

FOR SAFETY MEASUREMENTS!!

To prevent an electrical shock hazard to the operator and/or damage to the instruments, read this instruction manual carefully before using the Insulation Tester. WARNINGS with the symbol ⚠ on the Insulation Tester and this instruction manual are highly important.

⚠ The symbol listed in IEC 61010-1 and ISO 3864 means "Caution (refer to instruction manual)".

⚠ WARNING The symbol in this manual advises the user of an electrical shock hazard that could result in serious injury or even death.

⚠ CAUTION The symbol in this manual advises the user of an electrical shock hazard that could cause injury or material damages.

INTRODUCTION

Thank you for purchasing KAISE "MODEL 660 AC/DC CLAMP ADAPTER".

To obtain the maximum performance of this instrument, read this Instruction Manual carefully, and take safe measurement.

FEATURES

Useful for the current measurement up to 400A AC/DC for electric equipments or car in combination with DMM, by 2-ranges 40A and 400A.

Waveform output is also possible by connecting to the oscilloscope or the memory recorder.

1. UNPACKING AND INSPECTIONS

The package contains the following items. Confirm that there are any damage under transportation or missing items when receiving the instrument. If any damage or defective are found, contact your local dealer.

- | | |
|-------------------------|--------|
| 1. Clamp Adapter | 1 pce. |
| 2. Carrying Case (1011) | 1 pce. |
| 3. Battery (1.5V R6P) | 2 pcs. |
| 4. Instruction Manual | 1 pce. |

2. SPECIFICATIONS

2-1. GENERAL SPECIFICATIONS

- RANGE SELECTION** : Manual range
- OUTPUT WAVEFORM** : Almost same as the input waveform
- INPUT IMPEDANCE OF MULTIMETERS** : 2.5k Ω or more
- OVERLOAD PROTECTION** : 600A AC/DC for 1 minute
- DIELECTRIC STRENGTH** : 1.5kV AC for 1 minute (between input terminal and case)
- OPERATING TEMPERATURE & HUMIDITY** :
0 to 40 $^{\circ}$ C , 80%RH or less in non-condensing
- STORAGE TEMPERATURE & HUMIDITY** :
-20 to 60 $^{\circ}$ C , 70%RH or less in non-condensing
- POWER SUPPLY** : 1.5V R6P (AA) batteries x 2
- LOW BATTERY WARNING** : BAT LED turns off at approx. 2.2V
- POWER CONSUMPTION** : Approx. 30mW or less
- CONTINUOUS OPERATING TIME** : Approx. 90 hours
- CONDUCTOR DIAMETER** : 19mm max.
- DIMENSIONS & WEIGHT** : 180(H) x 43(W) x 31(D)mm, approx. 210g
- ACCESSORIES** : 1011 Carrying Case, 1.5V R6P (AA) Batteries x 2, Instruction Manual

2-2. MEASUREMENT SPECIFICATIONS (23 \pm 5 $\%$, <80%RH in non-condensing)

DC Current ($\overline{\text{---A}}$)

Range	Measuring Range	Output	Output Accuracy	Max. input current
40A	0 to 40A	0 to 400mV (100mA/mV)	1.5%rdg \pm 0.5mV	400A
400A	0 to 200A	0 to 400mV (1A/mV)	1.5%rdg \pm 0.5mV	
	200 to 300A		4.0%rdg \pm 0.5mV	
	300 to 400A		6.0%rdg \pm 0.5mV	

Zero adjustment is necessary by DCA.0 ADJ knob.

AC Current (\sim A)

Range	Measuring Range	Output	Output Accuracy	Max. input current
40A	0 to 40A	0 to 400mV (100mA/mV)	1.5%rdg \pm 0.5mV	400A
400A	0 to 200A	0 to 400mV (1A/mV)	1.5%rdg \pm 0.5mV	
	200 to 300A		4.0%rdg \pm 0.5mV	
	300 to 400A		7.0%rdg \pm 0.5mV	

Frequency less than 400Hz on sine wave.

3. SAFETY PRECAUTIONS

Correct knowledge of electric measurements is essential to avoid unexpected danger such as operator's injury or damage to the instrument. Read the following precautions carefully for safety measurements.

3-1. WARNINGS

⚠ WARNING 1. Checks of the Clamp Adapter

Before measurement, check if there are no damage to the instrument. Dust, grease and moisture must be removed.

⚠ WARNING 2. Prohibition of High Power Line Measurement

Measurements of High Power Line (High Energy Circuits) such as Distribution Transformers, Bus Bars and Large Motors are very dangerous. High Power Line sometimes includes High Surge Voltage that could cause explosive short in the instrument and could result in shock hazard. When measuring, keep safety distance not to touch the live line.

⚠ WARNING 3. Maximum Input Observance

Do not measure any current that might exceed the specified maximum input values.

⚠ WARNING 4. Safety Line

Do not put the fingers over the safety line during the measurement.

3-2. PRECAUTION FOR USE

Do not measure AC high-frequency current. Clamp head becomes heated and could damage the instrument.

3-3. GENERAL WARNINGS AND CAUTIONS

⚠ **WARNING 1.** Children and the persons who do not have enough knowledge about electric measurements must not use this instrument.

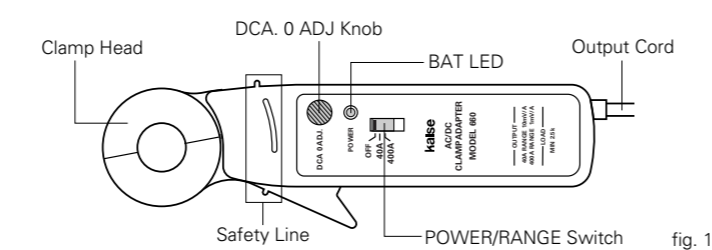
⚠ **WARNING 2.** Do not measure the electricity in naked of barefooted to protect yourself from electrical shock hazard.

⚠ **CAUTION 1.** Keep away the instrument from hot and humid conditions like in the car. Do not apply hard mechanical shock or vibration.

⚠ **CAUTION 2.** Do not polish the case or attempt to clean it with any cleaning fluid like gasoline or benzine. If necessary, use silicon oil or antistatic fluid.

⚠ **CAUTION 3.** Remove the batteries when the instrument is out of use for a long time. The exhausted batteries might leak electrolyte and corrode the inside.

4. NAME ILLUSTRATION



4-1. Clamp Head

Clamp a single conductor in the center of the Clamp Head.

NOTE : Measurement cannot be done when the several conductors are clamped.

NOTE : When measuring DC current, clamp the conductor in the same direction of sign on the clamp head (from + to -). The connected tester displays the minus value when clamping in the opposite direction.

4-2. DCA. 0 ADJ Knob

Turn this knob to make zero adjustment when measuring DC current (DC A).

4-3. BAT LED

The light turns off when the battery voltage becomes at approx. 2.2V or less.

NOTE : Output accuracy is not assured after it is turned off.

4-4. POWER/RANGE Switch

The switch to turn on/off the instrument and to change the measurement ranges.

Set it to "OFF" position after finishing the measurement.

4-5. Safety Line

The line to protect the user against the electrical shock hazard. Do not put the fingers over this line during the measurement.

4-6. Output Cord

Insert red and black plugs to the input terminals of the connecting tester. Be careful about the polarity especially when the DC current measurement.

5. MEASUREMENT PROCEDURES

5-1. Preparation for Use

1. Instruction Manual ⚠

Read INSTRUCTION MANUAL carefully to understand the specification and functions properly. "3. SAFETY PRECAUTIONS" is very important for safety measurement.

2. Battery Installation

Before starting the measurement, install 2 pcs of 1.5V R6P batteries in reference to "6-1. BATTERY REPLACEMENT". Replace them in the same way when BAT LED turns off.

3. Warning for Measurement

Important to prevent electric shock hazard.

⚠ WARNING

Do not apply any voltage to the Output Cord plugs.
Do not measure High Voltage Circuit that might exceed 600V AC/DC.
Do not measure any current that might exceed the maximum input values.
Read "3. SAFETY PRECAUTIONS" carefully to avoid electric shock hazard and serious damage to the instrument.
Be careful not to touch the circuit being measured.
To avoid electric shock hazard, do not put the fingers over the safety line during the measurement.

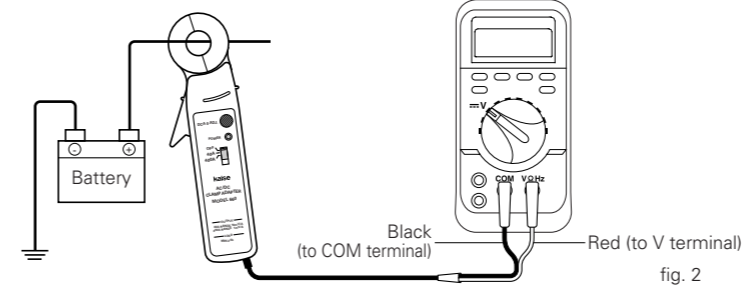
5-2. DC Current Measurement ($\overline{\text{---A}}$)

- Set the range of the connected tester enabling to measure 200mV DC or 400mV DC.
NOTE : Use the digital tester that display is 3.5 digit (1999 count) or more, or the analog tester that input sensitivity is 10k Ω /V or more.
- Insert black plug of output cord to COM terminal of the connected tester, and inserted plug to V terminal.
- Set POWER/RANGE Switch to a suitable current range to be measured. If the current value to be measured is uncertain, select 400A range.
- Turn DCA. 0 ADJ Knob and adjust the tester to display 0 \pm 1dgt.
- Open clamp head, and clamp a single conductor in its center.
NOTE : Measurement cannot be done when the several conductors are clamped.
- NOTE** : Clamp the conductor in the same direction of sign on the clamp head (from + to -). The connected tester displays the minus value when clamping in the opposite direction.
Read the measurement value displayed on the connected tester.
NOTE : Read the display value directly when measuring in 400A range. When measuring in 40A range, convert the display value into 1/10.

Example :

Measurement Range	Displayed Value	Reading (read the unit mV as A)
40A Range	380.4mV	38.04A
400A Range	380.4mV	380.4A

- After finishing the measurement, set POWER/RANGE Switch to OFF position and turn off the connected tester.



5-3. AC Current Measurement (\sim A)

- Set the range of the connected tester enabling to measure 200mV AC or 400mV AC.
NOTE : Use the digital tester that display is 3.5 digit (1999 count) or more, or the analog tester that input sensitivity is 10k Ω /V or more.
- Insert black plug of output cord to COM terminal of the connected tester, and inserted plug to V terminal.

- Set POWER/RANGE Switch to a suitable current range to be measured. If the current value to be measured is uncertain, select 400A range.
- Open clamp head, and clamp a single conductor in its center.
NOTE : Measurement cannot be done when the several conductors are clamped.
- Read the measurement value displayed on the connected tester.
NOTE : Read the display value directly when measuring in 400A range. When measuring in 40A range, convert the display value into 1/10. (see the example in "5-2. DC Current Measurement" for details.)
- After finishing the measurement, set POWER/RANGE Switch to OFF position and turn off the connected tester.

6. MAINTENANCE

6-1. Battery Replacement

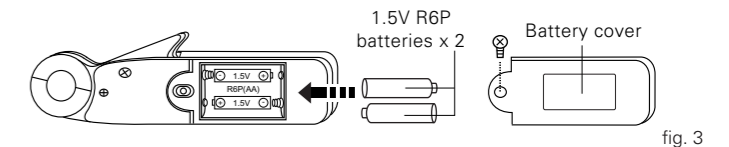
⚠ WARNING

When replacing the batteries, to prevent any electric accidents, detach clamp head from the conductor to be measured and turn off the instrument setting POWER/RANGE Switch to OFF position.

Replace the batteries when BAT LED turns off.

- Detach clamp head from the conductor to be measured and turn off the instrument.
- Loosen a screw of battery cover and open it.
- Remove the exhausted batteries and insert 2 pcs of new 1.5V R6P batteries in the correct polarity.
- Fix battery cover and tighten the screw.

NOTE : Remove the batteries when the instrument is out of use for a long time. The exhausted batteries might leak electrolyte and corrode the inside.



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

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.

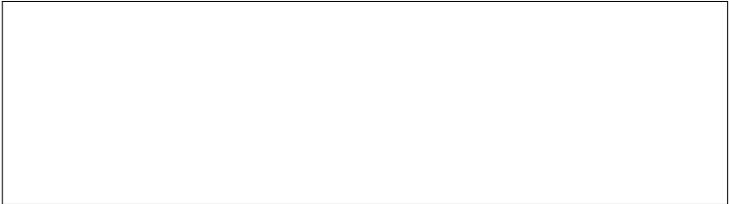
Check the following items before asking repair service.

- Check the battery connection, polarity, and capacity.
- Confirm if the over input, exceeding the specified range value, is not applied.
- Confirm that measured accuracy is adopted in the operating environment.
- Confirm that the body of this instrument has no cracks or any other damages.
- Check if the instrument is not affected by the strong noise generated from the equipment to be measured or measuring surroundings.

WARRANTY

MODEL 660 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 MODEL 660 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.