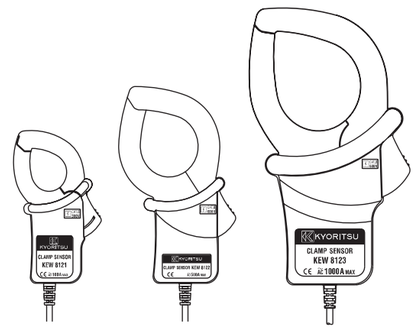
INSTRUCTION MANUAL



KEW 8121　KEW 8122　KEW 8123
KEW 8122WP

CLAMP SENSOR

CLAMP SENSOR Series

KEW 8121/8122/8122WP/8123

KYORITSU ELECTRICAL INSTRUMENTS WORKS, LTD.

DISTRIBUTOR

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1. Safety warnings

○ This instrument has been designed, manufactured and tested according to IEC 61010: Safety requirements for Electronic Measuring apparatus, and delivered in the best condition after passing quality control tests. This instruction manual contains warnings and safety rules which have to be observed by the user to ensure safe operation of the instrument and to maintain it in safe condition.
Therefore, read through these operating instructions before using the instrument.

⚠ WARNING
- Read through and understand instructions contained in this manual before using the instrument.
- Keep the manual at hand to enable quick reference whenever necessary.
- The instrument is to be used only in its intended applications.
  The operating instructions described in the manual must be observed.
- Understand and follow all the safety instructions contained in the manual.

It is essential that the above instructions are adhered to. Failure to follow the above instructions may cause injury and or instrument damage.

The symbol ⚠ indicated on the instrument, means that the user must refer to the related parts in the manual for safe operation of the instrument. It is essential to read the instructions wherever the ⚠ symbol appears in the manual.

⚠ **DANGER**	is reserved for conditions and actions that are likely to cause serious or fatal injury.
⚠ **WARNING**	is reserved for conditions and actions that can cause serious or fatal Injury.
⚠ **CAUTION**	is reserved for conditions and actions that can cause minor injury or instrument damage.

⚠ DANGER
- Never make measurement on a circuit in which the electrical potential exceeds AC300V when using KEW 8121 and AC600V using KEW 8122/ 8122WP and 8123.
- Do not make measurement when thunder rumbling. If the instrument is in use, stop the measurement immediately and remove the instrument from the equipment under test.
- Do not attempt to make measurement in the presence of flammable gasses.
  Otherwise, the use of the instrument may cause sparking, which can lead to an explosion.
- Use insulated protective gears, such as insulated gloves, for your safety when possible electric shock hazards are concerned.
- The transformer jaws are made of metal and their tips are not completely insulated. Be especially careful about the possible shorting where the measured object has exposed metal parts.
- Never use these sensors when their surface or your hand is wet. Do not wet the output connectors because they aren't dust/ water-proof.
- Do not exceed the maximum allowable input of any measuring range.

⚠ WARNING
- Never attempt to make any measurement, if any abnormal conditions are noted, such as broken case, and exposed metal parts.
- Do not install substitute parts or make any modification to the instrument.
  Return the instrument to your local Kyoritsu distributor for repair or re-calibration in case of suspected faulty operation.
- Always keep your fingers and hands behind the barrier on the instrument to avoid the possible shock hazard.

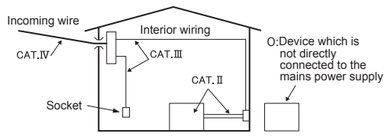
⚠ CAUTION
- Do not step on or pinch the cord to prevent the jacket of cord from being damaged.
- The output connector shall be removed or connected without clamping a conductor. Otherwise, it may cause a failure.
- Do not expose the instrument to direct sunlight, high temperatures, humidity or dew.
- Never give shocks, such as vibration or drop, which may damage the instrument.
- Use a damp cloth and mild detergent for cleaning the instrument. Do not use abrasives or solvents.

Safety symbols

⚠	Refer to the instructions in the manual.
⧈	Indicates instruments with double or reinforced insulation.
ϟ	Indicates that this instrument can clamp on live bare conductors when the voltage to be tested is below Circuit - Ground-to-Earth voltage against the indicated Measurement Category.
∼	Indicates AC

○Measurement Category:
To ensure safe operation of measuring instruments, IEC 61010 establishes safety standards for various electrical environments, categorized as O to CAT IV, and called measurement categories. Higher-numbered categories correspond to electrical environments with greater momentary energy, so a measuring instrument designed for CAT III environments can endure greater momentary energy than one designed for CAT II.

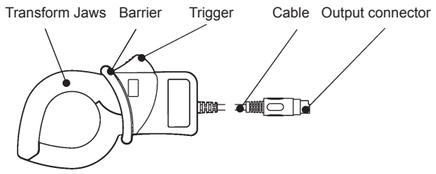
O : Circuits which are not directly connected to the mains power supply.
CAT II : Electrical circuits of equipment connected to an AC electrical outlet by a power cord.
CAT III : Primary electrical circuits of the equipment connected directly to the distribution panel, and feeders from the distribution panel to outlets.
CAT IV : The circuit from the service drop to the service entrance, and to the power meter and primary over-current protection device (distribution panel).



2. Features

- Clamp sensor for recording apparatus
- Designed to international safety standard IEC 61010-2-032 (Pollution Degree 2)
  KEW 8121　CAT.III 300V
  KEW 8122 /8122WP /8123　CAT.III 600V
- Designed to meet IEC 60529 IP 54. Possible to perform measurements under adverse weather.(KEW 8122WP only)

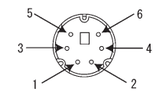
3. Instrument layout



4. DIN plug pin assignment

3: GND pin
5: Output signal pin
6: Sensor Signal pin
（Resistance between 3Pin and 6Pin:
8121:62kΩ　8122/ 8122WP:11kΩ　8123:24kΩ）
1, 2 and 4: No use

*Lower figure shows the pin assignment seeing the Clamp sensor from output connector part. The figure of the pin assignment of connection terminal is symmetrical to lower figure.

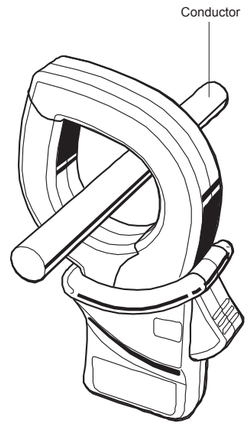


5. Operating instructions

⚠ DANGER
- Never make measurement on a circuit in which the electrical potential exceeds AC300V when using KEW 8121 and AC600V using KEW 8122/ 8122WP and 8123 in order to avoid possible shock hazard.
- The transformer jaws are made of metal and their tips are not completely insulated. Be especially careful about the possible shorting where the measured object has exposed metal parts.

⚠ CAUTION
- Take sufficient care to avoid shock, vibration or excessive force when handling the instrument. Otherwise, precisely adjusted transformer jaws will be damaged.
- When transformer jaws do not fully close, never try to close them by force, but make them free to move and try again. If a foreign substance is stuck in the jaw tips, remove it.
- Do not force to open the Transformer jaws when they are frozen.
- When making current measurements, keep the transformer jaws fully closed.
  Otherwise, accurate measurements cannot be taken.
  Maximum conductor size is as follows.
  KEW 8121　: 24mm in diameter
  KEW 8122WP　: 40mm in diameter
  KEW 8123　: 55mm in diameter
- Hold the inserting part (except for the cable) and disconnect the Output connector from the measuring instrument so as not to cause a break in the cord.

Measurement procedures
(1) Connect the Output connector to the Input terminal of the measuring instrument.
(2) Press the Trigger to open the transformer jaws and clamp onto one conductor.
Clamped conductor should be at the center of the closed transformer jaws.
(3) Ensure that the tips of transformer jaws are firmly closed.



6. Specifications

Model	KEW 8121	KEW 8122 /8122WP	KEW 8123
Rated current	AC100Arms(141Apeak)	AC500Arms(707Apeak)	AC1000Arms(1414Apeak)
Output voltage	AC0 ~ 500mV (AC500mV/AC100A):5mV/A	AC0 ~ 500mV (AC500mV/AC500A):1mV/A	AC0 ~ 500mV (AC500mV/AC1000A):0.5mV/A
Measuring range	AC0 ~ 100A	AC0 ~ 500A	AC0 ~ 1000A
Accuracy (Input: sine wave)	±2.0%rdg±0.3mV(50/60Hz) ±3.0%rdg±0.5mV(40 ~ 1kHz)	±2.0%rdg±0.3mV(50/60Hz) ±3.0%rdg±0.5mV(40 ~ 1kHz)	±2.0%rdg±0.3mV(50/60Hz) ±3.0%rdg±0.5mV(40 ~ 1kHz)
Temperature & humidity range (Guaranteed accuracy)	23±5ºC, relative humidity: 85% or less (no condensation)		
Operating temperature range	0 ~ 40ºC, relative humidity: 85% or less (no condensation)		
Storage temperature range	-20 ~ 60ºC, relative humidity: 85% or less (no condensation)		
Maximum permissible input	AC100Arms continuous(50/60Hz)	AC500Arms continuous (50/60Hz)	AC1000Arms continuous (50/60Hz)
Output impedance	Approx. 9.5Ω	Approx. 1.9Ω	Approx. 1.5Ω
Location for use	Altitude up to 2000m, Indoors		
Applicable standards	IEC 61010-1, IEC 61010-2-032 Measurement CAT. III (300Vrms) Pollution degree 2 IEC 61326-1(EMC), EN 5081(RoHS)	IEC 61010-1, IEC 61010-2-032 Measurement CAT. III (600Vrms) Pollution degree 2 IEC 61326-1(EMC), EN 50581(RoHS) IEC 60529 : 1999 IP54 (KEW 8122 WP only)	
Withstand voltage	AC3470Vrms (50/60Hz)for 5 sec. between Jaw and enclosure between enclosure and output connector between Jaw and output connector	AC5160Vrms (50/60Hz)for 5 sec. between Jaw and enclosure between enclosure and output connector between Jaw and output connector	
Insulation resistance	50MΩ or greater at 1000V between Jaw and enclosure between enclosure and output connector between Jaw and output connector		
Conductor Size	Approx.24mm in diameter (max.)	Approx.40mm in diameter (max.)	Approx.55mm in diameter (max.)
Dimension	97(L)×59(W)×26(D)mm	128(L)×81(W)×36(D)mm	170(L)×105(W)×48(D)mm
Cable length	Approx. 2m		
Output connector	MINI DIN 6PIN		
Weight	Approx. 150g	KEW 8122 Approx. 260g / KEW 8122WP Approx.270g	Approx. 360g
Accessories	Instruction manual Cable marker		
Option	MODEL 7146 (Banana ΦA4 adjuster plug) MODEL 7147 (Extension Cable) *Not available for KEW 8122WP		