

CT6500

CLAMP ON SENSOR

Instruction Manual

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CT6500A980-02 12-10H



99 Washington Street
Melrose, MA 02176
Phone 781-665-1400
Toll Free 1-800-517-8431

Visit us at www.TestEquipmentDepot.com

The Declaration of Conformity for instruments that comply to CE mark requirements may be downloaded from the HIOKI website.

Introduction

Thank you for purchasing the HIOKI CT6500 CLAMP ON SENSOR. To obtain maximum performance from the product, please read this manual first, and keep it handy for future reference.

Overview

The CT6500 are voltage output type clamp on sensors, which are applicable to 500 A AC current measurements. These sensors can be used to measure alternating current on a live power line without the need to cut the wire. Easy operation and connection make them useful for measuring alternating current and power in various fields.

Inspection and Maintenance

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.

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.
- Pack the product so that it will not sustain damage during shipping, and include a description of existing damage. We do not take any responsibility for damage incurred during shipping.

Safety

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

⚠ 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. 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.

Safety Symbol

	In the manual, the ⚠ symbol indicates particularly important information that the user should read before using the product. The ⚠ symbol printed on the product indicates that the user should refer to a corresponding topic in the manual (marked with the ⚠ symbol) before using the relevant function.
	Indicates a double-insulated device.
	Indicates that the instrument may be connected to or disconnected from a live circuit.
	Indicates AC (Alternating Current).

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.

Symbol for Various Standards

	This symbol indicates that the product conforms to safety regulations set out by the EC Directive.
	WEEE marking: This symbol indicates that the electrical and electronic appliance is put on the EU market after August 13, 2005, and producers of the Member States are required to display it on the appliance under Article 11.2 of Directive 2002/96/EC (WEEE).

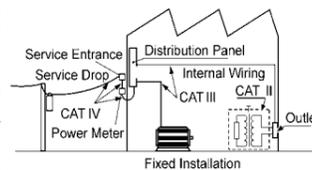
Measurement categories

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.



Usage Notes

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

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.

⚠ DANGER

- To avoid short circuits and potentially life-threatening hazards, never attach the product to a circuit that operates at more than the 600 V AC.
- The maximum rated voltage between input terminals and ground is 600V DC/AC. Attempting to measure voltages exceeding 600V with respect to ground could damage the product and result in personal injury.
- 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.
- To avoid electric shock, do not touch the portion beyond the protective barrier during use.

⚠ WARNING

- To avoid electric shock, do not allow the product to get wet, and do not use it when your hands are wet.
- Ensure that the input does not exceed the maximum input voltage or current to avoid product damage, short-circuiting and electric shock resulting from heat building.

⚠ WARNING

- Before using the product, make sure that the insulation on the cable 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.
- To avoid electric shock when measuring live lines, wear appropriate protective gear, such as insulated rubber gloves, boots and a safety helmet.

⚠ CAUTION

- Be careful to avoid dropping the product or otherwise subjecting them to mechanical shock, which could damage the mating surfaces of the core and adversely affect measurement.
- Keep the clamp jaws and core slits free from foreign objects, which could interfere with clamping action.
- 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.
- Measurements are degraded by dirt on the mating surfaces of the clamp-on sensor, so keep the surfaces clean by gently wiping with a soft cloth.

NOTE

- Correct 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.
- Poor phase characteristics prevent use in power measurement applications.
- 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.

Avoid the following locations that could cause an accident or damage to the instrument

	Exposed to direct sunlight		In the presence of corrosive or explosive gases
	Exposed to high temperature		Exposed to strong electromagnetic fields
	Exposed to water, oil, other chemicals, or solvents. Exposed to high humidity or condensation		Near electromagnetic radiators
	Exposed to high levels of particulate dust		Near induction heating systems (e.g., high-frequency induction heating systems and IH cooking utensils)
	Subject to vibration		

Specifications

Accuracy guaranteed for one year at 23±5°C (73±9°F), 80%RH or less., opening and closing of the sensor: maximum 10,000 times

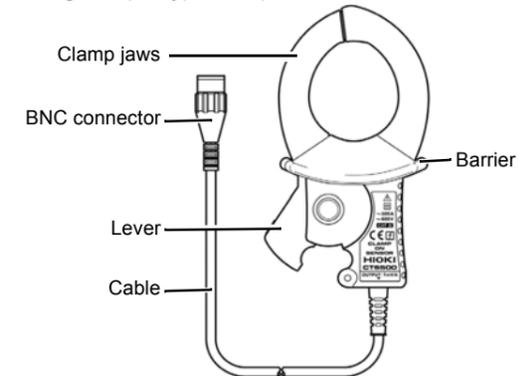
Rated primary current	500 A AC
Output voltage	1 mV AC/A
Amplitude accuracy	±1.5% rdg. ±0.03%f.s. (f.s.:500 A, 50 Hz - 60 Hz, at core center)
Amplitude frequency characteristics	Within ±5% at 40 Hz - 1 kHz (deviation from amplitude accuracy)
Effect of conductor position	Within ±3% (deviation from center)
Maximum input current	600 A continuous (at 45 - 66 Hz, ambient temperature 50°C)
Temperature coefficient	0.05%/rdg/°C
Dielectric strength	5312 V rms for 15 seconds (between electric circuit and core)
Maximum rated voltage to earth	600 V rms or lower, Measurement Category III (Anticipated Transient Overvoltage:6000 V)
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	altitude up to 2000 m (6562-ft.), Pollution Degree 2, Indoors

Applicable Standards	Safety EN61010 EMC EN61326 (Class A)
Measurable conductor diameter	φ 46 mm (1.81") or less
Cable length	Approx. 3 m (118.11")
Dimensions	Approx. 78W x 152H x 42D mm (3.07"W x 5.98"H x 1.65"D) (excluding protrusions)
Mass	Approx. 360 g (12.7 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 CT6500 is a voltage-output type clamp on sensor.



Measurement Procedures

Pre-Operation inspection

Before using the instrument the first time, verify that it operates normally to ensure that the no damage occurred during storage or shipping. If you find any damage, contact your dealer or Hioki representative.

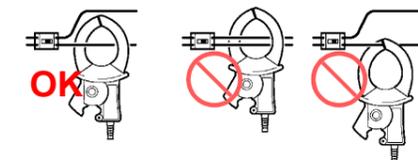
Check items	Diagnose and Solution
Is a clamp cracked or damaged?	
Isn't the cladding of the test lead torn?	Do not use if damage is present, as you could receive an electric shock. Contact your dealer or Hioki representative if you find any damage
Is there a wire break in the connector or sensor base?	

⚠ CAUTION

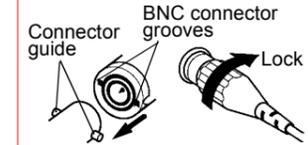
- When disconnecting the BNC connector, be sure to release the lock before pulling off the connector. Forcibly pulling the connector without releasing the lock, or pulling on the cable, can damage the connector.
- To prevent damage to the connected instruments and sensor, never connect or disconnect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



To remove the BNC connector, turn the connector counter-clockwise and pull it out.

- Engage the BNC connector grooves with the connector-guide projections, and turn the connector clockwise to lock the components.
- Open the clamp and hold only one conductor at the clamp center with the current direction indicator pointing toward the load side.
- Make sure the clamp core is closed.