

CLAMP TESTER

MODEL 290RMS

INSTRUCTION MANUAL

Thank you very much for selecting our digital AC/DC clamp tester model 290RMS.

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 and keep this instruction manual carefully to take out whenever you need.

MULTI MEASURING INSTRUMENTS CO.,LTD.

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- 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 of power lines carrying more than AC/DC 600V. Before use, check and confirm the voltage of circuit to be measured.
- Apply only the coated cables and do not clamp the 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 the battery cover is off, do not operate this instrument.
- Do not give the shock to tip of CT.
- Do not disassemble this instrument.
- Definitely avoid apply this instrument to voltage measurement of the power line carrying more than 250V for safety.
- Replace the batteries after took off test probe, etc. from the circuit.

POSSIBLE INSTRUMENT BROKEN

- At the range of resistance measurement, do not apply voltage to the tips of probes. It may cause the defect of instrument.

SPECIFICATIONS

Measuring Function : AC/DC Current (Clamp CT Method),
AC Voltage, DC Voltage and Resistance.

AC Current Detection : True RMS Reading

AD Conversion : Successive approximation mode

Display : 4 digit LCD max. reading of 999.9

Measuring Range : AC Current 40A/400A (2 Range Manual)
DC Current 40A/400A (2 Range Manual)
AC Voltage 60V/600A (2 Range Auto)
DC Voltage 60V/600A (2 Range Auto)
Resistance 1K Ω

Change of Range : by rotary switch

Accuracy : 23°C \pm 6°C 80%RH or less

Range	Resolution	Accuracy	
DC40A	0.01A	0~40.00A	$\pm 1.5\%rdg \pm 3dgt$
DC400A	0.1A	0~400.0A	$\pm 1.5\%rdg \pm 5dgt$
AC40A	0.01A	0~40.00A	$\pm 1.5\%rdg \pm 5dgt(50/60Hz)$
AC400A	0.1A	0~400.0A	$\pm 1.5\%rdg \pm 8dgt(50/60Hz)$
ACV	0.01V	0~600.0V	$\pm 1.0\%rdg \pm 8dgt$
DCV	0.1V	0~600.0V	$\pm 1.0\%rdg \pm 6dgt$
Ω	0.1 Ω	0~999.9 Ω	$\pm 1.5\%rdg \pm 8dgt$

Safety Standard : Meets the requirements for double insulation to
IEC 1010-2-032, IEC 1010-1 (1995), EN 61010-1 (1995)
installation Category II 600V phase to earth,
Category III 300V phase to earth.

E.M.C. Standard : The instrument meets EN 60081-1 and EN 50082-1 (1992).

Jaw Opening Capability : 30mm ϕ

Over Range Indication : "OL" mark on LCD

Low Battery Indication : "B" mark on LCD

Data Hold Indication : "DH" mark on LCD

0 adjustment : for DC current range, can make display to 0 by ADJ switch

Sampling Time : 2 times/second

Circuit Voltage : less than AC/DC 600V

Withstanding Voltage : AC 3700V 1 minute max. (Between the core of CT and outer case)

Operating Temperature : 0°C~40°C, < 80%RH (without condensing)

Storage Temperature : -10°C~60°C, < 70%RH (without condensing)

Power Supply : LR-03 x 3

Current Consumption : Approx. 9mA

Battery Life : 90 hours for continuous use (LR03 x 3)

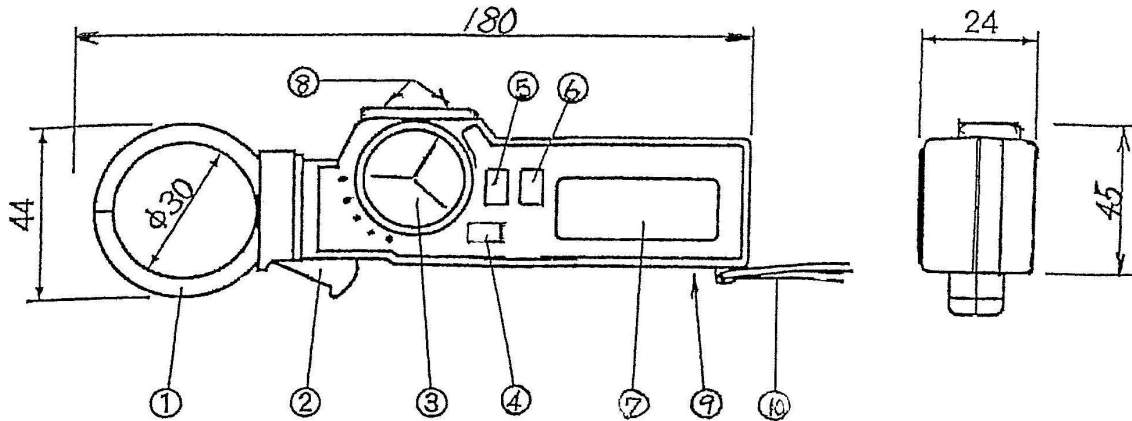
Size : 45(W)x180(H)x24(D)mm

Weight : Approx. 135g

Accessories : Soft Case 1
Instruction Manual 1
Batteries, LR03 3
Test Lead.....1

OPERATION

[Dimension and Panel Function]



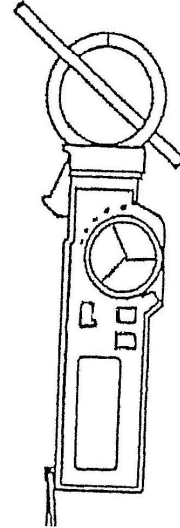
- ① Clamp CT : Sensor for detecting current and clamp method.
- ② Open/Close Lever : CT will open by pushing this lever to inside.
- ③ Range Switch : To change the ranges of current voltage and resistance.
- ④ AC/DC Switch : To change AC or DC measurement.
- ⑤ D-HOLD : By pressing one time, DH (Data Hold) on LCD and it will be released by pressing one more time.
- ⑥ ADJ : By pressing this key, can make the display value to "0" at DCA ().
- ⑦ Display : Digital display for measured value with annunciators and battery condition.
- ⑧ Input Terminal : Input position for voltage and resistance.
In case of DC, red terminal is (+) polarity.
- ⑨ Battery Compartment (On the reverse side) : Batteries are installed.
- ⑩ Hand Strap : During measurement, avoid to fall down the instrument by using this strap.

[Measuring Method]

For the safety operation keep and pay attention to the cautions and warnings stated in this manual.

▲ DC Current (DCA) Measurement

- 1) Set the range switch ③ from OFF to 40A or 400A
- 2) Set AC/DC switch ④ to DC
- 3) At the time of DC current measurement make “0” adjustment by ADJ switch before measurement.
- 4) Open clamp jaw and clamp CT to the conductor to be measured and close CT completely (Set the conductor to be located in the center position of CT).
- 5) Read the displayed value. (In case of over range, the display will show “OL”).
- 6) In the place where can hardly read the display, use The Data Hold ⑤.
- 7) After the measurement, set the range switch ⑧ to OFF.



▲ AC Current (ACA~) Measurement

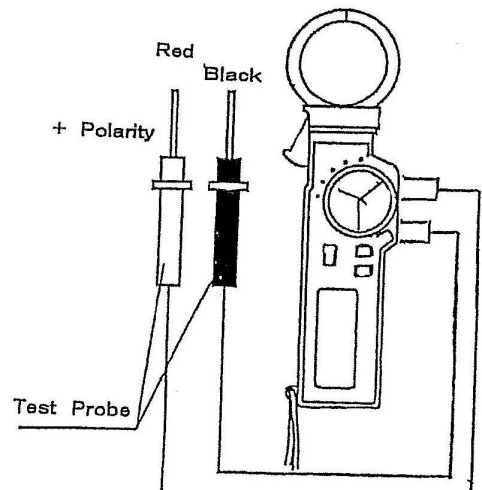
- 1) Set the range switch ③ from OFF to 40A or 400A
- 2) Set AC/DC switch ④ to AC
- 3) Open clamp jaw and clamp CT to the conductor to be measured and close CT completely (Set the conductor to be located in the center position of CT).
- 4) Read the displayed value. (In case of over range, the display will show “OL”).
- 5) In the place where can hardly read the display, use the Data Hold Switch ⑤.
- 6) After the measurement, set the range switch to OFF.

▲ DC Voltage (V) Measurement

- 1) Set the range switch ③ to V.
- 2) Set AC/DC switch ④ to DC
- 3) Insert test probe to the input terminal.
- 4) Apply the test probe to the part to be measured.
- 5) Read the displayed value.
- 6) After the measurement, set the range switch to OFF.

▲ AC Voltage (~V) Measurement

- 1) Set the range switch ③ to V.
- 2) Set AC/DC switch ④ to AC
- 3) Insert test probe to the input terminal.
- 4) Apply the test probe to the part to be measured.
- 5) Read the displayed value.
- 6) After the measurement, set the range switch to OFF.



▲ Resistance (Ω) Measurement

- 1) Set the range switch ③ to Ω .
- 2) Apply the test probe to the part to be measured.
- 3) Read the displayed value.
- 4) After the measurement, set the range switch to OFF.

- * For AC/DC current ranges, it takes approx. 20 seconds after power-on to get the stable display.
- * In case of the continuous measurement of DC current for long time, the “0” point may change by surrounding temperature and or by magnetization of CT. It may cause inaccurate measurement.
- * In case of measuring DC current, the display value may not return to “0.0” after measurement due to CT magnetization.
Before measurement, make “0” adjustment each time and Δ mark will be displayed.
The 40A range is high sensitive and the last digit may get unstable but it is not abnormal.

Δ **WARNING**

POSSIBLE ELECTRICAL SHOCK

- Test probes are consumption articles. Confirm that there are no damage at the insulate coat part of probes. If you find any unusualness, stop the use instantly and repair or replace the probes.

POSSIBLE FIRE HAZARD, BURN

- Connect test probes firmly. In case of mis-connection, it may cause spark.

Δ **CAUTION**

POSSIBLE DAMAGE

- At the measurement of resistance, it may cause the damage to the inside of instrument if applying voltage mistakenly.

REPLACEMENT OF BATTERIES

△ WARNING

POSSIBLE ELECTRICAL SHOCK OR ACCIDENT

- Do not replace the batteries under the conditions of measuring current or voltage
- Do not operate the instrument with battery cover off.

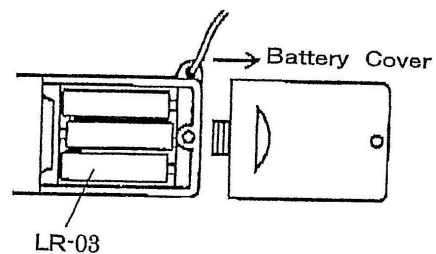
△ CAUTION

When not using the instrument for a long period, remove the batteries and keep separately. The batteries may leak and may cause damage to the instrument.

- 「B」 sign will appear on the display when batteries are exhausted and get less than operation voltage. Replace to new batteries immediately.
- Do not use the batteries mixed new one and once used and or different kind ones.

[How to replace the batteries]

- Remove the screw fixing battery cover at the bottom of rear case by + driver and slide & remove the battery cover to the direction of arrow mark.
- Pick up the exhausted batteries.
- Confirm the polarities and put the new batteries.
- Replace the battery cover to the original position and fix screw by driver.



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.