

Thank you very much for selecting our model FAD-100 AC/DC Flexible Clamp Adapter.

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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# C O N T E N T S

Safety Summery .....	P2
1. General .....	P2
2. Cautions before use .....	P3
3. Specifications.....	P3~P4
4. Explanations for each part name and function.....	P5~P6
5. Operation	
5.1) Connections with power supply and AC/DC output voltage.....	P6
5.2) Measurement.....	P7
Open/Close method of current detection CT.....	P8
Measurement of line current.....	P9
6. After Service/Warranty.....	P10

- To use this instrument safely, read this “SAFETY SUMMARY” carefully and apply the instrument correctly.
  - The CAUTIONs and WARNINGs which are shown 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 circuit voltage to be measured.
- Apply only the coated cables and do not clamp the bare cables.  
In case of applying CT to bare cables, wear the insulated gloves and take care of electrical shock sufficiently.

**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 outer case and or the flexible CT are damaged.

**POSSIBLE INSTRUMENT DAMAGE**

- Do not disassemble this instrument.
- Do not twist, bend and or pull the flexible CT unnecessarily.  
It may cause quality deterioration and or breakage.

**1. GENERAL**

Model FAD-100 AC/DC Clamp Adapter uses hall element clamp sensor which can be bended or stretched freely to some extent and can measure AC/DC current 0.1A ~ 1000A with output voltage according to the measured current values.

Also, it has the display showing primary current values and can measure DC current component contained in AC current.

## 2. CAUTION BEFORE USE

After opened the package, inspect the appearance of instrument and check the accessories. If any damage and or shortage are found, contact with the dealer you bought or directly with us.

Accessories:      Instruction Manual.....1  
                         Storage Case.....1

## 3. SPECIFICATIONS

### 1) Current Detection Sensor

Detection Method                               : Hall-element, Split-core Type CT  
CT Inside Diameter                             :  $\phi$  200mm (total length 700mm)  
Withstanding Voltage                          : AC2200V、 1 minute  
CT Cable Length                                : Approx. 2m (between measuring part and CT)

### 2) Measuring Part

Measuring Function                            : AC Current (AC)、 DC Current (DC)、  
  DC Current Component contained in AC Current  
Measuring Method                             : CT Clamping Method  
Measuring Range                               : AC(50Hz/60Hz)/DC 10A、 100A、 1000A  
Change of Range                               : 3 Range Manual (by tact switch)  
AC Conversion                                 : Average sensing RMS reading  
A/D Conversion                                 : Dual integration mode  
Sampling Range                                 : 2 times/sec.  
Display    : Liquid Crystal Display  
  (LCD module、 2 lines x 8 characters)  
Max. Count                                      : 1100  
Over Range Display                             : 「OL」 on LCD  
0 SET for DC Current                          : In case of measuring DC current, press  
Measurement                                    0SET switch to get 0 offset value on display and  
  then, start measurement.  
  By getting 0SET display, the DC output voltage  
  also becomes 0SET.  
DC/AC Voltage Output                        : Single wick shield wire, approx. 1m, w/o connector  
Cable Length

### 3) General Specifications

Applicable Circuit Voltage	:Low Voltage Circuit less than AC/DC600V
Operation Temperature	:0°C~40°C、less than 85%RH (w/o condensation)
Storage Temperature	:-10°C~60°C、less than 80%RH (w/o condensation)
Withstanding Voltage	:AC2200V、1 minute
Insulation Resistance	:more than 50MΩ by DC500V insulation resistance tester
Power Supply	:DC12V±0.6V
Consumption Current	:approx. 100mA
Dimension/Weight	:Instrument Body 135(H)×76(W)×35(D)mm、 approx.250g CT Sensor φ200mm、approx. 280g
Accessory	:Instruction Manual.....1 :Storage Case.....1

### 4) Accuracy (at 23°C±5°C、less than 85%RH)

#### ●Measurement Display

AC/DC Current Range	Measuring Range	Resolution	Accuracy
10A	AC : 0~10A DC : 0~±10A	0.01A	±3%rdg±10dgt
100A	AC : 10A~100A DC : ±10A~±100A	0.1A	±3%rdg±10dgt
1000A	AC : 100A~1000A DC : ±100A~±1000A	1A	±3%rdg±10dgt

#### ●AC/DC Output Voltage

AC/DC Current Range	Measuring Range	Output Voltage	Accuracy
10A	AC : 0~10A	1500mV/F. S.	±2%F. S.
	DC : 0~±10A	±1500mV/F. S.	
100A	AC : 10A~100A	1500mV/F. S.	±2%F. S.
	DC : ±10A~±100A	±1500mV/F. S.	
1000A	AC : 100A~1000A	1500mV/F. S.	±2%F. S.
	DC : ±100A~±1000A	±1500mV/F. S.	

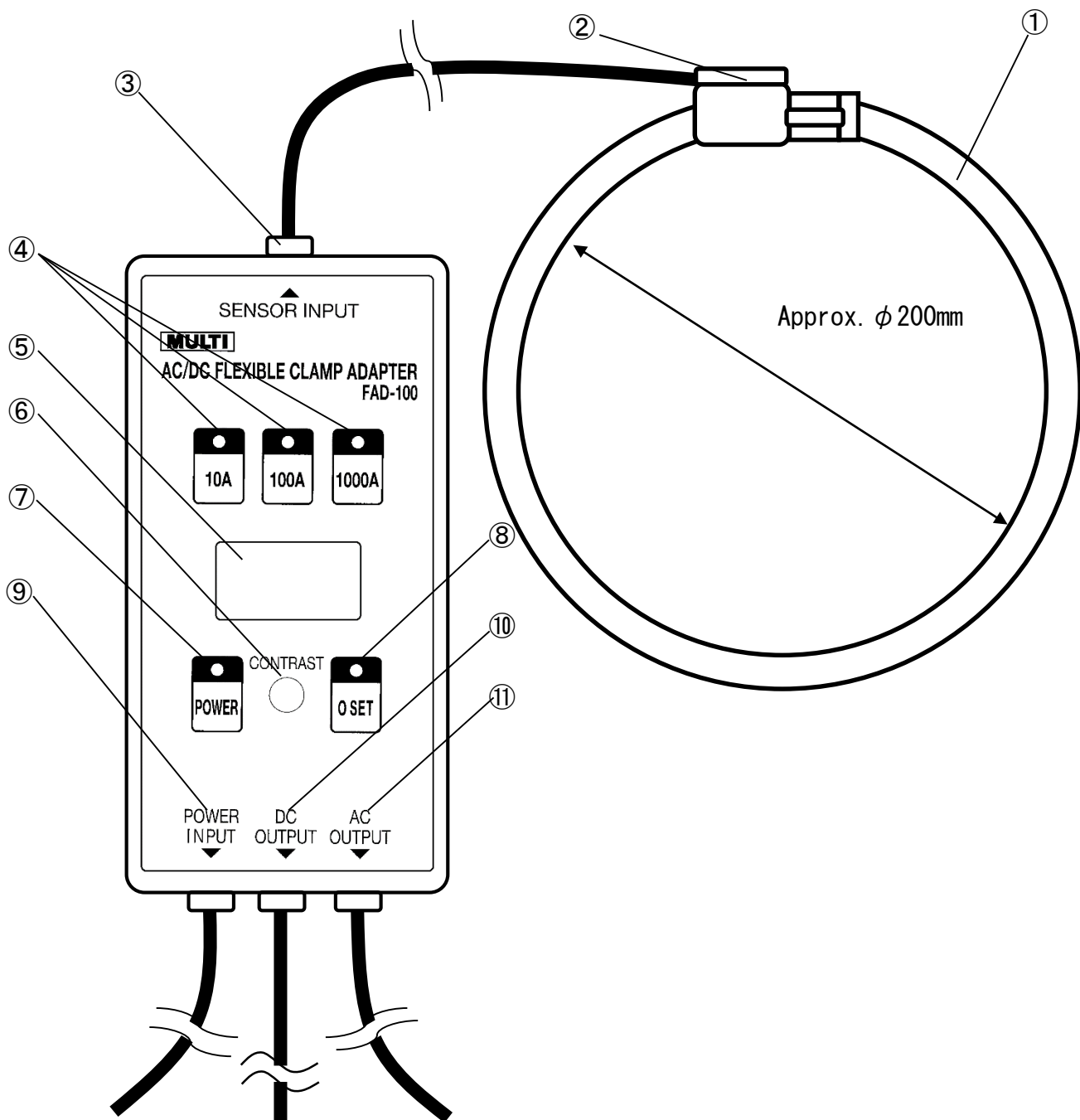
\* AC/DC Output Impedance: approx. 15kΩ

\* Provided that the coated conductor is located in the center of CT.

\* Accuracy is approx. 20 minutes after power on.

\* Provided that the temperature of current detection sensor and instrument are the same.

## 4. NAME OF EACH PART & EXPLANATION OF FUNCTION



- ① Current Detection Sensor (CT): Clamp type current sensor using hall-element and can be bending/stretching to a certain extent.  
Do not twist, bend and or pull unnecessarily at any rate.
- ② Attachment: Part of connection between split/contact of current detection CT and cable with instrument body (not detachable).
- ③ CT Input : connection part with the cable of current detection clamp sensor (not detachable).

- ④ Range Selection Switch: selection for measuring ranges 10A, 100A & 1000A.  
Can select the range by pushing numerical part and the LED of selected part will lighten (yellow).
- ⑤ Display (LCD) : LCD module with 2 lines x 8 characters showing measured values.  
The upper line is DC current display and the lower is AC current display.
- ⑥ Contrast Knob (CONTRAST) : adjusting light & shade of LCD.  
When the displayed value or letter can be hardly read, adjust lightness by turning this knob.
- ⑦ Power Supply Switch (POWER) : for power on or off of the instrument. When power on, the LED (red) will lighten and when off, LED will be extinguished.
- ⑧ 0 Adjustment Switch (0SET) : making the DC voltage output and off-set of DC current displayed value to zero. 0 set LED (green) will be blanking and will lighten after 0 set of DC voltage output and displayed value.
- ⑨ Power Supply Input (POWER INPUT) : connection part with the power input cables (approx. 1m, not detachable) to supply DC+12V to the instrument (DC12V to white and 0V to black).
- ⑩ DC Voltage Output (DC OUTPUT) : connection part with the analog signal output cable (approx. 1m, not detachable), DC±1500mV full scale to each range.  
(White: +, Shield: -, do not make short).
- ⑪ AC Voltage Output (AC OUTPUT) : connection part with the analog signal output cable (approx. 1m, not detachable), AC1500mV full scale to each range.  
(White: +, Shield: -, do not make short)

## 5. OPERATION

### 5. 1) Connections with Power Supply and to AC/DC Voltage Output

- 1) Supply DC12V to the power supply cable ⑨ from stabilized DC power supply, etc. (DC+12V to white, 0V to black).
- 2) Connect recorder, digital voltmeter, etc. (with impedance more than 15k Ω) to DC voltage output (DC OUTPUT) ⑩ and AC voltage output ⑪.  
White cable is for (+) and shield is for (-). In case of not using these cables, protect them from short circuit and direct touch each other by insulating tape, etc.
- 3) Press power supply switch (POWER) ⑦. After all LEDs lightened for approx. one second, Red LED will lighten and model number & version will be displayed on LCD for approx. one second.
- 4) The measured value will be displayed on LCD ⑤. The range remains at the last time power off and “0” adjustment is not set (Green LED is not lightening).
- 5) Power will be off by pressing this power supply switch (POWER) ⑦ once again. (Red LED turns light off).



## WARNING

- Use power supply voltage with unipolar DC  $12V \pm 0.6V$ . In case of different voltage, it may cause measurement error and failure.
- If taking wrong polarities of power supply, it may cause a defect of instrument.
- Do not make a mistake to connect AC/DC voltage output with wrong power supply Voltage. It may cause failure.

### 5. 2) Measurement

Observe the described contents of CAUTION and WARNING strictly to use the instrument safely.



## WARNING

### POSSIBLE ELECTRICAL SHOCK

- For safety, use in the circuit less than AC/DC 600V.
- Before use, confirm the circuit voltage to be measured.

### 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 outer case and or the flexible CT are damaged.



## CAUTION

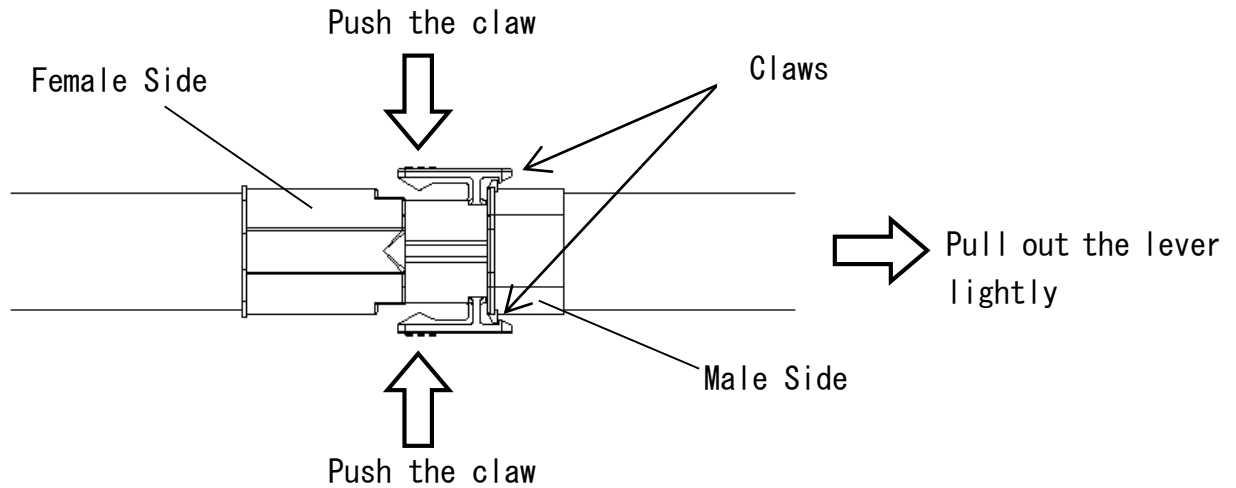
- The current detection sensor (CT) is a precision mechanical instrument. It can be bending and stretching in a certain extent but do not bend, stretch and twist unnecessarily by all means. It may cause breakage of CT.
- When turning power supply switch from OFF to ON, changing range switch and pushing "0" adjustment switch, there might be a case it takes a certain time to get the display stable but it is not abnormal condition and defect.
- The hall-element used in the current detection sensor (CT) is easy to receive influence of temperature due to its characteristics and the temperature compensation is made by the sensor internally installed in the instrument. Use the instrument in the near ambient temperatures between CT and instrument, as in case of big temperature difference, it may effect measurement accuracy, etc.
- Start the measurement approx. 20 minutes after power on to get the stable temperature conditions.



## How to Open/Close Current Detection Sensor

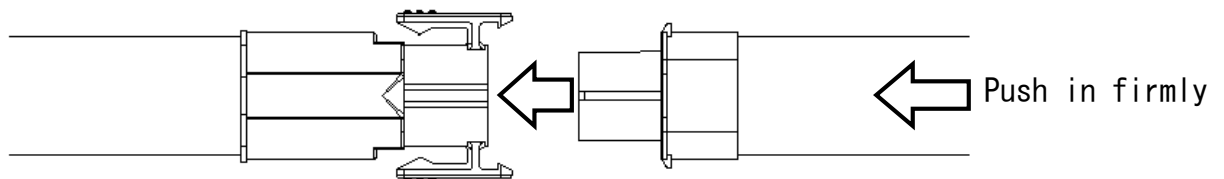
- To open

Press both claws of Attachment simultaneously and pull out the lever lightly while releasing the claws.



- To close

Join male side to female side and push them in together firmly until “snapping sound” heard .



※The flexible CT is a precision equipment. Though it can be bended or stretched freely to some extent, NEVER bend or stretch to twisted direction unnecessarily. It may cause damage.

## Measurement of Line Current

- 1) Make connections according to OPERATION 5. 1) and push power supply switch to get measured values on the display (LCD) ⑤.
- 2) Adjust the lightness of LCD display by contrast knob (CONTRAST) ⑥.

- 3) After getting the display values stable, push “0” Adjustment Switch (0 SET) ⑧ to make DC output voltage & DC off-set of measured value to “0”.  
LED of 0 set (Green) will get blinking and lighten after finished 0 adjustment of DC output and measured value.  
0 set can be made repeatedly.

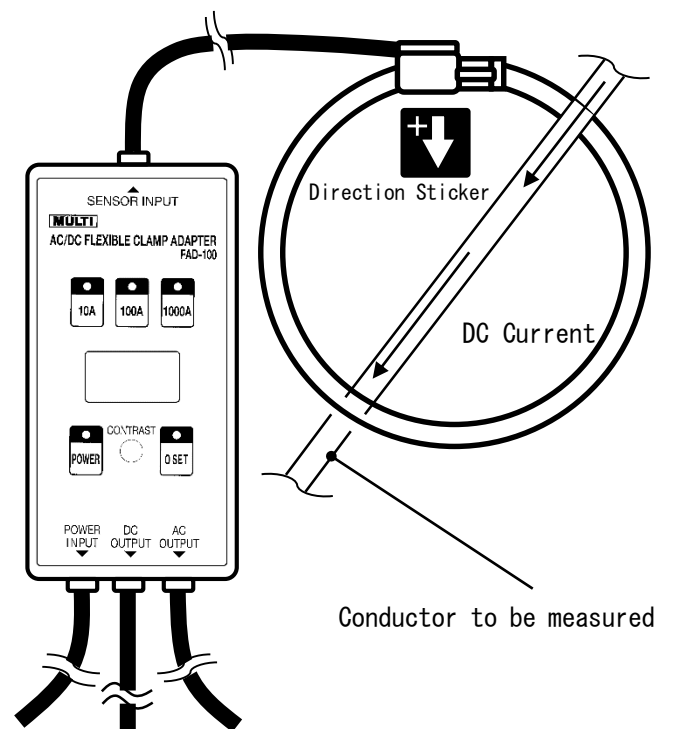
- 4) Open the attachment of current detection sensor (CT) ② and clamp it to the conductor at the center position of CT to be measured and close the attachment part. In case of DC current, make direction of allow mark on the sticker applied on the attachment and current direction to measured to the same.

- 5) By range selection switch ④, set the most appropriate range and confirm the output values by digital volt meter, etc. connected with AC/DC voltage output ⑩ ⑪. And or read the measured values on the display of instrument (there is no unit indication [A] on the display).

- 6) When input current becomes more than 110% over each range, [OL] mark is displayed on LCD and LED (Green) of the corresponding range becomes blinking.

Display Example  
of measured values

DC+10.01
AC 1.03



## 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.