

9660

CLAMP ON SENSOR

Instruction Manual

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HIOKI

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Please visit our website at www.hioki.com for the following:

- Regional contact information
- The latest revisions of instruction manuals and manuals in other languages.
- Declarations of Conformity for instruments that comply with CE mark requirements.

Warranty

Warranty malfunctions occurring under conditions of normal use in conformity with the Instruction Manual and Product Precautionary Markings will be repaired free of charge. This warranty is valid for a period of one (1) year from the date of purchase. Please contact the distributor from which you purchased the product for further information on warranty provisions.

Introduction

Thank you for purchasing the HIOKI 9660 CLAMP ON SENSOR. To obtain maximum performance from the product, please read this manual first, and keep it handy for future reference.

Initial Inspection

When you receive the product, inspect it carefully to ensure that no damage occurred during shipping. If damage is evident, or if it fails to operate according to the specifications, contact your dealer or Hioki representative.

Preliminary Checks

- Before using the product the first time, verify that it operates normally to ensure that no damage occurred during storage or shipping. If you find any damage, contact your dealer or Hioki representative.
- Before using the product, make sure that the insulation on the cables is undamaged and that no bare conductors are improperly exposed. Using the product in such conditions could cause an electric shock, so contact your dealer or Hioki representative for repair.

Maintenance and Service

- To clean the product, wipe it gently with a soft cloth moistened with water or mild detergent. Never use solvents such as benzene, alcohol, acetone, ether, ketones, thinners or gasoline, as they can deform and discolor the case.
- If the product seems to be malfunctioning, contact your dealer or Hioki representative.

Safety

Follow these precautions to ensure safe operation and to obtain the full benefits of the various functions.

⚠ DANGER

This product is designed to comply with IEC 61010 Safety Standards, and has been thoroughly tested for safety prior to shipment. However, mishandling during use could result in injury or death, as well as damage to the product. However, using the product in a way not described in this manual may negate the provided safety features. Be certain that you understand the instructions and precautions in the manual before use. We disclaim any responsibility for accidents or injuries not resulting directly from product defects.

Measurement categories

This product complies with CAT III safety requirements. To ensure safe operation of measurement products, IEC 61010 establishes safety standards for various electrical environments, categorized as CAT II to CAT IV, and called measurement categories.

CAT II: Primary electrical circuits in equipment connected to an AC electrical outlet by a power cord (portable tools, household appliances, etc.)
CAT II covers directly measuring electrical outlet receptacles.

CAT III: Primary electrical circuits of heavy equipment (fixed installations) 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 overcurrent protection device (distribution panel).

Using a measurement product in an environment designated with a higher-numbered category than that for which the product is rated could result in a severe accident, and must be carefully avoided. Use of a measurement instrument that is not CAT-rated in CAT II to CAT IV measurement applications could result in a severe accident, and must be carefully avoided.

Safety Symbol

	Indicates cautions and hazards. When the symbol is printed on the product refer to a corresponding topic in the Instruction Manual.
	Indicates a double-insulated device.
	Indicates AC (Alternating Current).
	Indicates that the instrument may be connected to or disconnected from a live circuit

The following symbols in this manual indicate the relative importance of cautions and warnings.

⚠ DANGER Indicates that incorrect operation presents an extreme hazard that could result in serious injury or death to the user.

⚠ WARNING Indicates that incorrect operation presents a significant hazard that could result in serious injury or death to the user.

⚠ CAUTION Indicates that incorrect operation presents a possibility of injury to the user or damage to the product

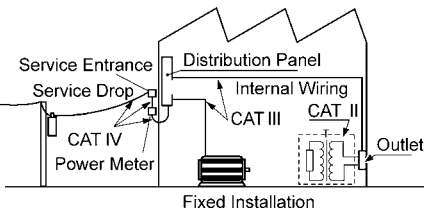
NOTE Advisory items related to performance or correct operation of the product.

Usage Notes

This manual contains information and warnings essential for safe operation of the product and for maintaining it in safe operating condition. Before using the product, be sure to carefully read the following safety notes.

⚠ DANGER

- To avoid short circuits and potentially life-threatening hazards, never attach the product to a circuit that operates at more than the 300 V AC.
- This product should only be connected to the secondary side of a breaker, so the breaker can prevent an accident if a short circuit occurs. Connections should never be made to the primary side of a breaker, because unrestricted current flow could cause a serious accident if a short circuit occurs.



⚠ WARNING

- To avoid electric shock, do not allow the product to get wet, and do not use it when your hands are wet.
- To avoid electric shock when measuring live lines, wear appropriate protective gear, such as insulated rubber gloves, boots and a safety helmet.
- Note that the product may be damaged if current exceeding the selected measurement range is applied for a long time.

⚠ CAUTION

- Do not store or use the product where it could be exposed to direct sunlight, high temperature or humidity, or condensation. Under such conditions, the product may be damaged and insulation may deteriorate so that it no longer meets specifications.
- Be careful to avoid dropping the product or otherwise subjecting them to mechanical shock, which could damage the mating surfaces of the jaws and adversely affect measurement.
- Keep the jaws and jaws slits free from foreign objects, which could interfere with clamping action.
- Keep the jaws closed when not in use, to avoid accumulating dust or dirt on the mating jaw surfaces, which could interfere with clamp performance.
- Avoid stepping on or pinching the cable, which could damage the cable insulation.
- To avoid damaging the cables, do not bend or pull the cables.

NOTE

- Accurate measurement may be impossible in the presence of strong magnetic fields, such as near transformers and high-current conductors, or in the presence of strong electromagnetic fields such as near radio transmitters.
- This product may cause interference if used in residential areas. Such use must be avoided unless the user takes special measures to reduce electromagnetic emissions to prevent interference to the reception of radio and television broadcasts.

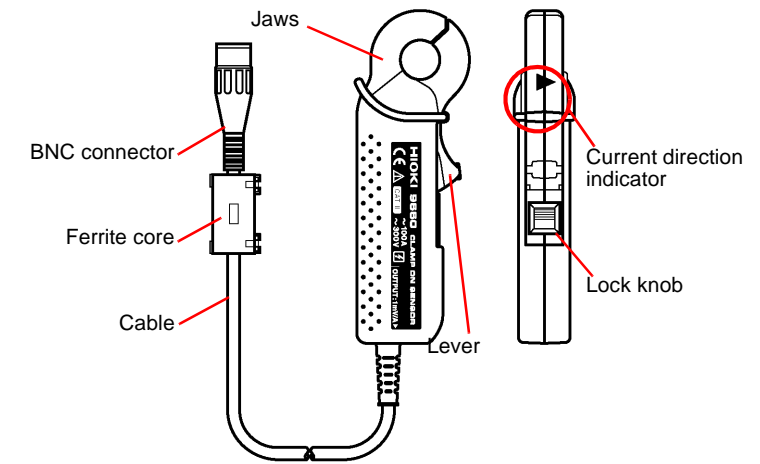
Specifications

Conditions of guaranteed accuracy	Guaranteed accuracy period: 1 year Guaranteed accuracy period after adjustment made by Hioki: 1 year Opening and closing of the Jaw : 10000 times or less Accuracy guarantee for temperature and humidity: 23 °C ± 5 °C (73 °F ± 9 °F), 80 % RH or less.
Rated measurement current	100 A AC
Output rate	1 mV AC/A
Amplitude accuracy	±0.3% rdg. ±0.02% f.s. (f.s.: 100 A, 45 Hz - 66 Hz, at jaw center)
Phase accuracy	Within ±1° (at 45 Hz - 5 kHz)
Amplitude frequency characteristics	Within ±1% at 40 Hz - 5 kHz (deviation from amplitude accuracy)
Effect of conductor position	Within ±0.5 % (deviation from center)
Effect of external electromagnetic field	0.1 A equivalent or lower (in an AC electromagnetic field of 400 A/m)
Maximum input current	130 A continuous (at 45 - 66 Hz, ambient temperature 50 °C)
Temperature coefficient	0.02 %rdg/°C
Dielectric strength	4290 V rms AC 50 Hz/60 Hz, 1 minute (jaw - hand held portion, jaw - output connector)
Maximum rated voltage to earth	AC 300 V rms or lower
Operating Temperature & Humidity	0 to 50 °C (32 - 122 °F), 80 %RH or lower (non-condensating)
Storage Temperature & Humidity	-10 to 60 °C (14 - 140 °F), 80 %RH or lower (non-condensating)
Operating Environment	Indoors, altitude up to 2000 m (6562-ft.)
Applicable Standards	Safety EN61010 Measurement Category III, Pollution Degree 2 (Anticipated Transient Overvoltage: 4000 V) EMC EN61326 (Class A)
Measurable conductor diameter	φ15 mm (0.59") or less
Cable length	Approx. 3 m (118.11")
Dimensions	Approx. 46 W × 135 H × 21 D mm (1.81" W × 5.31" H × 0.83" D) (excluding protrusions)
Mass	Approx. 230 g (8.1 oz.)
Accessory	Instruction Manual

f.s. : maximum display value or scale length
rdg.: reading value (The value currently being measured and indicated on the measuring product)

Parts Names

The 9660 is a voltage-output-type clamp-on sensor.



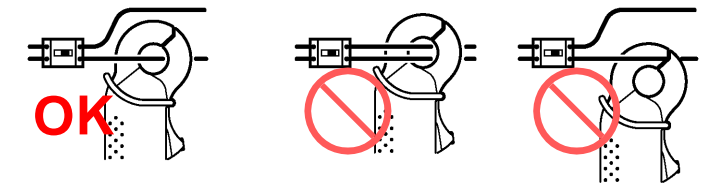
Measurement Procedures

⚠ CAUTION

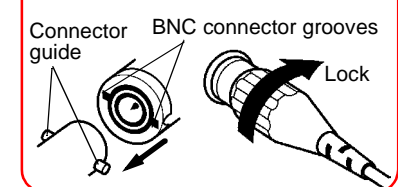
- When disconnecting the BNC connector, be sure to release the lock before pulling off the connector. Forcibly pulling the connector without releasing the lock, or pulling on the cable, can damage the connector.
- To prevent damage to the connected instruments and sensor, never connect or disconnect a sensor while the power is on.

NOTE

Attach the clamp around only one conductor. Single-phase (2-wire) or three-phase (3-wire) cables clamped together will not produce any reading.

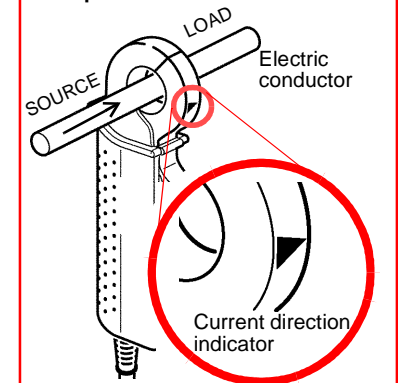


Connect the BNC connector.



1. Unlock the lever, if locked.
2. Engage the BNC connector grooves with the connector-guide projections, and turn the connector clockwise to lock the components.

Clamp the conductor.



3. Pull the lever toward you while pressing downward, and open the jaws.
4. Hold only one conductor at the jaws center with the current direction indicator pointing toward the load side.
5. Make sure the jaws is closed.
6. Slide the lock knob to lock the jaws ("LOCK" is displayed).

Position the clamp with the current direction indicator pointing toward the load side. (If installed in the opposite direction, the phase deviates 180 degrees.)

To remove the BNC connector, turn the connector counterclockwise and pull it out.