HIOKI

CT7044
CT7045
CT7046

AC FLEXIBLE CURRENT SENSOR

Instruction Manual

EN

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CT7044A961-02

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HIOKI

www.hioki.com/

All regional contact information

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Warranty Certificate

HIOKI

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 warrantied 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 CT7044, CT7045, CT7046 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 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, contact your authorized Hioki distributor or reseller.

Overview

This device measures large currents of up to 6000 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.
This current sensor has a Hioki PL14 output connector, enabling it to be automatically recognized when connected to a compatible instrument for simple setup.

Specifications

General Specifications

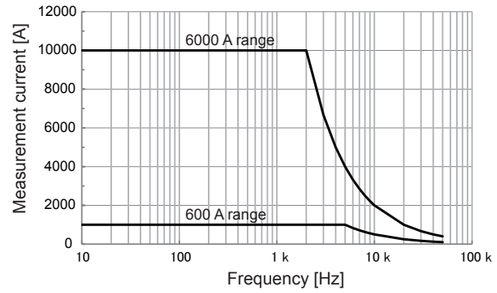
	CT7044	CT7045	CT7046
Operating environment	Indoors, pollution degree 2, altitude up to 2000 m (6562 ft.)		
Operating temperature and humidity			
Temperature	−25°C to 65°C (−13°F to 149°F)		
Humidity	Less than 40°C (104°F): 80% RH or less		
	From 40°C to 65°C (104°F to 149°F): Maximum relative humidity declining linearly from 80% RH at 40°C (104°F) to 25% RH at 65°C (149°F)		
	(no condensation)		
Storage temperature and humidity	−30°C to 70°C (−22°F to 158°F), 80% RH or less		
	(no condensation)		
Dustproof and waterproof	IP54 (EN60529) (when sensor is connected to a compatible instrument)		
Standards	Safety: EN61010 EMC: EN61326		
Dielectric strength	8.54 kV AC rms for 1 minute (at 50 Hz/ 60 Hz) (between flexible loop and output connector)		
Power consumption category	Sensor power consumption category: 1 (See the continuous operating time for the instrument to which the device is to be connected.)		
Dimensions (circuit box)	Approx. 25W × 72H × 20D mm (0.98″W × 2.83″H × 0.79″D) (excluding protruding parts)		
Mass	Approx. 160 g (5.6 oz.)	Approx. 174 g (6.1 oz.)	Approx. 186 g (6.6 oz.)
Cable length	Approx. 2300 mm (90.55″) (between flexible loop and circuit box) Approx. 200 mm (7.87″) (output cable)		
Flexible loop length	Approx. 390 mm (15.35″)	Approx. 630 mm (24.80″)	Approx. 870 mm (34.25″)
Flexible loop cross-sectional diameter	Approx. ϕ7.4 mm (ϕ0.29″)		
Flexible loop end cap diameter	Approx. ϕ9.9 mm (ϕ0.39″)		
Product warranty period	1 year		
Accessories	• Instruction Manual • Current Sensor Operating Precautions		

Input Specifications, Output Specifications, and Measurement Specifications

(1) Basic specifications

	CT7044	CT7045	CT7046
Output connector	Hioki PL14		
Rated measurement current	6000 A AC		
Internal ranges	600 A AC / 6000 A AC *Range can be controlled from a connected instrument.		
Maximum measurement current	RMS value, continuous: see "Frequency derating" below.		
	Peak value: 1500 A peak (600 A range) : 15000 A peak (6000 A range) under the RMS value conditions described below. 1000 A or less and 5×10^6 A·Hz or less (600 A range) 10000 A or less and 2×10^7 A·Hz or less (6000 A range)		
Frequency band	10 Hz to 50 kHz (within ±3 dB)		
Measurable conductor diameter	ϕ100 mm (ϕ3.94″) or less	ϕ180 mm (ϕ7.09″) or less	ϕ254 mm (ϕ10.00″) 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)



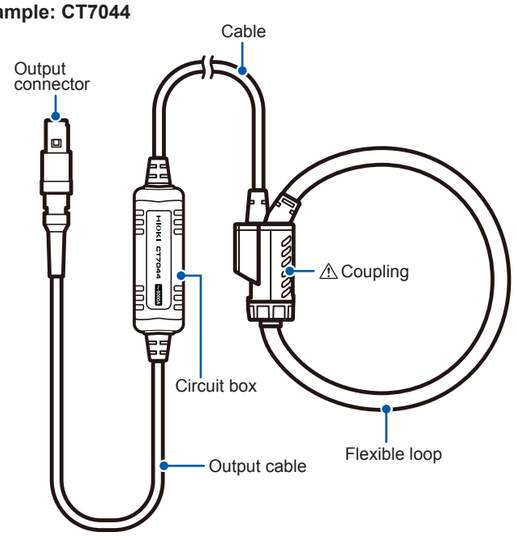
(2) Accuracy specifications

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

	CT7044	CT7045	CT7046
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	±1.5% rdg. ±0.25% f.s. (Full-scale value is determined by the selected internal range.) (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 ±3.0% (deviation from center)		
Effect of external magnetic field	2.0% f.s. or less.		2.5% f.s. or less.
	(400 A/m, 50 Hz/ 60 Hz)		
Offset voltage	±1 mV or less		

Parts Names

Example: CT7044



Measurement Methods

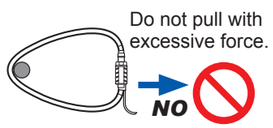
Inspection Before Use

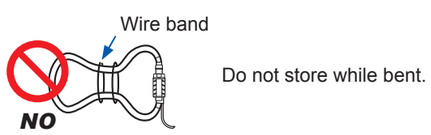
Verify that the device operates normally to ensure that no damage occurred during storage or shipping. If you find any damage, contact your authorized Hioki distributor or reseller.

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.

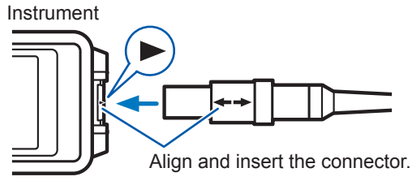
- Attach the clamp around only one conductor. If you clamp single-phase (2-wire) or three-phase (3-wire) conductors together, the device will not be able to make a measurement.

- Be aware of the following precautions to avoid damage to the device:



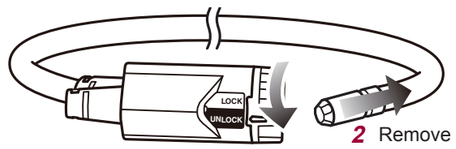


1 Connect the output connector to the connected instrument



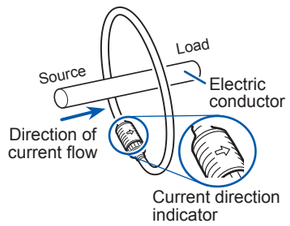
Align the arrow on the device's output connector with the ▶ on the connected instrument's sensor input connector and insert the connector.

2 Disconnect the flexible loop from the coupling



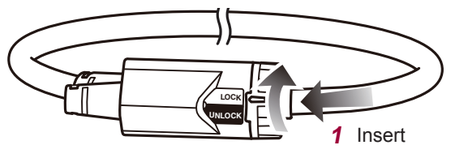
1 Rotate the dial until the blue ⬭ mark is in the **UNLOCK** position.

3 Clamp the conductor



Clamp only the conductor you wish to measure with the current direction indicator pointing toward the load side.
(To ensure that the measured current and sensor output have the same phase.)

4 Connect the flexible loop to the coupling



2 Rotate the dial until the blue ⬭ mark is in the **LOCK** position.

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.

5 Once measurement is complete, remove the device from the conductor and disconnect it from the instrument.

When disconnecting the device from the instrument, grip the tip of the output connector (the part with the arrow) and pull the connector straight out.

Pulling forcibly on the base of the connector may damage the device.

Memo