

# HIOKI

## AC LEAKAGE CLAMP METER CM4002, CM4003

NEW

Solve GFCI and RCD problems quickly

# Prevent unexpected downtime! Identify potential problems and avoid large problems



German iF Design Award



φ 40 mm

AC A: 0.060 mA to 200.0 A

CAT IV: 300 V  
CAT III: 600 V (CM4002)

CAT III: 300 V (CM4003)

IEC/EN 61557-13: Class2, 30 A/m



### Easy visualization of intermittent trip events

Connect the WIRELESS ADAPTER Z3210 to add wireless communications. The CM4002 and CM4003 allows you to track changes in leakage current over time, helping to identify potential problems before they turn into major failures.



WIRELESS ADAPTER  
Z3210

## Identifying intermittent GFCI and RCD trips without taking equipment off line

Streamline the process of identifying ground-fault circuit interrupter (GFCI) and residual-current device (RCD) trips with the **WIRELESS ADAPTER Z3210**, the **CM4002/CM4003<sup>\*1</sup>**, and **GENNECT Cross**, a free app from Hioki.

<sup>\*1</sup>: CM4001 is also supported.

### WIRELESS ADAPTER Z3210 (sold separately)



×

GENNECT Cross



Z3210  
To website

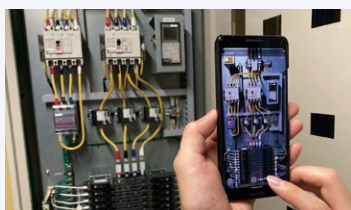
When you need speed and reliability  
Regular inspections of GFCIs and RCDs

### Photo drawing function

Record measurement locations and measured values together. Identify trip locations quickly and reliably!

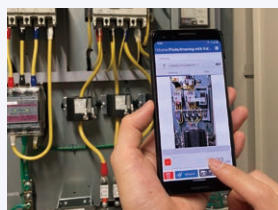
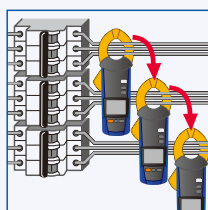
#### STEP 1 Take a photo.

Photograph the measurement site.



#### STEP 2 Measure and record.

Measure each circuit's leakage current. Tap measurement locations on the tablet to record measured values.



#### STEP 3 Identify trip locations.

Identify trip locations by repeating Steps 1 and 2 above while moving from upstream to downstream locations.



You can output a PDF report with recorded data right there on the spot.



Measuring densely-wired downstream distribution panels

AC LEAKAGE CLAMP METER  
CM4001

Product  
information



Dealing with unexpected events  
Identifying intermittent trip events

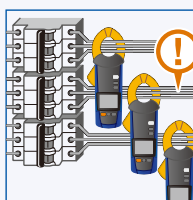
### Event recording function

The meter records event information (times and current values) in its internal memory. Collect data using a tablet and check for trips!

#### STEP 1 Configure settings.

- Install a clamp meter on each circuit
- Set the recording conditions using the tablet (threshold value<sup>\*2</sup> and recording time) and start event recording

<sup>\*2</sup>: Level of leakage current you wish to detect



#### STEP 2 Monitor and record (install leakage clamp meters).



##### Recording<sup>\*3</sup>

- Trip start times
- Trip stop times
- Maximum current values



There's no need to maintain a connection to the tablet during recording.

<sup>\*3</sup>: Recording time: Up to 30 days (Battery operation is limited by the life of the batteries. Only the CM4003 can be powered by an external power supply.)  
Number of recorded events: Up to 999 (CM4002/CM4003; CM4001: 99)

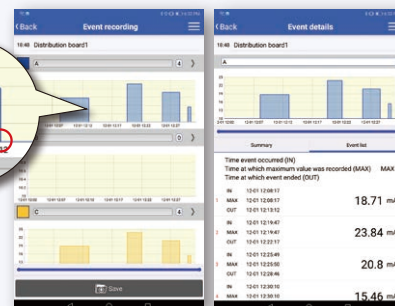
#### STEP 3 Collect and review data.

Import data using GENNECT Cross.

Maximum leakage values

Trip start times

Trip stop times



#### STEP 4 Identify trip locations.

Identify trip locations by repeating Steps 2 and 3 above.



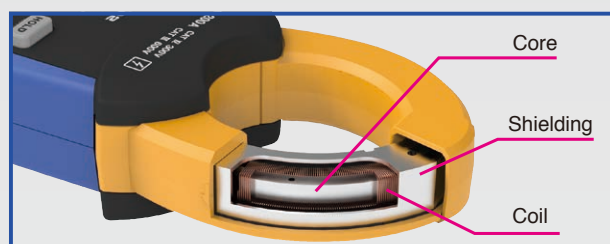
# High-accuracy, high-reliability leakage current measurement

IEC/EN 61557-13 compliant

## Detect minuscule leakage currents with a newly designed sensor.

- The core and shielding are constructed from high-permeability magnetic materials
- The CT sensor features a uniform coil

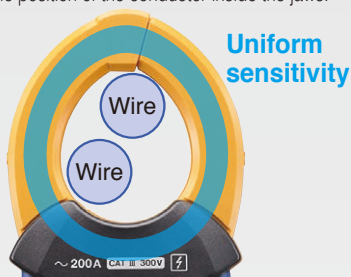
The CM4002/CM4003 complies with the performance standard set forth in IEC/EN61557-13, an international standard on leak clamp meters. This design makes possible high-accuracy, high-reliability measurement.



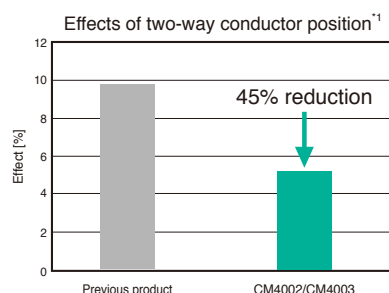
## Features

### 1. Uniform measurement sensitivity inside jaws

When affixed around a wire, sensitivity is uniform regardless of the position of the conductor inside the jaws.



Zero-phase current can be accurately measured since the meter is resistant to the effects of conductor position.



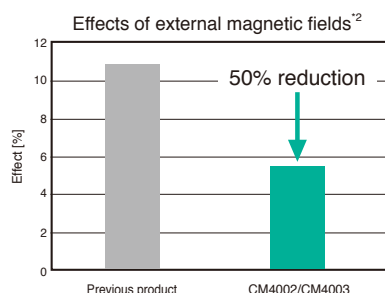
<sup>\*1</sup>: Typical value when measuring a 20 mA leakage current in two-way conductors carrying a 60 A load current. <sup>\*2</sup>: Typical value when measuring a 20 mA leakage current in a 400 A/m external magnetic field.

### 2. Resistance to the effects of external magnetic fields

Shielding made of high-permeability magnetic material blocks magnetic fields from the surrounding environment.

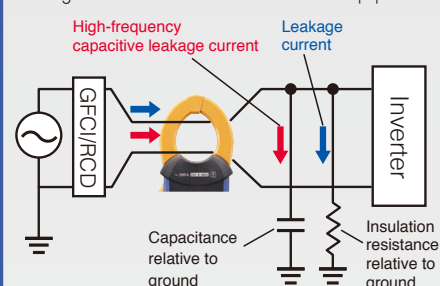


Minuscule leakage currents can be accurately detected since the meter is resistant to the effects of external magnetic fields.

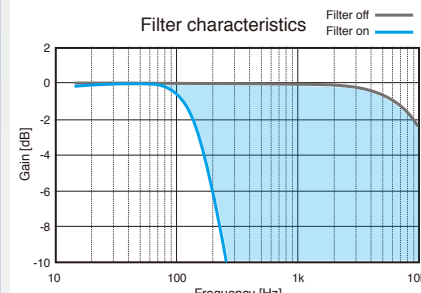


### 3. Elimination of the effects of high-frequency currents

A low-pass filter eliminates high-frequency capacitive leakage currents from inverters and other equipment.



Measure leakage current at frequency characteristics that approach those of the GFCI or RCD.



## CM4002/CM4003 shared features

### Broad measurement range extending from leakage currents to load currents

- Accommodates a broad range of current measurement applications, including maintenance/inspection tasks and electrical work
- Six ranges (6.000mA to 200.0A) and a 15Hz to 2kHz frequency band

### Convenient measurement functionality

- Speed up pass/fail judgments with the built-in comparator function. Set a threshold value and have the meter indicate judgment results aurally and visually
- Dual readout lets you check current values and frequencies at the same time
- The auto hold function detects and holds stable measured values, allowing you to obtain more reliable readings

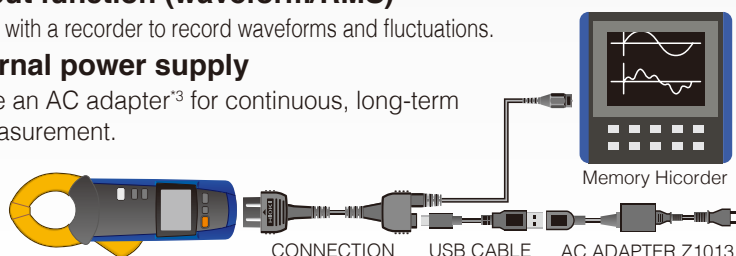
## Convenient functionality exclusive to the CM4003

### Output function (waveform/RMS)

Use with a recorder to record waveforms and fluctuations.

### External power supply

Use an AC adapter<sup>3</sup> for continuous, long-term measurement.



Comparison of CM4002 and CM4003 functionality

	CM4002	CM4003
Measurement category	CAT IV 300 V CAT III 600 V	CAT III 300 V
Output function	No	Yes
External power supply	No	Yes

## Specifications (1-year accuracy guarantee, 3-year product warranty)

	CM4002	CM4003
AC measurement method	True RMS	
Functions	Max/ Min/ AVG/ PEAK MAX/ PEAK MIN value display; Low-pass filter (-3dB at 180Hz ±30Hz); Display value hold and auto hold; Backlight; Auto power save; Buzzer sound; Event count display; Comparator; Simple event recording; Rush current measurement	
Operating temperature range	-10°C to 65°C	
Operating humidity range (non-condensing)	-10°C to 40°C, 80% RH or less 40°C to 45°C, 60% RH or less 45°C to 65°C, 50% RH or less	
Storage temperature range	-30°C to 70°C	
Power supply	AA-size alkaline battery (LR6) × 2	AA-size alkaline battery (LR6) × 2, AC Adapter Z1013 (5 V DC, 2.6 A)

	CM4002	CM4003
Continuous operating time	Approx. 48 hr. (without Z3210 installed) Approx. 30 hr. (with Z3210 installed and using wireless communications)	
Dimensions and weight	64 mm (2.52 in.) W × 233 mm (9.17 in.) H × 37 mm (1.46 in.) D, 400 g (14.1 oz.)	
Operating locations	Indoors, pollution level 2, elevation of 2000 m (6561 ft.) or less	
Diameter of measurable conductors	φ 40 mm (1.57 in.)	
Jaw dimensions	75 mm (2.95 in.) × 20 mm (0.79 in.)	
Dust and water resistance	IP 40 (with jaws closed)	
Standard compliance	Safety: EN 61010 (type A current sensor) EMC: EN 61326	
Other applicable standards	IEC/EN 61557-13: Class 2, ≤ 30 A/m	
Maximum rated conductor-to-ground voltage	300 V AC (CAT IV) 600 V AC (CAT III)	300 V AC (CAT III)

## Measurement specifications (CM4002/CM4003)

Defined accuracy range	0.060 mA to 200.0 A			
Zero display range	5 digits or less			
AC current	Range	Resolution	Measurement accuracy	
			45 Hz ≤ f ≤ 400 Hz	15 Hz ≤ f < 45 Hz 400 Hz < f ≤ 2 kHz
	6.000 mA	0.001 mA	±1.0% rdg. ±0.005 mA	±2.0% rdg. ±0.005 mA
	60.00 mA	0.01 mA	±1.0% rdg. ±0.05 mA	±2.0% rdg. ±0.05 mA
	600.0 mA	0.1 mA	±1.0% rdg. ±0.5 mA	±2.0% rdg. ±0.5 mA
	6.000 A	0.001 A	±1.0% rdg. ±0.005 A	±2.0% rdg. ±0.005 A
	60.00 A	0.01 A	±1.5% rdg. ±0.05 A	±2.0% rdg. ±0.05 A
Display refresh rate	5 times/sec.			
Crest factor	3 (other than 200.0 A range), 1.5 (200.0 A range)			
Effects of external magnetic fields	4 mA or less (with a 400 A/m AC, 50 Hz/60 Hz external magnetic field)			
Frequency measurement	15.0 Hz to 2000 Hz			

## Output specifications (CM4003 only)

Output parameters	RMS (RMS value output), WAVE (waveform output)	
Output level	RMS	600 mV DC f.s. (other than 200.0 A range) 200 mV DC f.s. (200.0 A range)
	WAVE	600 mV AC f.s. (other than 200.0 A range) 200 mV AC f.s. (200.0 A range)
Output accuracy	RMS	±1.0% rdg. ±5 mV (for display digits)
	WAVE	±3.0% rdg. ±10 mV (45 Hz to 400 Hz) ±5.0% rdg. ±10 mV (15 Hz to 45 Hz, 400 Hz to 2 kHz)
Output response	RMS	Refresh rate: 5 times/sec.
	WAVE	Frequency band: 15 Hz to 15 kHz (within ±3 dB)

## Model/Accessories

Model: AC LEAKAGE CLAMP METER CM4002, CM4003

Model No. (order code)	CM4002	
	CM4002-90	CM4002 + Wireless Adapter Z3210 (Recommended)
	CM4003	
	CM4003-90	CM4003 + Wireless Adapter Z3210 (Recommended)

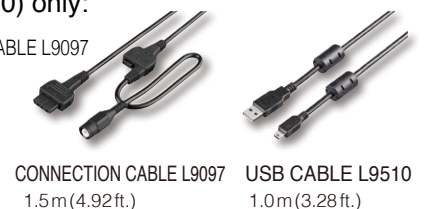
### CM4002 (-90) / CM4003 (-90):

Product  
CARRYING CASE C0203  
User Manual and Operating Precautions  
AA-size alkaline battery (LR6) × 2



### CM4003 (-90) only:

CONNECTION CABLE L9097  
USB Cable



## Options

<b>WIRELESS ADAPTER Z3210</b>	<b>CARRYING CASE C0203</b>	<b>CONVERSION ADAPTER 9704</b>	<b>AC ADAPTER Z1013</b>	<b>CONNECTION CABLE L9097</b>	<b>USB CABLE L9510</b>
Adds Bluetooth® wireless communications	External dimensions: 135 mm (5.31 in.) W × 265 mm (10.43 in.) H × 65 mm (2.56 in.) D	In: BNC female, out: banana male	5 V DC, 2.6 A	1.5 m (4.92 ft.), output terminal: BNC, power terminal: USB-C	1.0 m (3.28 ft.), USB A-C type, power supply only

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