HIOKI
9765
CLAMP ON SENSOR
INSTRUCTION MANUAL

August 2004 Revised edition 1 Printed in Japan
9765A980-01 04-08H

Introduction
Thank you for purchasing the HIOKI "Model 9765 CLAMP ON SENSOR." To obtain maximum performance from the product, please read this manual first, and keep it handy for future reference.

HIOKI E.E. CORPORATION
HEAD OFFICE
81 Koizumi, Ueda, Nagano 386-1192, Japan
TEL +81-268-28-0562 / FAX +81-268-28-0568
E-mail: os-com@hioki.co.jp URL http://www.hioki.co.jp/
HIOKI USA CORPORATION
6 Corporate Drive, Cranbury, NJ 08512, USA
TEL +1-609-409-9109 / FAX +1-609-409-9108

Overview
- This device is a voltage output-type clamp-on sensor for 5 A AC rated CT secondary AC current.
- The 9765 sensor is designed to measure alternating currents on a hot conductor without disconnecting it from the power line. It is easy to operate and suitable for electric current and power measurement 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 cannot accept 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
Mishandling this product during use could result in injury or death, as well as damage to the product. 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 AC (Alternating Current).
	Wear appropriate protective insulation (insulating rubber gloves and boots, helmet and etc.) when connecting and disconnecting from live electric circuits.

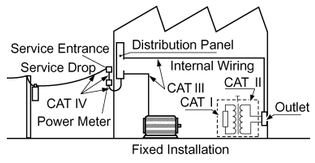
The following symbols in this manual indicate the relative importance of cautions and warnings.

⚠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	Indicates advisory items related to performance or correct operation of the product.

Measurement categories (Overvoltage categories)
Applicable electrical circuits for this device are CAT I circuits.
To ensure safe operation of measurement products, IEC 61010 establishes safety standards for various electrical environments, categorized as CAT I to CAT IV, and called measurement categories. These are defined as follows.

CAT I: Secondary electrical circuits connected to an AC electrical outlet through a transformer or similar product.
CAT II: Primary electrical circuits in equipment connected to an AC electrical outlet by a power cord (portable tools, household appliances, etc.)
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 product (distribution panel).

Higher-numbered categories correspond to electrical environments with greater momentary energy. So a measurement product designed for CAT III environments can endure greater momentary energy than a product designed for CAT II.



Fixed Installation

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.
Never use a CAT I measuring product in CAT II, III, or IV environments.
The measurement categories comply with the Overvoltage Categories of the IEC60664 Standards.

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

⚠DANGER
- To avoid short circuits and potentially life-threatening hazards, never attach the product to a circuit that operates at more than 30 VAC, or over bare conductors.
- 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.

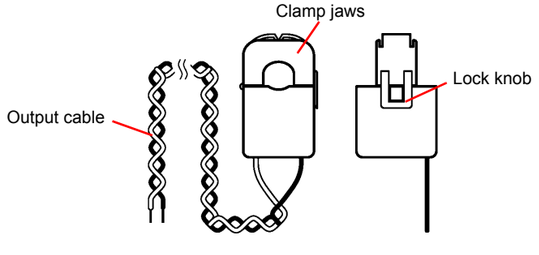
⚠WARNING
- Do not allow the product to get wet, and do not take measurements with wet hands. This may cause an electric shock.
- To avoid electric shock when measuring live lines, wear appropriate protective gear, such as insulated rubber gloves, boots and a safety helmet.
- There may be live parts exposed in or around the location where this device is installed. Be sure to wear insulated gear when installing this device.

⚠CAUTION
- Note that the product may be damaged if the applied current exceeds the rated primary current.
- 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 core and adversely affect measurement.
- Keep the clamp jaws and core slits free from foreign objects, which could interfere with clamping action.
- Keep the clamp closed when not in use, to avoid accumulating dust or dirt on the mating core surfaces, which could interfere with clamp performance.
- 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.
- Do not allow more than 2 kg of tensile force to be applied to the output cable.

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.

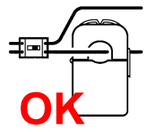
Preliminary Checks
⚠WARNING
Before using the product, make sure that the insulation on the cable is undamaged and that no bare conductors are improperly exposed. Using the product in such conditions could cause an electric shock, so contact your dealer or Hioki representative for repair.

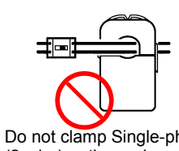
Before using the product the first time, verify that it operates normally to ensure that the no damage occurred during storage or shipping. If you find any damage, contact your dealer or Hioki representative.

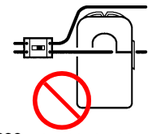
Names of Parts


Measurement Procedures
⚠CAUTION
To prevent damage to the tester and the 9765, never connect or disconnect the output cable while the tester's power is on, or while the 9765 is clamped around a conductor.

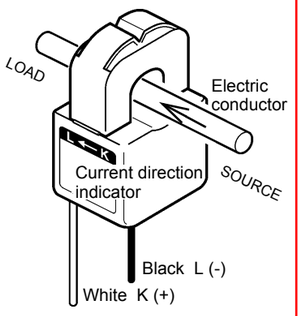
NOTE
Attach the clamp around only one conductor. Single-phase (2-wire) or three-phase (3-wire) cables clamped together will not produce any reading.




Do not clamp Single-phase (2-wire) or three-phase (3-wire) cables together.


Avoid pinching cables

Clamp the conductor.



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

1. *Confirm that the tester connected to the 9765 is powered off.*
2. *Connect the cable to the input terminal of the tester. Take caution against cable polarity. Opposite polarity will cause a 180 degrees phase change.*
3. *Turn on the tester.*
4. *If the lock knob is locked, unlock it.*
5. *Open the clamp jaws. Orient the current direction indicator to the load side and clamp one conductor at the center of the clamp jaws.*
6. *Close the clamp jaws and lock it. Be sure to lock the clamp jaws since it has no spring.*

Specifications
Accuracy guaranteed for one year at 23±5°C (73±9°F), 80%RH or less.
(Endurance number of the core opening and closing part: 100 times)

Rated primary current	5 AACf.s.
Output voltage	20 mVAC/A
Amplitude accuracy	±2%f.s. (45 to 66 Hz, Sine wave) ±5%f.s. (66 to 5 kHz, Sine wave)
Phase accuracy	Within ±3% (45 to 66 Hz, Sine wave)
Effect of external electromagnetic field	±3%f.s. or lower (in an AC electromagnetic field of 400 Arms/m, 50/60 Hz)
Maximum input current	10 A continuous (45 to 66 Hz, ambient temperature 50°C)
Temperature coefficient	0.03%f.s./°C
Dielectric strength	2300 Vrms for 1 minute (between electric circuit and clamp jaws)
Maximum rated voltage to earth	30 Vrms or lower (Insulated conductor of CAT I)
Operating temperature & humidity	0 to 50°C (32 to 122°F), 80%RH or less (non-condensating)
Storage temperature & humidity	-10 to 50°C (14 to 122°F), 80%RH or less (non-condensating)
Operating environment	Indoors, up to 2000 m (6562-ft.) ASL
Measurable conductor diameter	Less than ϕ10 mm (0.39")
Output cable	Approx. 3 m (118.11"), UL1007 AWG22
Dimensions	Approx. 26W × 38.5H × 23D mm (1.02"W × 1.52"H × 0.91"D) (excluding protrusions)
Mass	Approx. 70 g (2.5 oz.)
Accessories	Instruction manual

f.s. :maximum display value or scale length (This is usually the maximum value of the currently selected range.)