CLAMP TESTER

MODEL 280

INSTRUCTION MANUAL

Thank you very much for selecting our digital AC/DC clamp tester model 280.
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.

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SAFETY SUMMARY

Observe by all means

- To use this instrument safely, read this "SAFETY SUMARY" 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-operation.

⚠ 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 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 to 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

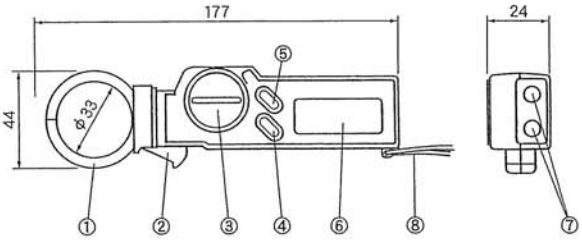
Measuring Function : AC/DC Current (Clamp CT Method),
AC Voltage, DC Voltage and Resistance.
AC Current Detection : Average sensing rms reading
AD Conversion : Successive approximation mode
Display : 4 digit LCD max. reading of 999.9
Measuring range : AC Current 1000A
DC Current 1000A
AC Voltage 500V
DC Voltage 500V
Resistance 600Ω
Change of Range : by rotary switch
Accuracy : 23°C±5°C 80%RH or less

Range	Resolution	Input Range	
AC Current (ACA)	0.1A	0-600.0A	±1.5%rdg±8dgt
		600.1-999.9A	±3.0%rdg±8dgt
DC Current (DCA)	0.1A	0-600.0A	±1.5%rdg±6dgt
		600.1-999.9A	±3.0%rdg±6dgt
AC Voltage (ACV)	0.1V	0-600.0V	±1.0%rdg±8dgt
DC Voltage (DCV)	0.1V	0-600.0V	±1.0%rdg±6dgt
Resistance (Ω)	0.1Ω	0-600.0Ω	±1.5%rdg±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 50081-1 and EN 50082-1 (1992).
Jaw opening capability : 33mmφ
Over range indication : "OL" mark on LCD.
Low battery indication : "B" mark on LCD
Data hold indication : "DH" mark on LCD
Max. display function : "Max" mark on display, indicating max.value during measurement.
Min. display function : "Min" mark on display, indicating min.value during measurement.
0 adjustment : for DC current range, can make display to 0 by ADJ switch.
Sampling time : 2 times/sec
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 to ~ 40°C<80%RH (without condensing)
Storage temperature : -10°C to ~ 60°C<70%RH (without condensing)
Power supply : SR-44 (1.55V) × 2 or LR-44×2
Power consumption : 24mW
Battery life : 6 hours for continuous use (LR-44)
Size : 44.5(W)×177(H)×24(D)mm
Weight : Approx. 95g
Accessories : Soft case 1
Instruction manual..... 1
Batteries, LR-44(1.55V)..... 2
Test Lead..... 1

OPERATION

〔 Dimensions 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 DH/MAX/MIN : By pressing one time, DH(Data Hold)→MAX (Max. Value Display) →MIN (Min. Value Display) will be repeated. To release these function, press the key for more than 2 sec.
⑤ ADJ : By pressing this key, can make the display value to "0" at DCA(⎓) and ACA (~) range. In case that the display value appears at "0" input influenced by the CT magnetization at the time of hight current measurement and or effected by earth magnetism, use this ADJ function.
⑥ Display : Digital display for measured value with annunciators and battery condition.
⑦ Input Terminal : Input position for voltage and resistance. In case of DC, red terminal is (+) polarity.
⑧ 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 DCA (⎓).
2) AT the time of DC current measurement, make "0" adjustment by ADJ switch before measurement.
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 ④.
6) After the measurement, set the range switch ③ to OFF.

▲ AC Current (~A) Measurement

1) Set the range switch ③ from OFF to ACA~.
2) 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).
3) Read the displayed value. (In case of over range, the display will show "OL").
4) In the place where can hardly read the display, use the Data Hold switch.
5) After the measurement, set the range switch to OFF.

▲ DC Voltage (⎓) Measurement

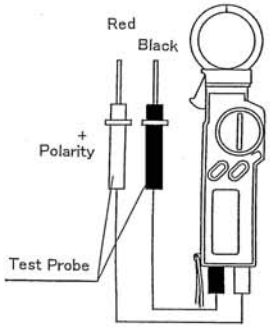
1) Set the range switch③ to DCV
2) Apply the test probe to the part to be measured.
3) Read the displayed value.
4) After the measurement, set the range switch to OFF.

▲ AC Voltage (~V) Measurement

1) Set the range switch ③ to ACV~.
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.

▲ 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.



* In case of the continuous measurement of DC current 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 after measurement due to CT magnetization. Before measurement, measurement, make "0" adjustment each time.

* In case of loading high DC current to CT, "0" adjustment can not be done. In this case, degauss the CT in the following manner.

① Power on the instrument.
② Set the measuring range to AC 200mA.
③ Load AC current approx. 10A to CT and then, reduce the current value to OA slowly.

⚠ 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.

⚠ 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.

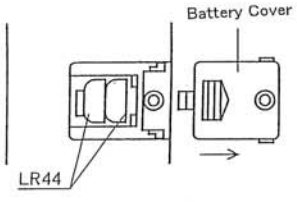
⚠ CAUTION

When do not use 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 fixed 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 the 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 l 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 12months 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 coursed from our responsibilities.