

Safety Information - Before use, read the manual -

This product has been designed and manufactured in accordance with the safety standards applicable to IEC 61010-2-32 Electronic Measuring Equipment and has passed the inspection. Using this product in ways not specified in this manual may damage its protection function. The instructions given under the heading of "WARNING" and "CAUTION" must be followed to prevent accidents.

- ⚠ **WARNING** : Intended to prevent personal injury such as burn and electric shock and other serious accidents.
- ⚠ **CAUTION** : Intended to prevent misuse that could result in personal injury and damage to equipment including this instrument.

WARNING

1. This is a clamp meter for low-voltage circuits. Never use it on the power line that exceeds 600VAC to ground. The measurement classification category of this instrument is 300V CAT. III, 600V CAT. II.
2. Use the meter only as described in this manual.
3. Do not apply more than the rated maximum input.
4. Pay special attention to voltages above 33VAC (46.7Vpeak) and 70VDC that are hazardous to the human body.
5. Do not use the meter if it is damaged or broken.
6. Do not use the meter with the battery lid or rear case removed.
7. During measurement, keep your fingers behind the barrier (finger guard).
8. When measuring un-insulated conductors, be careful not to touch them. Otherwise you will suffer electric shock.
9. Do not use the meter near flammable gases or solvents.
10. Do not use the meter with wet hands or in a damp environment.
11. Do not disassemble or modify the meter nor use components not specified by the manufacturer.
12. Inspect the meter at least once a year.
13. The meter is for indoor use.

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Electrical Specification

The accuracy specification is defined as $\pm(\dots\% \text{reading} + \dots \text{count})$
At 23±5°C, ≤80%RH

DCV (Autorange)

| Range | Resolution | Accuracy | Input Impedance | Overload Protection |
|-------|------------|--|-----------------|---------------------|
| 400V | 0.1V | $\pm(1.5\% \text{rdg.} + 2 \text{dgt.})$ | 1MΩ | 660Vrms |
| 600V | 1V | | | |

ACV (Autorange)

| Range | Resolution | Accuracy | Input Impedance | Overload Protection |
|-------|------------|--|-----------------|---------------------|
| 400V | 0.1V | $\pm(1.5\% \text{rdg.} + 5 \text{dgt.})$ | 1MΩ | 660Vrms |
| 600V | 1V | | | |

ACA (Autorange)

| Range | Resolution | Accuracy | Overload Protection |
|-------|------------|--|---------------------|
| 40A | 0.01A | $\pm(1.9\% \text{rdg.} + 5 \text{dgt.})$ | 600Arms |
| 400A | 0.1A | | |

Ohm (Ω)

| Range | Resolution | Accuracy | MAX Test Voltage | Overload Protection |
|-------|------------|--|------------------|---------------------|
| 400Ω | 0.1Ω | $\pm(1.5\% \text{rdg.} + 2 \text{dgt.})$ | 1.5VDC | 600Vrms |

Continuity (•••)

| Range | Active Region | MAX Test Voltage | Overload Protection |
|-------|---------------|------------------|---------------------|
| ••• | <40 Ω | 1.5VDC | 600Vrms |

Frequency (Hz) (Autorange)

| Function | Range | Resolution | Accuracy | Sensitivity | Overload Protection |
|-------------------|-------------|------------|--|-------------|---------------------|
| Current Frequency | 20Hz ~ 4kHz | 1Hz | $\pm(0.1\% \text{rdg.} + 1 \text{dgt.})$ | 2Arms | 600Arms |
| | 10kHz | 10Hz | | | |
| Voltage Frequency | 4kHz | 1Hz | $\pm(0.1\% \text{rdg.} + 1 \text{dgt.})$ | 3Vrms | 600Vrms |
| | 40kHz | 10Hz | | | |
| | 400kHz | 100Hz | | | |
| | 1MHz | 1kHz | | 5Vrms | |

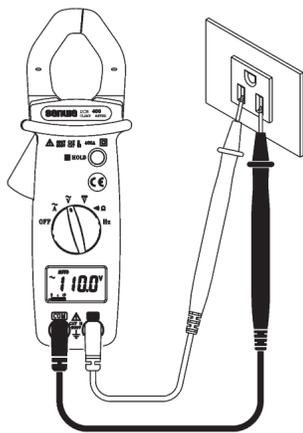
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ACV Measurement

WARNING

Maximum Input Voltage is 600V AC/DC. Do not attempt to take any voltage measurement that may exceed to avoid Electrical shock hazard and/or damage to this instrument.

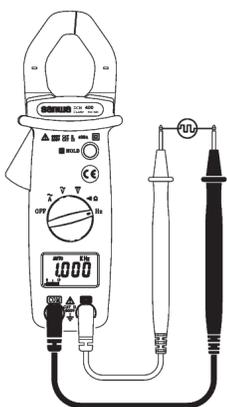
Switch the main function selector to \tilde{V} range.
Connect red test lead to "+" terminal and black one to the "COM" terminal.
Measure the voltage by touch the test lead tips to the test circuit where the value of voltage is needed.
Read the result from the LCD display.



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Frequency measurement from the terminals

Switch the main function to "Hz" range.
Connect red test lead to "+" terminal and black one to the "COM" terminal.
Connect tip of the test leads to the points where the frequency of the voltage signal is needed.
Read the Result from the LCD display.



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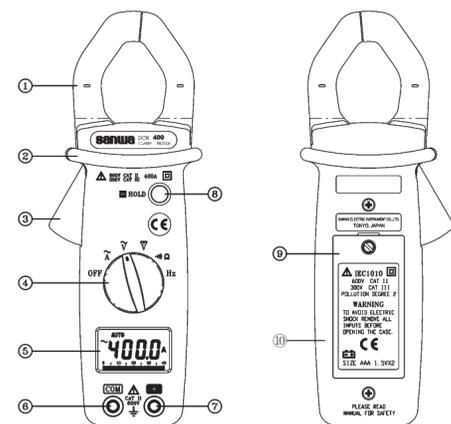
Specification

General Specification

Digital Display: 3 3/4 digits LCD display with maximum reading 3999
Analog Display: 42 segments fast analog bar display
Symbol and Scale range: adjust automatically according range and input signal
Polarity: When negative signal in apply to the meter, \ominus will show.
Over Load: When the signal larger than the maximum will be show **OL**
Sample Rate: 2 times/sec for digital data
20 times/sec for analog bar
Low Power Indication: When the battery is under the proper operation range, ⏻ will appear on the LCD display.
Power Source: R03 or AAA 1.5V battery x 2.
Auto Power Off: If there is no key or dial operation for 30 minutes, the meter will power itself off to save battery consumption.
Battery Life: Approx. 150 hrs
Power Consumption: 7.4mW
Clamp opening size: 25mm
Operating temperature: 0°C ~ 40°C, <80% RH, No condensation
Storage temperature: -10°C ~ 60°C, <70% RH, No condensation
Approvals: IEC61010-2-32 300V CAT.III 600V CAT.II
Environmental conditions: Altitude up to 2000 meters, indoor use, pollution degree 2
Withstand voltage: AC3.7kV (50/60Hz) for a minute.
Dimension (L x W x H) : 193 x 50 x 28mm
Weight: 230g
Accessory: Instruction Manual, Carrying case (C-DCM400), Test lead (TL-23a).

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Instrument Familiarization



- | | |
|--------------------------|---------------------------|
| ① Current Sensing Clamp | ⑥ COM input terminal |
| ② Barrier | ⑦ Positive input terminal |
| ③ Jaw-opening handle | ⑧ Data hold button |
| ④ Main function selector | ⑨ Battery lid |
| ⑤ LCD display | ⑩ Rear case |

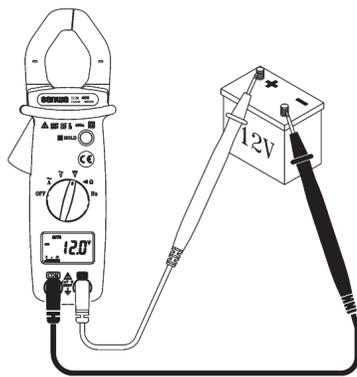
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DCV Measurement

WARNING

Maximum Input Voltage is 600V AC/DC. Do not attempt to take any voltage measurement that may exceed to avoid Electrical shock hazard and/or damage to this instrument.

Switch the main function selector to \bar{V} range.
Connect red test lead to "+" terminal and black one to the "COM" terminal.
Measure the voltage by touch the test lead tips to the test circuit where the value of voltage is needed.
Read the result from the LCD display.

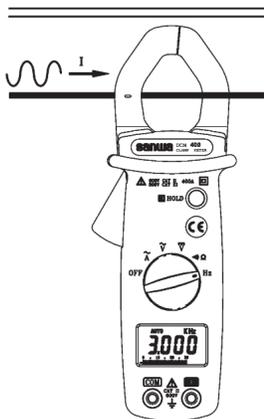


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Frequency measurement with the clamp

Switch the main function selector to "Hz" range.
Open the clamp by pressing the clamp-opening handle and insert the cable to be measured into the clamp.
Close the clamp and get the reading form the LCD display.

Note:
When doing frequency measurement, user should either use the terminal signal or clamp signal but not both. If both sources are applied an error will occur.



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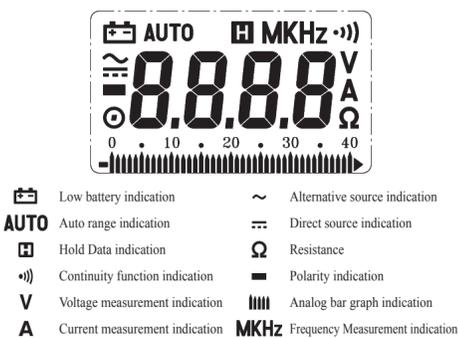
sanwa®

DCM400 DIGITAL CLAMP METER

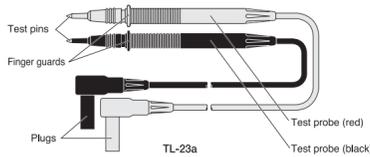
INSTRUCTION MANUAL



Symbol Definition



Removable test pin covers
When not covered : CAT. II 1000V
When covered : CAT. III 600V

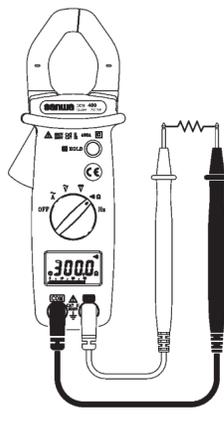


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Resistance Measurement

Switch the main function to Ω range.
Connect red test lead to "+" terminal and black one to the "COM" terminal.
Connect tip of the test leads to the points where the value of the resistance is needed.
Read the result from the LCD display.

Note:
When take resistance value from a circuit system, make sure the power is cut off and all capacitors need to be discharged.



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Maintenance

WARNING

1. The following instructions are very important for safety. Read this manual thoroughly to ensure correct maintenance.
2. Test leads:
 - Are the core wires not exposed from the test leads?
 - Is the plug when inserted to the input terminal not loose?
 If any of the above problems exists, stop using the meter and request for repair.

1. Maintenance and Inspection

- 1) Appearance: Is the meter not damaged due to falling or other cause?
- 2) Test leads:
 - Are the core wires not exposed from the test leads?
 - Is the plug when inserted to the input terminal not loose?
 If any of the above problems exists, stop using the meter and request for repair.

2. Inspection

Inspect the meter at least once a year.

3. Storage

CAUTION

1. The panel and case are not resistant to volatile solvent and must not be cleaned with thinner or alcohol.
2. The panel and case are not resistant to heat. Do not place the meter near heat-generating devices.
3. Do not store the meter in a place where it may be subjected to vibration or where it may fall.
4. Do not store the meter in places under direct sunlight, or hot, cold or humid places or places where condensation is anticipated.
5. If the meter will not be used for a long time, remove the batteries.

4. Battery when the meter is shipped:

A battery for monitoring has been installed prior to shipment from the factory. It may be discharged before the expiration of the described battery life.
*The battery for monitoring is a battery used to check the functions and performance of the product.

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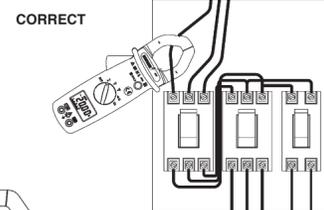
sanwa®
SANWA ELECTRIC
INSTRUMENT CO.,LTD.
Dempa Bldg,Sotokanda2-Chome
Chiyoda-Ku,Tokyo,Japan

Measuring Instruction

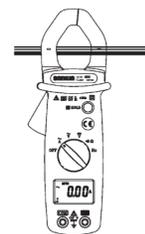
AC Current Measurement

Switch the main function selector to \tilde{A} range.
Open the clamp by pressing the jaw-opening handle and insert the cable to be measured into the jaw.
Close the clamp and get the reading from the LCD panel.

Note:
Before this measurement, disconnect the test lead with the meter for safety. In some occasion that the reading is hard to read, push the HOLD button and read the result later.



CORRECT

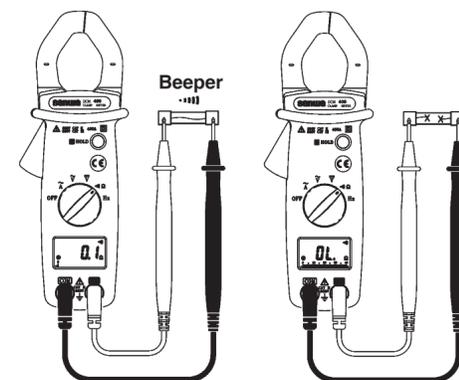


INCORRECT

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Continuity Test

Switch the main function to ••• range.
Connect red test lead to "+" terminal and black one to the "COM" terminal.
Connect tip of the test leads to the points where the conduction condition needed.
If the resistance is under 40Ω, the beeper will sound continuously.



Short circuit

Open circuit

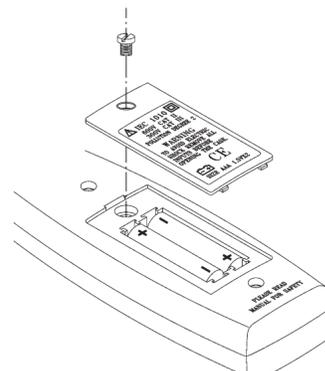
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Battery Changing

WARNING

To prevent electrical hazard or shock, turn off clamp meter and disconnect test leads before removing battery lid.
Never uses the meter before the battery lid is closed.

1. When the battery voltage drop below proper operation range the ⏻ symbol will appear on the LCD display and the battery need to be changed.
2. Before changing the battery, switch the main dial to "OFF" and disconnect test leads. Open the battery lid by a screwdriver.
3. Replace the old batteries with two R03 or AAA size batteries.
Close the battery lid and fasten the screw.



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