

2CT CLAMP LEAKER

MODEL 2002

INSTRUCTION MANUAL

Thank you very much for selecting our digital 2CT clamp leaker model 2002.

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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- 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 the bare cables.
- In case of not using 2CT, make measurement with the cover to “2CT INPUT” terminal.

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.
- Replace the batteries after took off test probe, etc. from the circuit.
- Do not apply voltage to “2CT INPUT” terminal. It may cause defect of instrument.

SPECIFICATIONS

Measuring Function:	AC Line Current, Leakage Current, (2CT Method for Line & Leakage Current)
AC Current Detection :	True RMS Reading
AD Conversion:	Equivalent to Double Integration Method
Display:	4 digit LCD max. reading of 9999 with annunciator
Measuring Range:	Leakage Current 0~1000mA/10A(50/60Hz) Line Current 0~20A/200A(50/60Hz) 2 CT Method 0~1000mA/10A(50/60Hz)
Change of Range:	by rotary switch(4 Range Manual)
Accuracy:	23°C ± 6°C 80%RH or less
Auto Power Off	Approx. 10 minutes after the final range switch operation and can power on again by once setting range switch to off.
Jaw Opening Capability :	40 mm φ
Over Range Indication :	"OL" mark on LCD
Low Battery Indication :	"B" mark on LCD
Data Hold Indication :	"DH" mark on LCD
Sampling Time :	2 times/second
Withstanding Voltage :	AC 2000V 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
Battery Life:	50 hours for continuous use (LR03 x 3)
Size:	64(W)x195(H)x24(D)
Weight:	Approx. 190g(with internal batteries)
Accessories:	Soft Case 1 Instruction Manual 1 Batteries, LR033 Spare CT(CTP-05-02)..... 1 Terminal Cover.....2
Option:	Spare CT(CTP-05-2)
Spare CT (CTP-05-2):	Inside diameter φ 5mm, withstanding voltage AC2000V/min.
Option CT (ZCT-18-2):	Inside diameter φ 18mm, withstanding voltage AC 2000V/min.

Range	Resolution	Accuracy(50Hz/60Hz)
AC 100mA	0.1mA	± 1% rdg ± 10 dgt
AC 10A	0.001A	
AC 20A	0.001A	
AC 200A	0.1A	Primary current 0~100A: ± 1% rdg ± 10dgt
		Primary current 101~150A: ± 3% rdg ± 10dgt
		Primary current 151~200A: +0%, -6% rdg ± 10dgt

Accuracy provided that the conductor to be measured is located in the center of CT.

*Influence of residual current by 2CT method

CTP-05-2: less than 12mA at line current of 10A
(max. applicable line current: 10A)

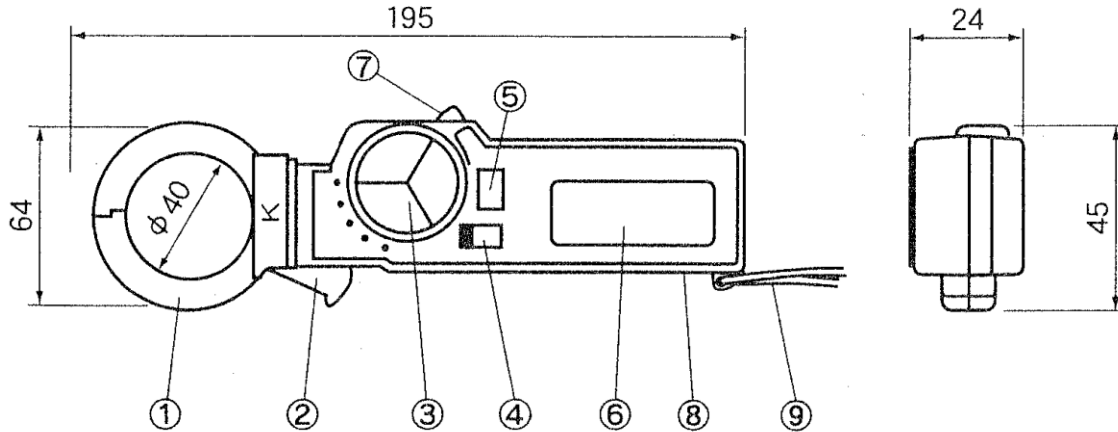
ZCT-18-2: less than 12mA at line current of 10A
(max. applicable line current: 14A)

*Frequency to be measured by 2CT method for leakage current: 50Hz, 60Hz
close/open CT slowly in case of 2CT method. Residual current will be increased if CT fitting is wrong.

*Can measure line current (max. 10A) in case of applying spare CT only.

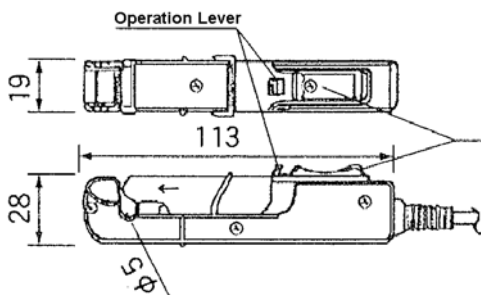
OPERATION

[Dimension and Panel Function]



- | | | |
|--|---|--|
| ①Clamp CT | : | Sensor for detecting current and clamp method |
| ②Open/Close Lever | : | CT will open by pushing this lever to inside. |
| ③Range Switch | : | To change power on/off and the ranges (2CT). |
| ④CT Selection Switch | : | ϕ 5 for CTP-05-2 and ϕ 18 for ZCT-18-2 by 2CT method |
| ⑤D-HOLD | : | By pressing one time, DH (Data Hold) on LCD and it will be released by pressing one more time. |
| ⑥Display | : | Digital display for measured value with annunciators and battery condition. |
| ⑦ Input Terminal for Spare CT: | : | For 2CT method with terminal cover |
| ⑧Battery Compartment (On the reverse side) | : | Batteries are installed. |
| ⑨Hand Strap | : | During measurement, avoid to fall down the instrument by using this strap. |

Spare CT (CTP-05-2)



• To open CT: pull operation lever below by using slider.

• To close CT: make slider up until CT will be closed and pull up operation lever to close CT completely.

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.

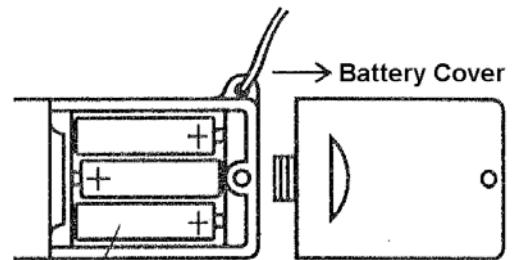
△ CAUTION

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.



AAA Alkaline Battery x 3 (LR-03)

MEASURING METHOD

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

△ 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.

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.
- Do not use the instrument, leaving the battery cover off.
- If excessive current is applied to the CT, the instrument will be heated and damaged. Use the CT according to the rating current.

- ※ Note : The display may not become “0” at power on promptly but it is not defect or abnormal. (it takes a time.)
It will take a time to get the stable display at 1000mA & 10A range due to wide range measurement.

(1) Line Current Measurement

- 1) Set the range switch from OFF to 200A (display on).
- 2) Open clamp jaw and clamp CT to the conductor to be measured and close CT completely.
- 3) Select the most suitable range by range switch and read the displayed value.
(In the place where hardly can read the display, use data hold function).

Note : The power will become automatically off approx. 10 minutes after the final operation of range switch due to auto power off function.

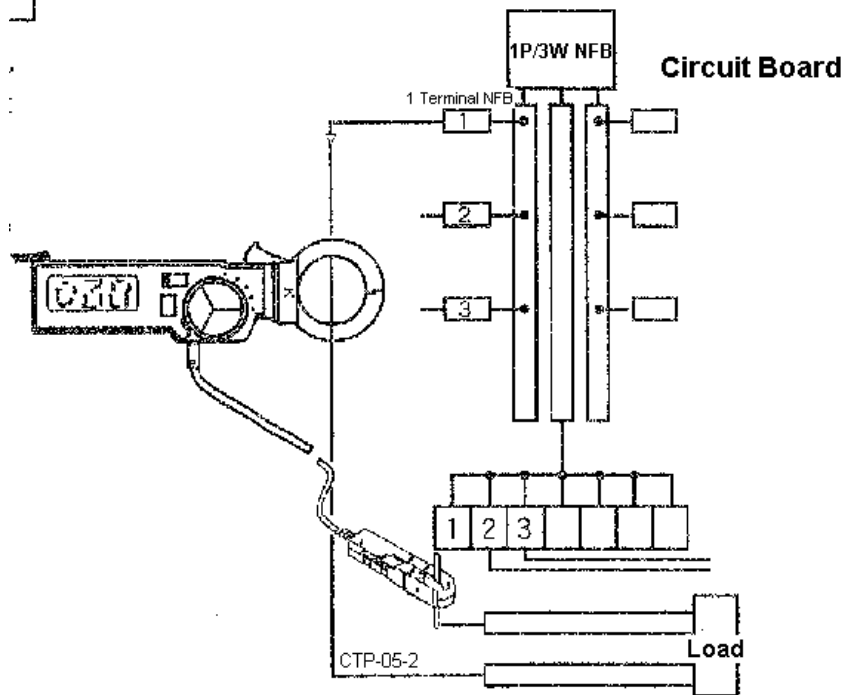
(2) Leakage Current Measurement

- 1) Measurement at grounding line
Do the same method as for line current measurement, and use the measuring ranges 1000mA and 10A.
- 2) Measurement for other circuit except for grounding line
The operations are the same as for line current but clamp CT to 2 wires en bloc in case of single phase and 3 wires en bloc in case of 3 phase.

Note: In case of not using 2CT Method, make measurement by applying the cover to 2CT INPUT terminals.

(3) 2 CT Method Leakage Current Measurement

Can measure leakage current where CT cannot be applied to the conductors en block in the distribution circuit board like as a drawing on the right, by using spare CT (CTP-05-2). In this case, make the instrument and spare CT to the same direction.



*Can measure line current by using spare CT only.(Max. 10A)

- 1) Insert spare CT (CTP-05-2) to the terminal of 2CT INPUT.
- 2) Set the range switch ③ from OFF to 10A (display on).
- 3) Check the line current of circuit to be measured and confirm if it is less than 10A. (The max applicable current of spare CT CTP-05-2 is 10A).
- 4) Set CT Selection Switch ④ to $\phi 5$.
- 5) Clamp CTs respectively like as drawing.
- 6) Observing display value, set the most suitable range and read the value. (In case of over range, "DL" mark appears on the display).

Note:

- In case that CT direction is not same, the display value will become twice of line current.
- In case of using 2CT Method, put the conductor to be measured in the center of CT.
- Be careful not to lose terminal covers for 2CT INPUT terminals.
- Can measure line current by applying spare CT only.
- In case of 2CT method measurement for low range, it will take a time to get stable value due to wide range measurement.

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.