

DC LEAKAGE CURRENT MONITOR

MDLA-100

INSTRUCTION MANUAL

Thank you for your purchasing our model MDLA-100
DC Leakage Current Monitor.

Before use the instrument, read this instruction manual
thoroughly and operate it correctly.

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 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.

○ OPERATION ENVIRONMENT

△ CAUTION

- Do not use or storage this instrument under the condition of direct rays of the sun, high temperature & humidity and or condensation, as it may cause the deformation and or the isolation defect of the instrument.
- Do not use this instrument in the environment influenced by acids, alkalis, organic solutions, corrosive gas, etc.
- Do not use or storage this instrument where the mechanical vibration can be directly transmitted, as it may cause defect of the instrument.
- Do not use this instrument nearby the appliances which generate strong magnetic field and or electric field, as it may cause mis-movement of the instrument.
- This instrument does not have the water/dust-proof structure. Do not use this instrument in the environment with a lot of dust and drops of water, as it may cause defect of the instrument.

○ OPERATION CONDITION & CONNECTION

△ 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 to 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.
- If excessive current is applied to the CT, the instrument will be heated and damaged. Use the CT according to the rating current.
- Use AC100V for the power supply of this instrument. If using other voltage, it may cause electrical shock, fire hazard and or defect.

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.

4. PRODUCT SPECIFICATIONS

1) DC Leakage Current Detection Part

Number of Monitoring Circuit	: 1 (1 channel)
Detection Method	: Magnetic Exciting Method
Current Setting Level	: 10/30/50/100/200mA (by shortpin)
Detection Accuracy	: $\pm 10\% \pm 1\text{mA}$ to each setting level (at $23^\circ\text{C} \pm 5^\circ\text{C}$, less than 85%RH)
Detection Period	: less than 2 sec.
Reversion Level	: $80\% \pm 10\%$ of detected current value

2) DC Current Sensor

Inside Diameter	: $\phi 20\text{mm}$
Structure	: Non-split Core Type

3) Warning Display & Output Part

Warning Display	: Warning Lamp (Red LED) will lighten and keep lightening in case that the leakage current exceeds the setting value and period.
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Warning Signal Output
Number of output circuit
Output Method

Number of output circuit	: 1 (1 channel)
Output Method	: Relay "A" contact signal (AC125V, 0.5A/DC24, 1A) Resistor Loading

4) General Specification

(1) Power Supply Voltage	: AC100V $\pm 10\%$ (50/60Hz)
(2) Power Consumption	: Less than 2VA
(3) Operation Temperature	: $0\sim 50^\circ\text{C}$, less than 85%RH w/o condensation
(4) Storage Temperature	: $-20^\circ\text{C}\sim 60^\circ\text{C}$, less than 85%RH w/o condensation
(5) Withstanding Voltage	: AC1200V/1 minute between power supply terminal & outer case and between warning output terminal & outer case
(6) Insulation Resistance	: more than $100\text{M}\Omega$ by DC500V insulation tester between power supply terminal & outer case and between warning output terminal & outer case
(7) Dimension & Weight	: $85.5(\text{H})\times 110(\text{W})\times 35(\text{D})\text{mm}$, approx. 300g
(8) Optional Item	: Clamp Type DCZCT, DCZCT-110CDEHL

5) Other Specification

(1) Test Function	: By pressing test switch, warning lamp lightens and warning signal output becomes ON.
(2) Reset Function	: By pressing reset switch, can make warning lamp reset. Warning lamp lightens again if the monitor is operating at the time of reset.

1. GENERAL

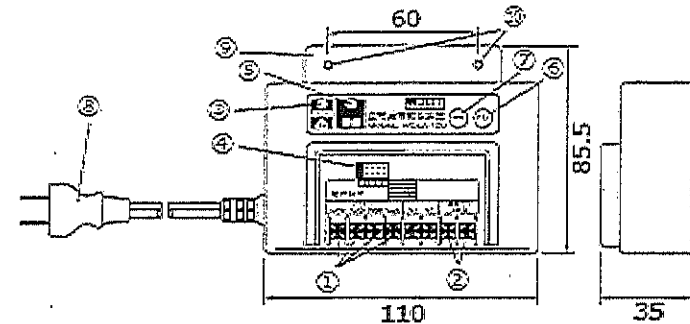
This DC Leakage Current Monitor constantly observes leakage current of DC circuit like as PV generation system, etc. and lights up the warning lamp with signal output, when the leakage current exceeds the setting value.

2. COMPOSITION

1) DC Leakage Current Monitor (MDLA-100)	---1 (with power supply cord & magnet)
2) DC Current Sensor (DCZCT-20)	---1 (with input/output cable)
3) Instruction Manual	---1

3. OPERATION

3-1 Name of Part & Explanation

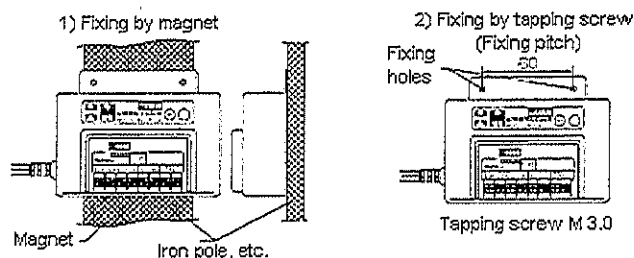


① CT Input	: Input terminal for current sensor
② Warning	: Output terminal for warning signal
③ Lamp for power supply	: Green lightening during input of power supply
④ Level Setting	: Setting for detection current level
⑤ Warning Lamp	: Red lightening when the leakage current exceeds the setting level
⑥ Test Switch	: During pushing this switch, warning signal outputs
⑦ Reset Switch	: Switch for warning lamp reset. When the lightening will continue even by push of this switch, the leakage current is still flowing currently.
⑧ Power Supply Plug	: Plug for power supply to the monitor (AC100V)
⑨ Magnet Board	: For placing this monitor to iron board, etc.
⑩ Fixing Hole	: For placing this monitor to wooden board, etc. ($\phi 3.5$)

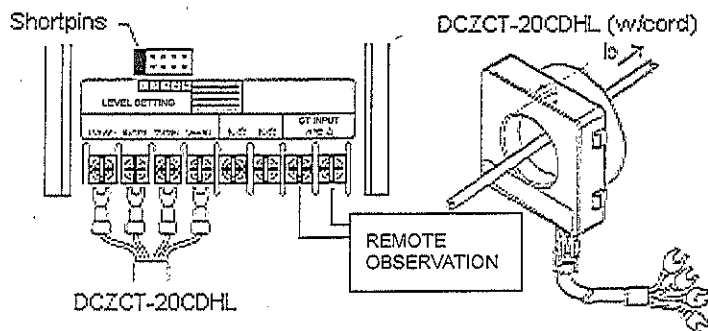
3-2 How to fix the monitor

△To avoid fault and to make measurement precisely, do not fix this monitor to the following places:

- Nearby transformers, power lines, etc. which generate strong magnetic fields and where vibrations are directly transmitted.
- Where sunshine gets directly and temperature exceeds the operation limit.



3-3 Connection/Wiring to terminal board



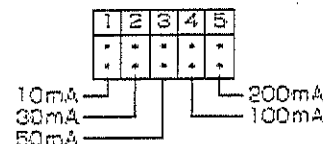
- (1) Pull up and remove the dust cover (transparent board) at the terminal part of monitor.
- (2) Wirings of CT: White cord → IN (W), Green cord → Ref (G)
Black cord → GND (B) Red cord → Vcc (R)

△DC current sensor has a direction. Set the current direction to the arrow mark.

Note) After finished the connection and level setting, apply the dust cover again definitely. Bending the dust cover lightly, input it into the grooves. Take care not to lose the dust cover.

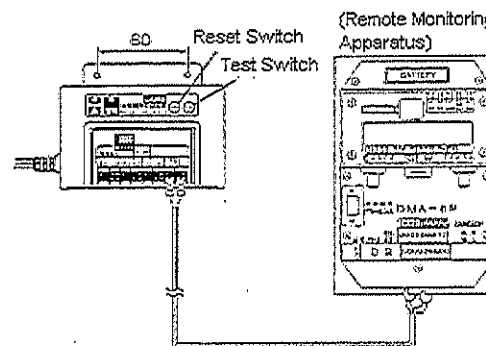
3-4 Operation Method

- 1) According to 3-3 'connection/wiring, connect DCZCT and warning output respectively.
- 2) Apply DC current detection CT (DCZCT-20CDHL) to the conductor to be measured(en bloc for go/return circuit or grounding line).
- 3) Set the detection current level by shortpin. At the time of initial delivery, the setting level is 10mA. Pull out shortpin (black cap) by hand and insert it into the setting level place to be required (Do not change the level during measurement).



- 4) After finished all connection and level setting, insert the power supply plug into AC 100V outlet. Power supply lamp (green) will lighten after normal power supply input. Warning lamp (red) will lighten if there is leakage current already. Warning Lamp keeps lightening and press the reset switch if you would like to know the present situation. In case that warning lamp disappears, there is no leakage current presently and in case that it lightens again, there is leakage current generated.

3-5 Remote Measurement



- (1) Connect the monitor with remote monitoring apparatus (like as MULTI LS-10E) by lead wire (Such remote monitoring apparatus has the function, to set up the places, etc. where the signals to be transmitted by software.)
- (2) By pressing test switch, warning lamp lightens and warning signal outputs. Systems test can be made by sending e-mail from remote monitoring apparatus to set up the place.