurement of AC Voltage

- ① Set the power switch to "ON" position.
- 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 "ACV~" range.
- ④ Contact the tips of the test leads to the circuit under test.
- ⑤ Read the voltage value in the display.



### 4-2-2. Measurement of DC Voltage

- ① Set the power switch to "ON" position.
- 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 "DCV  $\overline{\text{---}}$ " range.
- ④ Contact the tips of the test leads to the circuit under test.
- ⑤ Read the voltage value in the display.

**△WARNING**

Do not make measurements of power lines carrying more than 250V. 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.

**△WARNING**

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.

**△WARNING**

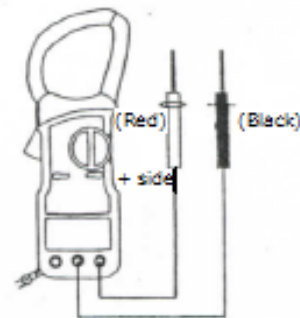
POSSIBLE ELECTRICAL SHOCK or FIRE HAZARD. Do not expose this tester to rain or moisture. Do not operate the tester in the presence of flammable gases or fumes.

**△CAUTION**

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

**4-3. Measurement of Resistance and Continuity Check**

- ① Set the power switch to "ON" position.
- 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 "•••) 2K Ω" range.
- ④ Contact the tips of the test leads to 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 300 Ω, the continuity beeper will sound.

**△CAUTION**

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

#### 4-4. Measurement of Diode

- ① Set the power switch to "ON" position.
- 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 Contact the tips of the test leads to the diode under test.

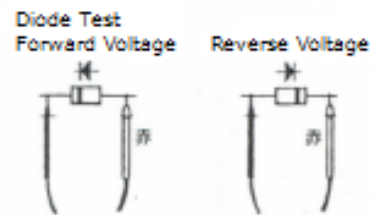


Fig. 4

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 a value near 1.500(battery voltage). 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.

#### 5. 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.

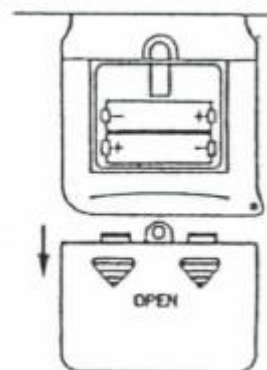
Turn the power switch to "OFF", prior to installing batteries.

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.



**△WARNING**

Before changing batteries or fuse, remove all electrical input.

## **6. REPAIR SERVICE**

When making requests for repair service, please bring the instrument directly to the dealer. If this is impossible, however, 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 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.

## **7. 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 and the instrument shall be repaired at free of charge, provided that we judge the cause of defect is obviously resulted from our responsibility.

### GURANTEE REGULATIONS

1. This instrument is warranted for the operation under normal use for 12 months from the date of purchase.
2. This warranty does not cover the following defects:
  - a. Defect caused from the improper use and operation.
  - b. Defect caused from the use, operation and storage beyond the original specifications, designs and conditions.
  - c. Defect caused from the renovations or repairs done by someone else than us or our representatives.
  - d. Defect not caused from our responsibilities.