

4-2. Clamp Head

Clamp on a single conductor to measure AC current.

NOTE : Measurement is unable if several conductors are clamped.

4-3. Safety Line

The line to protect yourself against electrical shock hazard. Do not put your fingers over this line while current measurement.

4-4. FUNCTION Switch

Enables to select main-measurement functions. After measurement, turn it to "OFF".

4-5. SHIFT Key : Enables to select sub-measurement functions.

Current Measurement : $\sim A \rightarrow Hz$

Voltage Measurement : $\approx V \rightarrow \sim V \rightarrow Hz \rightarrow \%$

Resistance Measurement : $\Omega \rightarrow \bullet\Omega \rightarrow \blacktriangleleft \rightarrow \blacktriangleright$

4-6. MAX/MIN Key : MAX/MIN Measurement

Press this key for one second or more while regular measurement. "MAX MIN" symbol appears on LCD and starts MAX/MIN Measurement.

Enables to confirm MAX (maximum) and MIN (minimum) values by pressing this key during MAX/MIN measurement.

To release it : Press MAX/MIN Key again for one second or more.

4-7. DH Key : Display Hold

Enables to hold indicating values on LCD. "DH" symbol appears on LCD.

To release it : Press DH Key again.

4-8. DIFF Key : Difference Measurement

Enables to start Difference Measurement. Press this key for one second or more while regular measurement. "DIFF" symbol appears on LCD, and reset indicating value into 0 ± 1 digit.

Difference Measurement : Convert a certain measurement value into zero and indicate the relative values. Also usable to make zero adjustment.

To release it : Press DIFF Key again for one second or more.

4-9. Input Terminals · Test Leads

Use for $V, \Omega, \bullet\Omega, \blacktriangleleft, \blacktriangleright$ measurements. Plug test lead connector into input terminals matching "+" and "-".

WARNING : Unplug the Test Leads from input terminals while current measurement.

4-10. Test Lead Holder

Fixable Test Lead on the side of Clamp Meter by inserting its hook into the holder socket.

WARNING : Remove the Test Lead from the holder while current measurement.

5. MEASUREMENT PROCEDURES

5-1. PREPARATION FOR USE

1. INSTRUCTION MANUAL

Read INSTRUCTION MANUAL carefully to understand the specification and functions correctly. 「3. SAFETY PRECAUTIONS」 is highly important for safety measurement.

2. BATTERY

No battery is attached to this Clamp Meter. Please purchase 2 of 1.5V R03 (AAA) separately. How to install the batteries, refer to 「6-1. BATTERY REPLACEMENT」.

3. OVERLOAD INDICATION

"OL" symbol appears on LCD if input value exceeds 4000 counts that should be the maximum input value of the measuring range. 600V AC/DC range is excepted.

4. AUTO POWER OFF

Power turns off automatically after 12 minutes of last operation of FUNCTION Switch to conserve battery life (10 μA consumption is remained).

To disable it : Turn the power on pressing SHIFT Key. "APO" symbol disappears from LCD.

5. $\sim V / \sim A$ MEASUREMENT

Digits on LCD come down to 0 ± 1 digit gradually in $\sim V / \sim A$ measurements, but specified measurements are made if the measurement is started before it becomes into 0 ± 1 digit.

NOTE : For the measurement near the noisy environment or current conductor, LCD does not indicate 0 ± 1 digit.

6. Hz / Duty MEASUREMENT ON V/A FUNCTIONS






(Duty measurement is effective in Voltage measurement only)

0-basis High or low level pulse wave measurement is unable in this measurement function.

7. SYMBOL MARK

The following symbol marks shown on the instrument and instruction manual are listed in IEC 61010-1 and ISO 3864.

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	Caution (refer to instruction manual.)		
	Alternating Current (AC)		Direct Current (DC)
	Earth (Ground)		Double Insulation

5-2. CURRENT MEASUREMENTS ($\sim A / Hz$)

WARNINGS

- Maximum input current 400A AC (600V line). Do not measure any current that might exceed 400A.
- Read 「3. SAFETY PRECAUTIONS」 carefully to avoid electric shock hazard to the operator or serious damage to the instrument.
- Unplug the Test Leads from input terminals while current measurement.
- Do not touch any part of the power line or the circuit to be measured.

1. Set FUNCTION Switch to " $\sim A / Hz$ ".
2. Open Clamp Head, and clamp-on a single conductor.
NOTE : Measurement is unable if several conductors are clamped.
3. Read the measurement value on LCD.
4. After measurement, unclamp from the conductor and set FUNCTION Switch to "OFF".

Frequency Measurement (Hz) : Press SHIFT Key once.

Supporting Functions :

MAX/MIN Measurement, Difference Measurement, Display Hold (Refer to 4-6 to 4-8).

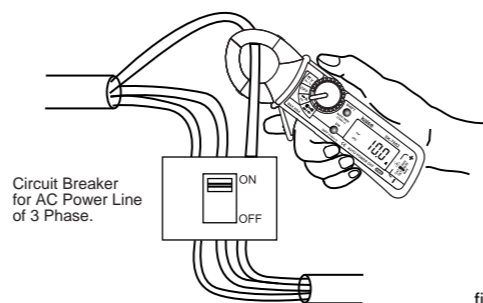



fig.3

5-3. VOLTAGE MEASUREMENTS ($\approx V / \sim V / Hz / \%$)

WARNINGS

- Maximum input voltage is 600V AC/DC. Do not measure any voltage that might exceed 600V.
- Read 「3. SAFETY PRECAUTIONS」 carefully to avoid electric shock hazard to the operator or serious damage to the instrument.
- For dangerous voltage measurement more than 220V AC/DC, turn off the power of the circuit to be measured and use Alligator Clips (optional). Refer to " WARNING 4. Dangerous Voltage Measurement Procedure" for details.
- Do not touch any part of the power line or the circuit to be measured.

1. Plug test lead connector into input terminals matching "+" and "-".
2. Set FUNCTION Switch to " $\approx V / Hz / \%$ ".
3. Select " \approx (DC)" or " \sim (AC)" by SHIFT key.
NOTE : LCD indicates random digits, but does not affect the specified accuracy.
4. Connect Black Test Lead to -(earth) side and Red Test Lead to +(high potential) side of the circuit to be measured.
NOTE : For Voltage Measurements, connect Clamp Meter **IN PARALLEL** to the measuring circuit.
5. Read the measurement value on LCD.
6. After measurement, set FUNCTION Switch to "OFF".

Frequency Measurement (Hz) : Press SHIFT key twice.

Duty Cycle (%) : Press SHIFT key three times.

Supporting Functions :

MAX/MIN Measurement, Difference Measurement, Display Hold (Refer to 4-6 to 4-8)

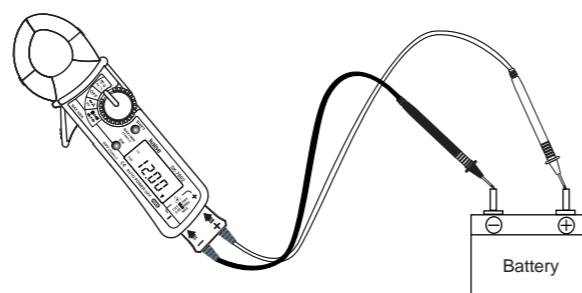


fig. 4

5-4. RESISTANCE MEASUREMENTS (Ω)

WARNINGS

- Do not measure Voltage at " $\Omega / \bullet\Omega / \blacktriangleleft / \blacktriangleright$ " position to avoid electric shock hazard to the operator or serious damage to the instrument.
- When measuring in-circuit resistance, turn off the power of the circuit to be measured and discharge the all capacitors.
- Before measurements, read 「3. SAFETY PRECAUTIONS」 carefully.

1. Plug test lead connector into input terminals matching "+" and "-".
2. Set FUNCTION Switch to " $\Omega / \bullet\Omega / \blacktriangleleft / \blacktriangleright$ ".
3. If the resistor to be measured is connected in a circuit, turn the circuit power off and discharge the all capacitors. Disconnect one side of the resistor.
4. Connect Test Leads to the resistor (or circuit) to be measured.
5. Read the measurement value on LCD.
6. After measurement, set FUNCTION Switch to "OFF".

Supporting Functions :

Difference Measurement, Display Hold (Refer to 4-7 to 4-8)

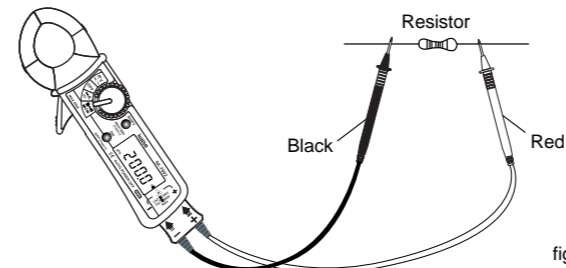


fig. 5

5-5. CONTINUITY TESTS ($\bullet\Omega$)

WARNINGS

- Do not measure Voltage at " $\Omega / \bullet\Omega / \blacktriangleleft / \blacktriangleright$ " position to avoid electric shock hazard to the operator or serious damage to the instrument.
- When testing in-circuit continuity, turn off the power of the circuit to be measured and discharge the all capacitors.
- Before measurements, read 「3. SAFETY PRECAUTIONS」 carefully.

1. Plug test lead connector into input terminals matching "+" and "-".
2. Set FUNCTION Switch to " $\Omega / \bullet\Omega / \blacktriangleleft / \blacktriangleright$ ".
3. Press SHIFT Key once. " $\bullet\Omega$ " symbol appears on LCD.
4. When testing in-circuit continuity, turn the circuit power off and discharge the all capacitors.
5. Connect Test Leads to the circuit to be tested. Buzzer sounds when the resistance value that is displayed on LCD is approx.50 Ω or less.
6. After measurements, set FUNCTION Switch to "OFF".

5-6. DIODE TEST (\blacktriangleleft)

WARNINGS

- Do not measure Voltage at " $\Omega / \bullet\Omega / \blacktriangleleft / \blacktriangleright$ " position to avoid electric shock hazard to the operator or serious damage to the instrument.
- When testing in-circuit diode, turn off the power of the circuit to be measured and discharge the all capacitors.
- Before measurements, read 「3. SAFETY PRECAUTIONS」 carefully.

1. Plug test lead connector into input terminals matching "+" and "-".
2. Set FUNCTION Switch to " $\Omega / \bullet\Omega / \blacktriangleleft / \blacktriangleright$ ".
3. Press SHIFT Key twice. " \blacktriangleleft " symbol appears on LCD.
4. If the diode to be tested is connected in a circuit, turn the circuit power off and discharge the all capacitors. Disconnect one side of the diode.
5. Connect Black Test Lead to Anode side and Red Test Lead to Cathode side (Reverse Connection). Confirm "OL" is indicated on LCD.
6. Connect Test Leads to the opposite sides of 5.(Foward Connection). Test results are good if the following voltage values are indicated on LCD.
Silicon diodes 0.4V~0.7V
Germanium diodes 0.1V~0.4V
7. After measurement, set FUNCTION Switch to "OFF".

5-7. CAPACITANCE MEASUREMENTS (\blacktriangleright)

WARNINGS

- Do not measure Voltage at " $\Omega / \bullet\Omega / \blacktriangleleft / \blacktriangleright$ " position to avoid electric shock hazard to the operator or serious damage to the instrument.
- When testing in-circuit capacitors, turn off the power of the circuit to be measured and discharge the all capacitors.
- Before measurements, read 「3. SAFETY PRECAUTIONS」 carefully.

1. Plug test lead connector into input terminals matching "+" and "-".
2. Set FUNCTION Switch to " $\Omega / \bullet\Omega / \blacktriangleleft / \blacktriangleright$ ".
3. Press SHIFT Key three times. "nF" is indicated on LCD.
4. Press DIFF key to reset LCD into 0 ± 3 digit or less.
5. If the capacitor to be measured is connected in a circuit, turn the circuit power off and discharge the all capacitors. Disconnect one side of the capacitor.
6. Connect Test Leads to the circuit to be tested.
7. Read the measurement value on LCD.
8. After measurement, set FUNCTION Switch to "OFF".

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NOTE : Measurement time takes longer to measure higher capacitance.
(Example : approx. 4 sec. at 10 μF , approx. 14 sec. at 90 μF .)

6. MAINTENANCE

6-1. BATTERY REPLACEMENT

WARNING

To prevent electrical shock hazard, turn the power off and disconnect Test Leads from the circuit before opening Battery Cover.

Replace the battery when "BAT" symbol appears on LCD.

1. Turn the power off and disconnect Test Leads from the circuit.
2. Unscrew the Battery Cover and remove the exhausted batteries.
3. Insert 2 pcs of new 1.5V R03 (AAA) batteries in correct polarity.
4. Fix the Battery Cover and tighten the screw.

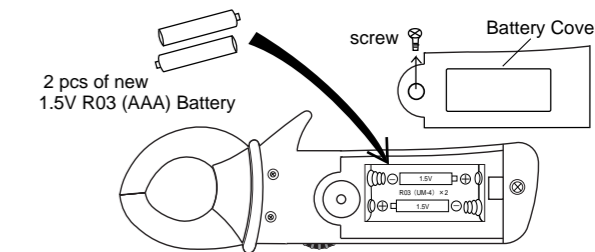


fig. 6

6-2. PERIODICAL CHECK AND CALIBRATION

Periodical check and calibration is necessary to make safety measurements and to maintain the specified accuracy. The recommended check and calibration term is once a year and after the repair service. This service is available at KAISE AUTHORIZED SERVICE AGENCY through your local dealer.

6-3. REPAIR

Repair service is available at KAISE AUTHORIZED SERVICE AGENCY through your local dealer. Pack the instrument securely with your name, address, telephone number and problem details, and ship prepaid to your local dealer.

Check the following items before asking repair service.

1. Check the battery connection, polarity, and the rest capacity (exhausted or not).
2. Confirm that FUNCTION Switch is set to the correct position.
3. Confirm that the body of this instrument and handle insulators of the Test Leads have no cracks or any other damages.
4. Check if any noise affects the instrument. This instrument is fully shielded against noise, but possibly to be affected by very strong noise.

WARRANTY

SK-7602/7603 is warranted in its entirety against any defects of material or workmanship under normal use and service within a period of one year from the date of purchase of the original purchaser. Warranty service is available at **KAISE AUTHORIZED SERVICE AGENCY** through your local dealer. Their obligation under this warranty is limited to repairing or replacing SK-7602/7603 returned intact or in warrantable defect with proof of purchase and transport charges prepaid. **KAISE AUTHORIZED DEALER** and the manufacturer, **KAISE CORPORATION**, shall not be liable for any consequential damages, loss or otherwise. The foregoing warranty is exclusive and in lieu of all other warranties including any warranty of merchantability, whether expressed or implied. This warranty shall not apply to any instrument or other article of equipment which shall have been repaired or altered outside of **KAISE AUTHORIZED SERVICE AGENCY**, nor which have been subject to misuse, negligence, accident, incorrect repair by users, or any installation or use not in accordance with instructions provided by the manufacturer.

KAISE AUTHORIZED DEALER

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Product specifications and appearance are subject to change without notice due to continual improvements.

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