

DC in AC CLAMP METER

M - 8 0 0 P

INSTRUCTION MANUAL

Thank you very much for selecting our model 800P
DC in AC Clamp Meter.

Before use the instrument, read this instruction manual
completely and familiarize yourself thoroughly with all
functions.

Keep this instruction manual carefully to take out
whenever you need.

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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 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.
- Do not disassemble the instrument.

GENERAL

This “DC in AC CLAMP METER (M-800P)” is the world-first clamp meter, which can measure not only AC & DC current but also can detect small DC current in AC and can display its percentage.

SPECIFICATIONS

- (1) Measuring Function : ACA, DCA, DC% in ACA, ACV, DCV
- (2) Measuring Method : CT Clamp Method
- (3) CT Inside Diameter : ϕ 23mm
- (4) Measuring Range : ACA (15A/150A auto)、DCA (15A/150A auto)、% (DCA in ACA)、ACV (150V/600V auto)、DCV (150V/600V auto)
- (5) Switching Method : Rotary Switch
- (6) AC Detection : True RMS (Analog Arithmetic Method)
- (7) A/D Conversion : Successive Approximation Method
- (8) Display : LCD with annunciator
- (9) Over Range Display : 「OL」 mark on LCD
- (10) Data Hold : 「DH」 mark on LCD, holding the displayed value
- (11) 0 Adjustment : By press OSET switch at DCA range, 「 Δ 」 mark on LCD and 0 display
- (12) Sampling Rate : 2 times/sec.
- (13) Low Battery Indication : 「B」 mark on LCD in case of less than operation voltage
- (14) Circuit Voltage : Less than AC/DC 600V (Insulated Conductor)
- (15) Operating Temperature : 0°C~40°C、less than 80%RH (w/o condensation)
- (16) Storage Temperature : -10°C~60°C、less than 70%RH (w/o condensation)
- (17) Withstanding Voltage : AC3700V/1 minute, between CT jaw and handle
- (18) Safety Standard : IEC1010-1、CAT II 600V
- (19) Auto Power-off : Approx. 10 minutes after the final operation in power on
- (20) Power Supply : AAA size alkaline batteries (LR03×3)
- (21) Current Consumption : Approx. 20mA
- (22) Outer Dimension : Approx. 48mm×178mm×24mm
- (23) Weight : Approx. 120g (without batteries)
- (24) Accessories : AAA size alkaline batteries (LR03×3)
Instruction Manual
Test Leads for Voltage Input (Red/Black)
Soft Carrying Case

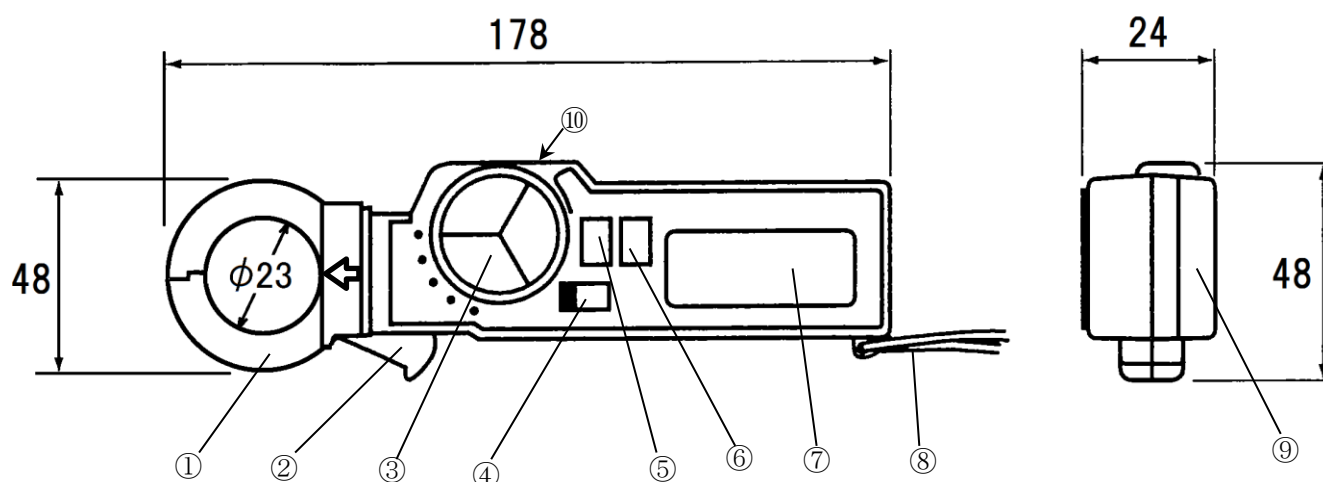
ACCURACY

Tolerance : $23^{\circ}\text{C} \pm 5^{\circ}\text{C}$ 、less than 80%RH、Conductor to be measured at the center of CT

Range	Auto Range	Min. Resolution	Measuring Range	確度
DCA	15A	0.01	0.00~15.00A	$\pm 1.0\% \text{rdg} \pm 5 \text{dgt}$
	150A	0.1	15.0~150.0A	$\pm 2.0\% \text{rdg} \pm 5 \text{dgt}$
ACA	15A	0.01	0.00~15.00A	$\pm 1.0\% \text{rdg} \pm 5 \text{dgt}$
	150A	0.1	15.0~150.0A	$\pm 2.0\% \text{rdg} \pm 8 \text{dgt}$
DCV	150V	0.1	0.0~150.0V	$\pm 1.0\% \text{rdg} \pm 5 \text{dgt}$
	600V	1	150~600V	$\pm 1.0\% \text{rdg} \pm 5 \text{dgt}$
ACV	150V	0.1	0.0~150.0V	$\pm 1.0\% \text{rdg} \pm 5 \text{dgt}$
	600V	1	150~600V	$\pm 1.0\% \text{rdg} \pm 5 \text{dgt}$

OPERATION

Name of Each Part & Explanation



- ① Clamp Type CT : Current Detection Sensor by Clamping Method
- ② Open/Close Lever : By pressing this lever to the inside, CT will open
- ③ Range Switch : Switch for power ON/OFF and change of measuring ranges.
The instrument will get power off by auto power off function, after approx. 10 minutes after the final operation under power on condition. To get power on again, set range switch at OFF once and set power on again.
- ④ AC/DC Switch : Apply this switch at range switch 「V」. On 「AC」 side for AC voltage measurement and 「DC」 side for DC voltage.
- ⑤ Data Hold Switch : By pressing 「D HOLD」 switch, 「DH」 mark on LCD and the displayed value will be hold. By pressing once again, this function will be released.

- ⑥ Zero Set Switch : Apply this switch at range switch 「DCA」. By pressing Zero Set Switch, 「△」 mark on LCD. (It will take approx. 5 - 6 seconds for zero set).
- ⑦ LCD Display : Digital display for measured value, unit symbol and battery condition.
- ⑧ Hand Strap : Apply this strap to wrist during measurement to prevent dropping the instrument.
- ⑨ Battery Compartment : Batteries are installed (back side).
- ⑩ Voltage Input Terminal: Voltage Input Part (Red/Black). In case of DC, red terminal is + side.

MEASURING METHOD

To operate the instrument safely, observe strictly the contents of Caution/Warning stated.

●DC Current (—A) Measurement

- 1) Set range switch ③ from OFF to —A position.
- 2) By zero set switch ⑥, make zero adjustment before measurement.
- 3) Open clamp CT and apply CT to the one conductor to be measured (locate the conductor to be measured at the center of CT). Close CT firmly (in case of DC current, set the current direction same as to the indication sticker of the instrument).
- 4) Read the displayed value. In case of over range (more than 165A), 「OL」 will appear on LCD.
- 5) In the place where the display can hardly read, utilize data hold switch ⑤.
- 6) After measurement, set range switch ③ to OFF.

●AC Current (~A) Measurement

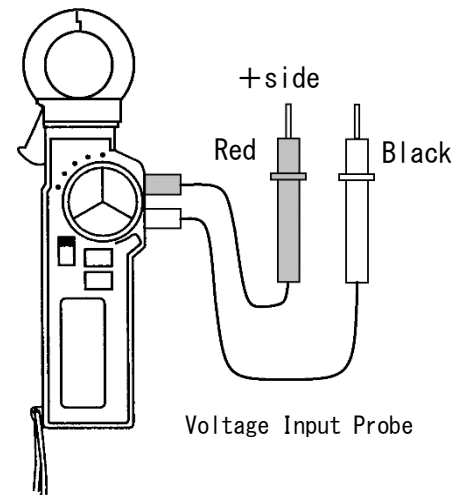
- 1) Set range switch ③ from OFF to ~A position.
- 2) Open clamp CT and apply CT to the one conductor to be measured (locate the conductor to be measured at the center of CT). Close CT firmly.
- 3) Read the displayed value. In case of over range (more than 165A), 「OL」 will appear on LCD.
- 4) In the place where the display can hardly read, utilize data hold switch ⑤.
- 5) After measurement, set range switch ③ to OFF.

●Percentage for DC Current contained in AC Current (%)

- 1) Set range switch ③ from OFF to —A position.
- 2) By zero set switch ⑥, make zero adjustment before measurement.
- 3) Set range switch ③ to % position.
- 4) Open clamp CT and apply CT to the one conductor to be measured (locate the conductor to be measured at the center of CT). Close CT firmly
- 5) Read the displayed value. $\% = (\text{DC Current} \div \text{AC Current}) \times 100$
- 6) Conditions of Over Range Display 「OL」
 - Calculated Value becomes more than 100.0%
 - In case of AC current 0A
 - In case of AC current more than 165A
 - In case of DC current more than 165A
- 7) In the place where the display can hardly read, utilize data hold switch ⑤.
- 8) After measurement, set range switch ③ to OFF.

●DC Voltage (V) Measurement

- 1) Set range switch ③ from OFF to V position.
- 2) Set AC/DC switch ④ to DC side.
- 3) Insert voltage probe to voltage input terminal ⑩. (Red : +、 Black : -)
- 4) Apply voltage input leads to the object to be measured.
- 5) Read the displayed value.
- 6) In the place where the display can hardly read, use data hold switch ⑤.
- 7) After measurement, set range switch ③ to OFF.



●AC Voltage (V) Measurement

- 1) Set range switch ③ from OFF to V position.
- 2) Set AC/DC switch ④ to AC side.
- 3) Insert voltage probe to voltage input terminal ⑩.
- 4) Apply voltage input leads to the object to be measured.
- 5) Read the displayed value.
- 6) In the place where the display can hardly read, use data hold switch ⑤.
- 7) After measurement, set range switch ③ to OFF.

- ※ In case of DC current measurement, zero point may change by influences of magnetization, terrestrial magnetism, etc. Make zero adjustment by zero set switch ⑥ before measurement.
- ※ When measuring current for a long time, the errors may get bigger caused from surrounding temperatures and or CT magnetizations.

⚠ 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.

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.

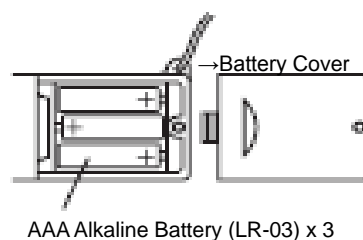
⚠ CAUTION

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.



4. 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.

5. 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.