

**AC CURRENT
MINI DIGITAL CLAMP-ON TESTER**

MODEL 110

INSTRUCTION MANUAL

Thank you very much for selecting our digital AV clamp-on tester.

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. With proper use and care, your tester will give you years of satisfactory service.

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1. FEATURES

- Model 110 is a clamp-on type ammeter which is least affected by external magnetic fields.
- 30mm ϕ CT enables the leakage current measurement for SV cable (38m m²).
- Data hold function. Especially useful when working in dark or hard to get areas.
- Pocket sized and light weight

2. CAUTION

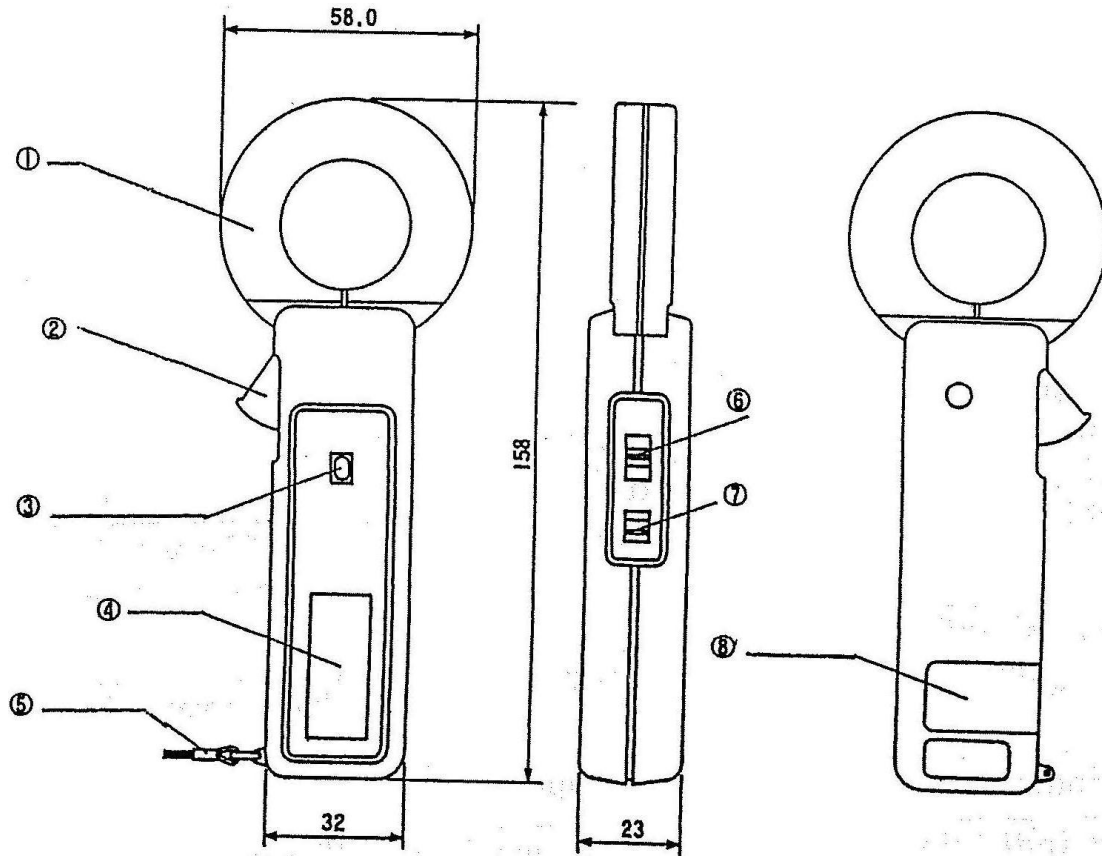
- Before operating this instrument, familiarize yourself with all instructions outlined in this manual.
- Always check to make sure that the function switch is set to the proper position.
- When making measurements, use CAUTION as dangerous voltages may be present in normally safe areas.
- To avoid electrical shock, use CAUTION when working above 60V DC or 25V AC rms.
Such voltages pose a shock hazard.
- Never make measurements with the battery cover OFF.
- 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.
- Never make measurements for uninsulated conductors or bus bars.

3. SPECIFICATION

Measuring method	Dual integration mode
Display	3.5digit LCD, max. reading of 1999
Range	0~2mA/200mA/60A (50/60Hz)
Ranging	Manual ranging
Accuracy	50/60Hz, 23°C ± 5°C, 80% RH max.

Range	Mini. Resolution	Accuracy
2mA	1 μ A	± 1.0%rdg ± 5dgt
20mA	10 μ A	
60A	100mA	± 1.0%rdg ± 5dgt(0~50A) ± 5%rdg ± 5dgt(50A~60A)
Jaw opening capability	30mm ϕ	
Over range indication	Blanking of all digits except MSD1	
Maximum indication	1999	
Low battery indication	"B" mark on LCD readout	
Data hold indication	"D·H" mark on LCD readout	
Sampling time	Approx. 2 times/s.	
Limitation of circuit voltage	Less than AC 600V	
Operating temperature	0°C to +40°C, < 70%RH (non-condensing)	
Storage temperature	-10 °C to +60 °C , < 70% RH (non-condensing)	
Power supply	LR-44(1.5V)x2 or SR-44x2	
Power consumption	Approx. 3mW	
Battery life	Approx. 100 hours (LR-44) Approx. 200 hours (SR-44)	
Size	58.5(W)x158(H)x23(D)mm	
Weight	Approx. 120gs	
Accessories	Batteries (LR-44).....2 Instruction manual.....1 Soft case.....1	

4. DIMENSIONS AND PANEL FUNCTION



- ① Current transducer(Jaw)
- ② Jaw opening lever
- ③ Data hold switch
- ④ LCD display

- ⑤ Wrist strap
- ⑥ Range selector switch
- ⑦ Power switch
- ⑧ Battery cover

5. METHOD OF MEASUREMENT

5-1. Preparation and Caution before Measurement

- Before making measurements, install the batteries. Two LR-44 batteries can be used.
- Avoid using the tester in places subject to high temperatures, humidity or excessive vibration.
- Before measurements, be sure the data hold switch is set to "OFF". (It is impossible to make measurements if the data hold switch is set to "ON".)
- Remove the battery if the tester will not be used for a long period of time.

5-2. Measurement of Leakage Current

5-2-1 . Leakage current measurement for the grounded conductor

- 1) Set the power switch to "ON" position.
- 2) Set the range selector switch to a range appropriate to the current to be measured.
- 3) Clamp the conductor of the circuit under test with the current transducer.
- 4) 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.

5-2-2. Leakage current measurement for the single-phase or three-phase electric circuit.

- 1) Set the power switch to "ON" position.
- 2) Set the range selector switch to a range appropriate to the current to be measured.
- 3) To measure a leakage current in a single-phase electric circuit, clamp the two conductors together. Or clamp the three conductors together in the case of the three-phase electric circuit.
- 4) 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.

5-3. Measurement of Line Current

- 1) Set the power switch to "ON" position.
- 2) Set the range selector switch to a range appropriate to the current to be measured.
- 3) Clamp the conductor of the circuit under test.
- 4) 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.

Note: Clamp around only one conductor of the circuit to be measured.

CAUTION:

This tester is designed for low voltage applications.

To avoid electrical shock or damage, the measurement is limited to the circuit under 600V AC.

6. REPLACEMENT OF BATTERIES

When the battery becomes exhausted or drops below the operating voltage, the "B" mark is displayed. Turn the power switch to "OFF", prior to installing batteries.

To install the batteries, remove the battery cover located on the unit back. (See Fig.2)

Insert the two LR-44 or SR-44 into the battery case making sure that proper polarity is observed. (See Fig.3)

Always replace both batteries at the same time. If the difference between the voltages of the batteries is big, the measurement error may be caused.

Place batteries with positive

Pull up

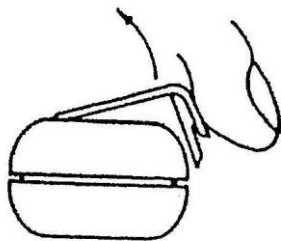


Fig.2

Side up.

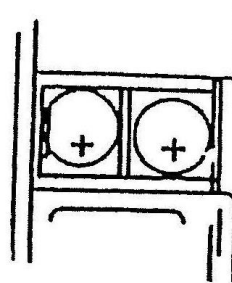


Fig.3

REPAIR SERVICE

When requesting for repair service, please bring the instrument directly to the dealer where you bought.

When mailing the instrument, always pack it in its original or equivalent packing materials to avoid any damage during the transportation and also put together with documents showing your name, address, phone number and defect point.

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.