

CT9667-01

CT9667-02

CT9667-03

AC FLEXIBLE
CURRENT SENSOR

Instruction Manual

EN

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CT9667B981-01



600453101

www.hioki.com/



All regional
contact
information

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2402 EN

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Europe only

•EU declaration of conformity can be downloaded from our website.

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Warranty Certificate

Model	Serial number	Warranty period
		One (1) year from date of purchase (____ / ____)
Customer name: _____		
Customer address: _____		
Important • Please retain this warranty certificate. Duplicates cannot be reissued. • Complete the certificate with the model number, serial number, and date of purchase, along with your name and address. The personal information you provide on this form will only be used to provide repair service and information about Hioki products and services.		
This document certifies that the product has been inspected and verified to conform to Hioki's standards. Please contact the place of purchase in the event of a malfunction and provide this document, in which case Hioki will repair or replace the product subject to the warranty terms described below.		
Warranty terms 1. The product is guaranteed to operate properly during the warranty period (one [1] year from the date of purchase). If the date of purchase is unknown, the warranty period is defined as one (1) year from the date (month and year) of manufacture (as indicated by the first four digits of the serial number in YYMM format). 2. If the product came with an AC adapter, the adapter is warranted for one (1) year from the date of purchase. 3. The accuracy of measured values and other data generated by the product is guaranteed as described in the product specifications. 4. In the event that the product or AC adapter malfunctions during its respective warranty period due to a defect of workmanship or materials, Hioki will repair or replace the product or AC adapter free of charge. 5. The following malfunctions and issues are not covered by the warranty and as such are not subject to free repair or replacement: -1. Malfunctions or damage of consumables, parts with a defined service life, etc. -2. Malfunctions or damage of connectors, cables, etc. -3. Malfunctions or damage caused by shipment, dropping, relocation, etc., after purchase of the product -4. Malfunctions or damage caused by inappropriate handling that violates information found in the instruction manual or on precautionary labeling on the product itself -5. Malfunctions or damage caused by a failure to perform maintenance or inspections as required by law or recommended in the instruction manual -6. Malfunctions or damage caused by fire, storms or flooding, earthquakes, lightning, power anomalies (involving voltage, frequency, etc.), war or unrest, contamination with radiation, or other acts of God -7. Damage that is limited to the product's appearance (cosmetic blemishes, deformation of enclosure shape, fading of color, etc.) -8. Other malfunctions or damage for which Hioki is not responsible 6. The warranty will be considered invalidated in the following circumstances, in which case Hioki will be unable to perform service such as repair or calibration: -1. If the product has been repaired or modified by a company, entity, or individual other than Hioki -2. If the product has been embedded in another piece of equipment for use in a special application (aerospace, nuclear power, medical use, vehicle control, etc.) without Hioki's having received prior notice 7. If you experience a loss caused by use of the product and Hioki determines that it is responsible for the underlying issue, Hioki will provide compensation in an amount not to exceed the purchase price, with the following exceptions: -1. Secondary damage arising from damage to a measured device or component that was caused by use of the product -2. Damage arising from measurement results provided by the product -3. Damage to a device other than the product that was sustained when connecting the device to the product (including via network connections) 8. Hioki reserves the right to decline to perform repair, calibration, or other service for products for which a certain amount of time has passed since their manufacture, products whose parts have been discontinued, and products that cannot be repaired due to unforeseen circumstances.		
HIOKI E.E. CORPORATION http://www.hioki.com 18-07 EN-1		

Introduction

Thank you for purchasing the Hioki CT9667-01, CT9667-02, CT9667-03 AC Flexible Current Sensor. To obtain maximum performance from the device, please read this manual first, and keep it handy for future reference.

Be sure to also read the separate booklet “Current Sensor Operating Precautions” before use.

Use Environment of the Device



WARNING



Although part of this device (the flexible loop part only) is designed to resist the ingress of dust and dripping water, it is not entirely waterproof or dustproof, so to avoid electric shock or damage, do not use it in a wet or dusty environment.

Troubleshooting

If the device seems to be malfunctioning, confirm that the batteries are not discharged before contacting your authorized Hioki distributor or reseller.

Overview

This device measures large currents of up to 5000 A AC. The air core coil makes the sensor unit highly flexible, allowing it to be used for clamping in narrow spaces with crowded wiring.

Specifications

General Specifications

	CT9667-01	CT9667-02	CT9667-03
Operating environment	Indoors, pollution degree 2, altitude up to 2000 m (6562 ft.)		
Operating temperature and humidity			
Temperature	−25°C to 65°C (−13°F to 149°F)		−10°C to 50°C (14°F to 122°F)
Humidity (no condensation)	Less than 40°C (104°F): 80% RH or less From 40°C to 65°C (104°F to 149°F): Maximum relative humidity declining linearly from 80% RH at 40°C (104°F) to 25% RH at 65°C (149°F)		From 40°C to 50°C (104°F to 122°F): Maximum relative humidity declining linearly from 80% RH at 40°C (104°F) to 50% RH at 50°C (122°F)
(When using batteries, AC adapter, or external power supply, depends on the power supply's specifications.)			
Storage temperature and humidity	−30°C to 70°C (−22°F to 158°F), 80% RH or less (no condensation)		−20°C to 60°C (−4°F to 140°F), 80% RH or less

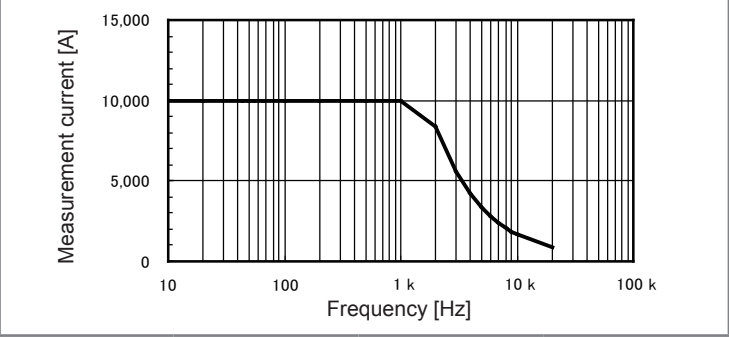
	CT9667-01	CT9667-02	CT9667-03
Dustproof and waterproof	IP54 (EN60529) (Flexible loop only)		—
Standards	Safety: EN61010 EMC: EN61326, EN61000-3-2, EN61000-3-3		
Dielectric strength	8.54 kV AC rms for 1 minute (at 50 Hz/ 60 Hz) (between flexible loop and output connector)		
Power supply	• LR6 (AA size) alkaline battery × 2 Rated supply voltage: 1.5 V DC × 2 Maximum rated power: 35 mVA • 9445-02, 9445-03 (for EU), Z1012 AC adapter (option) Rated supply voltage: 100 V to 240 V AC (Voltage fluctuations of ±10% from the rated supply voltage are taken into account.) Rated supply frequency: 50 Hz/60 Hz Anticipated transient overvoltage: 2500 V • External power supply Rated supply voltage: 5 V to 15 V DC Maximum rated power: 0.2 VA		
Continuous operating time	When LR6 (AA size) alkaline battery × 2 are used (at 23°C) Approx. 168 hours (7 days)		
Dimensions (circuit box)	Approx. 35W × 120.5H × 34D mm (1.38"W × 4.74"H × 1.34"D) (excluding protruding parts)		
Mass	Approx. 280 g (9.9 oz.)		Approx. 470 g (16.6 oz.)
	(Flexible loop + circuit box, including batteries)		
Cable length	Approx. 2 m (78.74") (between flexible loop and circuit box) Approx. 1 m (39.37") (output cable)		
Flexible loop length	Approx. 390 mm (15.35")	Approx. 630 mm (24.80")	Approx. 930 mm (36.61")
Flexible loop cross-sectional diameter	Approx. φ7.4 mm (0.29")		Approx. φ13 mm (0.51")
Flexible loop end cap diameter	Approx. φ9.9 mm (0.39")		Approx. φ20 mm (0.79")
Product warranty period	1 year		
Accessories	• LR6 (AA size) alkaline battery × 2 • Instruction Manual • Current Sensor Operating Precautions		
Options	• 9445-02 AC Adapter • 9445-03 AC Adapter (for EU) • Z1012 AC Adapter (Operating temperature: −40°C to 70°C [−40°F to 158°F]) • 9704 Conversion Adapter (BNC female to banana male)		

Input Specifications, Output Specifications, and Measurement Specifications

(1) Basic specifications

	CT9667-01	CT9667-02	CT9667-03
Output connector	BNC		
Rated measurement current	500 A AC (500 A range) 5000 A AC (5000 A range)		
Output rate	1 mV/A (500 A range) 0.1 mV/A (5000 A range)		
Maximum measurement current	RMS value, continuous: see "Frequency derating" below. Peak value: under the RMS value conditions described above. 1500 A peak (500 A range) 15000 A peak (5000 A range)		
Frequency band	10 Hz to 20 kHz (within ±3 dB)		
Output impedance	50 Ω (±5%)		
Measurable conductor diameter	φ100 mm (3.94") or less	φ180 mm (7.09") or less	φ254 mm (10.00") or less
Maximum rated voltage to earth	1000 V AC (Measurement category III) 600 V AC (Measurement category IV) (Anticipated Transient Overvoltage: 8000 V)		

Frequency derating (continuous, design values)



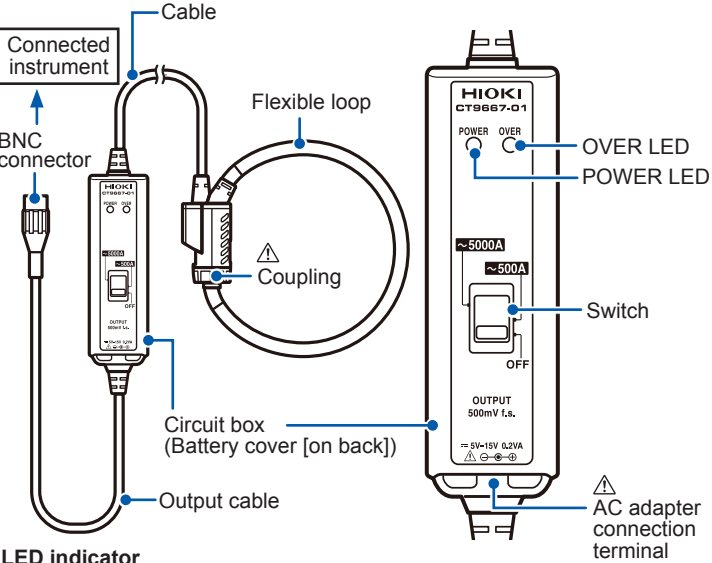
(2) Accuracy specifications

f.s. (range): The currently selected range.
rdg. (reading or displayed value): The value currently being measured and indicated on the measuring instrument.

	CT9667-01	CT9667-02	CT9667-03
Conditions of guaranteed accuracy	Guaranteed accuracy period:		1 year
	Opening and closing of the flexible loop:		10000 times or less
	Accuracy guarantee for temperature and humidity:		23°C±5°C (73°F±9°F), 80% RH or less
	(With no flexible loop stretching, damage, or cross-sectional deformation in shape)		
Measurement accuracy			
Amplitude accuracy	±2% rdg. ±0.3% f.s. (at 45 Hz to 66 Hz, at flexible loop center)		
Phase accuracy	Within ±1.0° (at 45 Hz to 66 Hz)		
Temperature coefficient	In the operating temperature range, add 0.05 × specified accuracy/°C (at temperatures other than 23°C ±5°C).		
Effect of conductor position	Within ±3% (deviation from center)		
Effect of external magnetic field	2.4% f.s. or less. (400 A/m, 50 Hz/ 60 Hz)		
Offset voltage	±1 mV or less		

Parts Names

Example: CT9667-01



LED indicator

	Lights up (Green)	Lights up (Red)	Turns off
POWER LED	Power on.	Battery life is low.*	There is no battery life remaining*, or power off.
OVER LED	-	Range exceeded (peak value of at least 3 × range).	Normal measurement, or power off.

* When using battery power.

Measurement Methods

Inspection Before Use

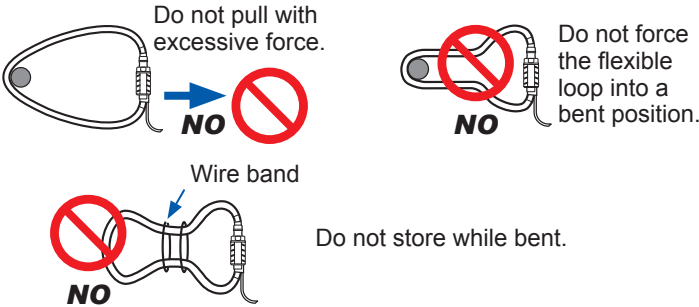
Verify that the device operates normally to ensure that no damage occurred during storage or shipping. If you find any damage, contact your authorized Hioki distributor or reseller.

Check Items	Remedy
Is the flexible loop or cable insulation torn, or is any metal exposed?	Device damage may result in electric shock. Contact your authorized Hioki distributor or reseller.
Is there a broken connection involving the connector or sensor base?	Broken connections will make proper measurement impossible. Discontinue use and contact your authorized Hioki distributor or reseller.
When the switch is placed in any position other than OFF, does the POWER LED turn green?	Lights up (red): Battery life is low. → Replace the batteries soon. Turns off: There is no battery life remaining. → Replace the batteries immediately.

- Attach the clamp around only one conductor. If you clamp single-phase (2-wire) or three-phase (3-wire) conductors together, the device will not be able to make a measurement.



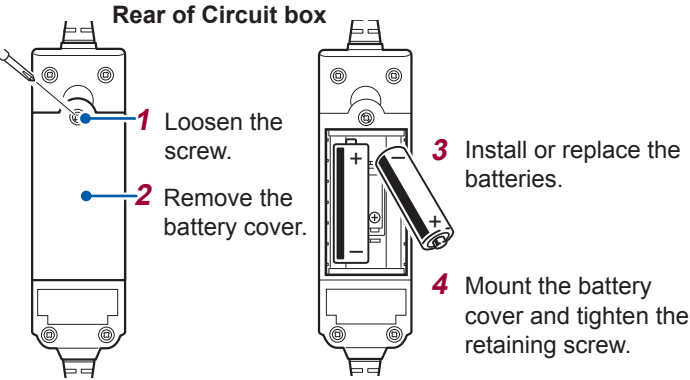
- When using an AC adapter, always use the optional AC adapter.
- When using the AC adapter and batteries at the same time, the AC adapter takes precedence. Switching power supplies during measurement may introduce noise into the device's output.
- When using the AC adapter for continuous monitoring, we recommend that you also use batteries to prevent interruptions due to instantaneous power outages.
- After use, always turn off the power.
- Be aware of the following precautions to avoid damage to the device:



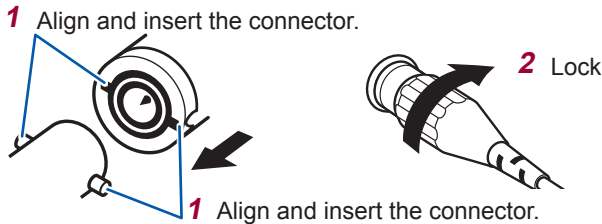
1 Insert/ Replace batteries

Necessary tool: • Two LR6 (AA size) alkaline batteries
• Phillips screwdriver

Turn off the switch on the circuit box and then disconnect the AC adapter.

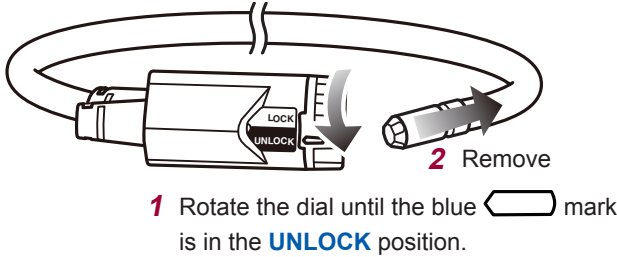


2 Connect the BNC connector to the connected instrument

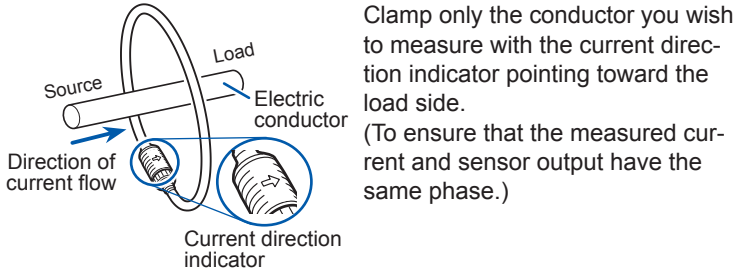


3 Disconnect the flexible loop from the coupling

Example: CT9667-01, CT9667-02

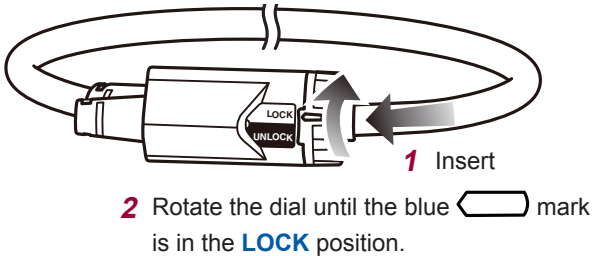


4 Clamp the conductor



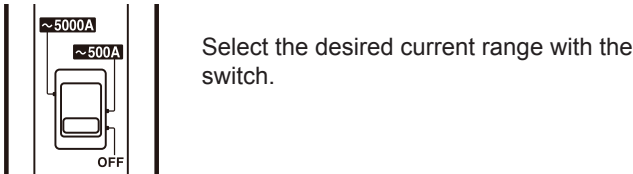
5 Connect the flexible loop to the coupling

Example: CT9667-01, CT9667-02



Pulling on the flexible loop with a large amount of force while in the locked state may cause it to become disconnected from the coupling.

6 Select the range depending on the current value to be measured



Memo