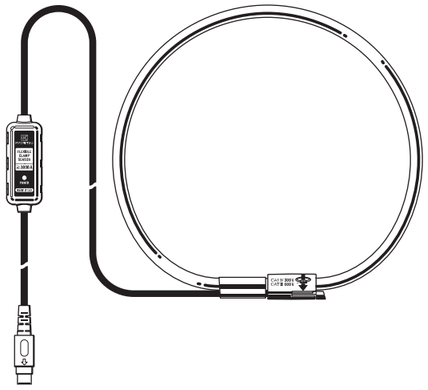
Instruction manual



FLEXIBLE CLAMP SENSOR

POWER CLAMP SENSOR Series

KEW 8133

KYORITSU ELECTRICAL
INSTRUMENTS WORKS, LTD.

DISTRIBUTOR

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1. Safety warnings

This clamp sensor has been designed and tested according to IEC61010-1: 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 clamp sensor and to maintain it in safe condition. Therefore, read through these operating instructions before starting to use the clamp sensor.

⚠ WARNING

- Read through and understand instructions contained in this manual before starting to use the clamp sensor.
- Keep the manual at hand to enable quick reference whenever necessary.
- The clamp sensor is to be used only in its intended applications.
- 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, clamp sensor damage and/or damage to equipment under test. KYORITSU is not liable for any damage resulting from the mishandling of the clamp sensor.

The symbol ⚠ indicated on the clamp sensor, means that the user must refer to the related parts in the manual for safe operation of the clamp sensor. 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 injury or instrument damage.

⚠ DANGER

- Do not make measurements on a circuit in which electrical potentials exceeding the following values exist: 300 V in CAT IV environment and 600 V in CAT III or lower environment.
- Use the sensor only as specified; otherwise, the protection supplied by the sensor can be compromised and damage itself or lead to a serious accident. Always verify the proper operation on a well-known power source before starting to use the sensor.

⚠ WARNING

- Stop using the sensor if any visible damage such as cracks on the circuit box or clamp part, or exposed internal metal parts are found.
- Do not disassemble, install substitute parts or make any modification to the clamp sensor. Return the clamp sensor to your local KYORITSU distributor for repair or re-calibration in case of suspected faulty operation.
- Do not use the clamp sensor if the sensor or your hand is wet; otherwise, electrical shock accident may occur.
- Comply with the local and national safety code and use the protective gears to prevent shock hazard.

⚠ CAUTION

- Do not step on or pinch the cord; it may damage the jacket of the cable.
- Do not expose the clamp sensor to direct sunlight, high temperature, humidity or dew. It may cause deformation or insulation degradation and cannot meet the original specification.
- Not to give shocks, such as vibration or drop, which may damage the clamp sensor, during transit or use.
- Use a damp cloth with water or neutral detergent for cleaning the clamp sensor. Do not use abrasives or solvents.
- This clamp sensor is not designed to be dust or waterproof. Do not use it dusty places or where the clamp sensor is likely to be wet. It can damage the sensor.
- Never pinch foreign matters or give vibrations to the joint part of the clamp sensor; otherwise, the joint part may be damaged and lead to inaccurate measurements.
- Do not bend or pull the root of the cable to prevent breaks in the cable.
- Never apply a current exceeding the measuring range for a long time. It may damage the clamp sensor.
- Do not connect/remove the connectors while the connected devices are on or clamping onto the conductor under test. Otherwise, the connected device or clamp sensor may be damaged.
- Accurate measurement may not be obtained in the vicinity of strong magnetic fields such as transformers, high-current circuits or wireless machines.

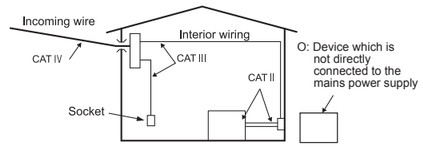
Meaning of symbols on the clamp sensor:

⚠	User must refer to the explanations in the instruction manual for safety reasons.
⧈	Clamp sensor with double or reinforced insulation
	Do not use for, attach to or detach from un-insulated hazardous live conductors, which may render electric shock, electric burn, or arc flash.
~	AC
	Crossed-out wheel bin symbol (according to WEEE Directive: 2002/ 96/ EC) indicating that this electrical product may not be treated as household waste, but that it must be collected and treated separately.

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.

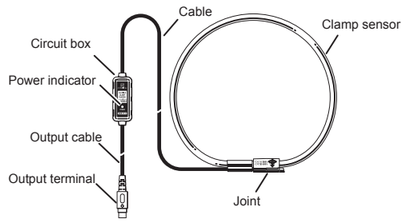
O (None, Other) : Circuits which are not directly connected to the mains power supply.
CAT II : Electrical circuits of equipment connected to an AC electrical outlet by a power cord.
CAT III : Primary electrical circuits of the equipment connected directly to the distribution panel, and feeders from 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).



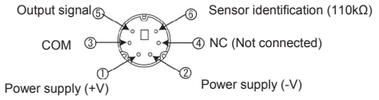
2. Features

- This is a clamp sensor which can measure AC current up to 3000 A.
- Flexible and lightweight is achieved by using air core coil for the sensor.

3. Clamp sensor layout



4. Pin assignment for output terminal



* Pin assignment at the connecting terminal of measuring instrument is symmetrical to above figure.

- Output signal passes between ③ and ⑤ of output terminal.
- This clamp sensor drives power via the output cable. Power supply of +3.0 to +5.5V is required between ① and ③ of output terminal and -3.0 to -5.5V is required between ② and ③.

5. Specifications

Model name	KEW 8133
Applicable models	KEW 6305 Power Meter KEW 6315 Power Quality Analyzer
Rated current	3000 A AC
Output voltage	500 mV AC/ 3000 A AC (0.167 mV/ A)
Measuring range	0 – 3000 A AC rms (5515 A Peak)
Accuracy (sine wave input)	±1.0%rdg±0.5mV (45 – 65 Hz) ±1.5%rdg±0.5mV (40 – 1 kHz) * ±3.0%rdg±0.5mV (max): electromagnetic environment on industrial site
Phase characteristics	45 – 65 Hz: within ±2° 40 – 1 kHz: within ±3°
Current consumption (at power supply ±5V)	2 mA (max)
Temp. & Hum. range (guaranteed accuracy)	23±5°C Relative humidity 85% or less (no condensation)
Operating Temp. & Hum. range	-10 to 50°C Relative humidity 85% or less (no condensation)
Storage Temp. & Hum. range	-20 to 60°C Relative humidity 85% or less (no condensation)
Max allowable input	3900 A AC (continuous)
Output impedance	100 Ω or less
Environmental condition	Altitude up to 2000 m, In-door use
Applicable standards	IEC61010-1 IEC61010-2-032 CAT III (600 V rms), CAT IV (300 V rms), Pollution degree 2 IEC 61326-1 (EMC)
Environmental standards	EU RoHS directive compliant
Withstand voltage	5160 V AC rms (50/ 60 Hz)/ 5 sec. Between circuit and clamp sensor
Insulation resistance	50 MΩ or more/ 1000 V Between circuit and clamp sensor
Measurable conductor size	Ø 170 mm (max)
Cable length	Approx. 2.7m: between circuit box and clamp sensor Approx. 0.2m: between circuit box and output terminal
Output terminal	MINI DIN 6PIN
Weight	Approx. 200 g
Accessories	Carrying bag (MODEL9095) Instruction manual Cable marker No.1 - No.3 (2pcs each)

6. Operating instructions

⚠ DANGER

- Never make measurements on a circuit in which electrical potentials exceeding the following values exist: 300 V in CAT IV and 600 V in CAT III or lower environment.

⚠ CAUTION

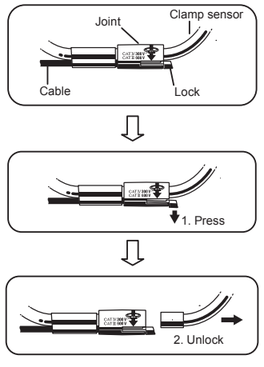
- The measurable conductor size is 170mm in diameter (max). Make sure that the clamp sensor is firmly closed for accurate measurement.
- When disconnecting the output terminal from the measuring instrument, do so by removing the plug and not by pulling the cable.

Note

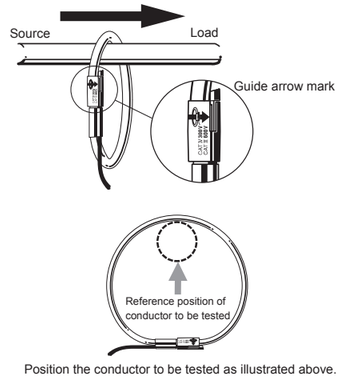
- This sensor has been specially designed and dedicated to our Power meter KEW 6305 and Power quality analyzer KEW 6315. It cannot be used with the other our products such as KEW 5010/ 5020.

6-1 Measurement method

(1) Connect the output terminal to the input terminal on the measuring instrument.
(2) Power on the measuring instrument.
(3) Unlock the Joint according to the following illustrations.



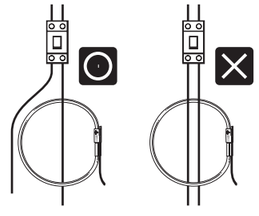
(4) Clamp onto one conductor to be tested. Locate the conductor as shown below while observing the direction of the Guide arrow mark - indicating the current flowing direction - marked on the Joint of the sensor to synchronize the phases of the current under test and of the output voltage.



Position the conductor to be tested as illustrated above.

(5) Ensure that the joint part of the clamp sensor is firmly locked.

- Joint part may be unlocked and disconnected if excessive force is applied to.
- Clamp onto just one conductor; measurements cannot be made when clamping single-phase (2-wire) or three-phase (3-wire) at the same time.

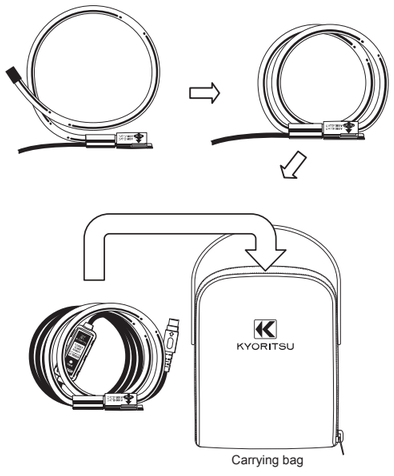


6-2 Connecting with KEW 6305/KEW 6315

Before connecting this sensor with KEW 6305 or KEW 6315, confirm that the internal firmware version is later than the one listed in the following table; otherwise, this sensor cannot be used with. The latest firmware is available on our website.

MODEL	Firmware version
KEW 6305	V1.10 or later
KEW 6315	V1.50 or later

For the detailed settings of the clamp sensor, please refer to the instruction manual for the applicable model.

7. Storage

Wind the cable of the sensor as shown below and lock the joint. Wind the black cable in the same way and store them in the carrying bag.