

# AC/DC CURRENT MINI DIGITAL CLAMP-ON TESTER

**MODEL 230**

## INSTRUCTION MANUAL

Thank you very much for selecting our digital AC/DC current 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.

### 1. FEATURES

- Useful for DCA measurement for automobile service.
- Accurate gearing mechanism for closing of CT.
- Data hold function. Especially useful when working in dark or hard to get areas.
- Ultra compact size.

### 2. SPECIFICATION

|                  |   |
|------------------|---|
| Measuring method | Dual integration mode                     |
| Display          | 3.5 digit LCD                             |
| Range            | AC/DC 20A/200A (AC 50/60Hz)               |
| Ranging          | Manual ranging                            |
| Accuracy         | AC 50/60Hz or DC, 23°C ± 5°C, 80% RH max. |

| Range             | Mini. Resolution | Accuracy  |
|-------------------|------------------|---|
| AC 20A (50/60Hz)  | 10mA             | ± 1.0%rdg ± 5dgt  |
| AC 200A (50/60Hz) | 100mA            | ± 1.5%rdg ± 5dgt(0~150A)<br>± 2.5%rdg ± 5dgt(150A~200A) |
| DC 20A            | 10mA             | ± 1.0%rdg ± 5dgt  |
| DC 200A           | 100mA            | ± 1.5%rdg ± 3dgt(0~150A)<br>± 2.5%rdg ± 3dgt(150~200A)  |

|                               |  |
|-------------------------------|--|
| Jaw opening capability        | 23mm $\phi$  |
| Over range indication         | Blanking of all digits except MSD1                                     |
| Maximum indication            | 1999 count   |
| Low battery indication        | "B" mark on LCD readout  |
| Data hold indication          | "D·H" mark on LCD readout  |
| Sampling time                 | Approx. 2 times/sec.   |
| Limitation of circuit voltage | Less than AC/DC 600V   |
| Withstanding voltage          | AC 1000V/1 minute between CT core and outer case                       |
| Insulation resistance         | 10M $\Omega$ or more between internal circuit and CT core.             |
| Operating temperature         | 0°C to +40°C, < 80%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. 7mW  |
| Battery life                  | Approx. 16 hours (LR-44)<br>Approx. 30 hours (SR-44)                   |
| Size                          | 48(W)x146(H)x20(D)mm   |
| Weight                        | Approx. 100g   |
| Accessories                   | Batteries (LR-44).....2<br>Instruction manual.....1<br>Soft case.....1 |

### 3. 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.

#### 4. DIMENSIONS AND PANEL FUNCTION

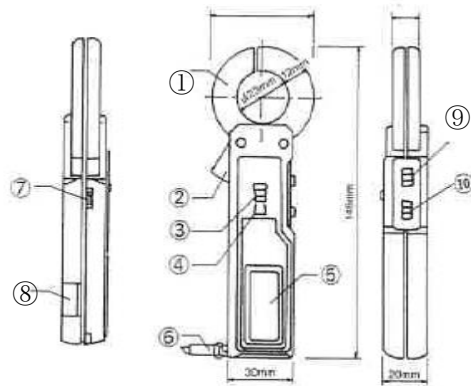


Fig. 1

- |                           |                        |
|---------------------------|------------------------|
| ① Current transducer(Jaw) | ⑦ Zero adjustment knob |
| ② Jaw opening lever       | ⑧ Battery cover        |
| ③ Range switch            | ⑨ AC/DC switch         |
| ④ Data hold switch        | ⑩ Power switch         |
| ⑤ LCD display             |                        |
| ⑥ Wrist strap             |                        |

#### 5. METHOD OF MEASUREMENT

- ① Set the power switch to “ON” position.
- ② Set the AC/DC switch to AC or DC depending upon the signal to be measured.  
Note: In AC current measurement, even if “1” is displayed in the least digit without input, however, it is not abnormal and no influence for the measurement accuracy.
- ③ Set the range switch to the desired range.
- ④ Adjust the zero adjustment knob to read zero for DC current measurement.
- ⑤ Clamp the conductor of the circuit under test with current transducer.  
Note: Clamp around only one conductor in the circuit to be measured.
- ⑥ Read the displayed value.
- ⑦ After measurement, set the power switch to “OFF”.

**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.

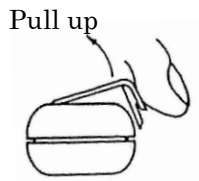


Fig.2

Place batteries with positive side up

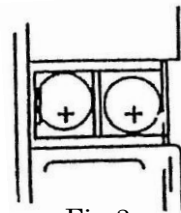


Fig.3

## 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.

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