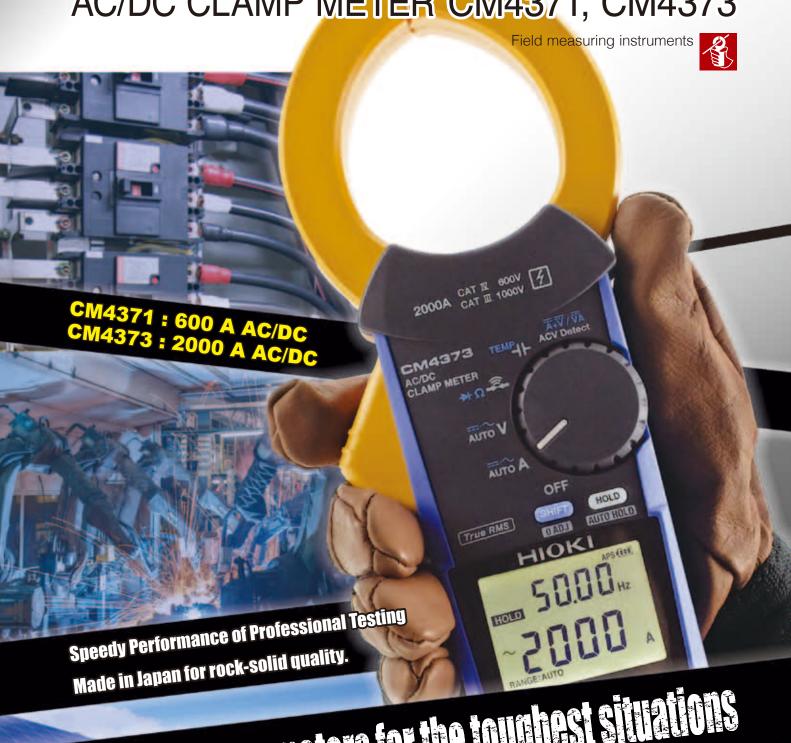




# AC/DC CLAMP METER CM4371, CM4373



# Pilged clair motors for the toughest situations

INCREASED JAW STRENGTH

WIDE OPERATING TEMPERATURE RANGE

DUSTPROOF AND WATERPROOF DESIGN

HIGH-VOLTAGE MEASUREMENT



The CM4370 Series surpassed the requirements of numerous durability tests to deliver safety, confidence and peace of mind.

# Rugged clamp meters for the toughest situations

# TOUGH Damage-resistant jaws

Guaranteed for 30,000 open-close cycles

A revised design features stronger jaws (the current sensor portion of the instrument) and a dramatic boost in the duration of the warranty from 10,000 to 30,000 open-close cycles to ensure the instrument will provide even more years of reliable use.



### Clamp open/ close test

In this test, the jaws are opened and closed a specified number of times at the rate of one cycle per second. In addition, the test is continued until the jaws break to provide a better understanding of their strength. Tests like this help us improve the instrument's durability.



TOUGH

**Expanded operating** temperature range

Thanks to an operating temperature range that has been expanded from the previous design (which could be used from 0°C to 40°C), the CM4371 and CM4373 can be used in freezing temperatures or on the hottest summer days.



### **Temperature test**

In this test, we verified that the clamp meter can operate for an extended period of time while taking normal measurement in the specified temperature range.



# Dustproof and waterproof performance

**Enhanced environmental** resistance

International Protection Code: IP54\*

\*Jaws (current sensor portion): IP50 Measurement functionality is maintained despite exposure to sand or dust as well as water droplets.

Caution: The CM4370 Series' waterproof enclosure is designed to enable the instrument to maintain its measurement functionality even when wet. Getting the instrument wet or measuring energized parts with wet hands increases risk of electric shock



# **Dustproof** and

In the dustproof test, the clamp meter's enclosure is placed under reduced pressure and exposed to dust, and in the waterproof test, the instrument is sprayed with water from multiple directions in order to investigate how readily dust and water can get in.

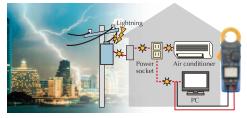


**Expanded range of** measurement targets

The CM4371 and CM4373 can safely measure service wires with a wire-toground voltage of up to 600 V as well as wires found in distribution panels.

The clamp meter series features a safe design that can withstand a transient overvoltage of 8 kV in case of a lightning strike.





**VOLTAGE** 

Measure high DC voltages

The CM4371 and CM4373 can measure DC voltages of up to 1700 V, making them ideal for no-load voltage inspections of rapidly evolving solar power systems.



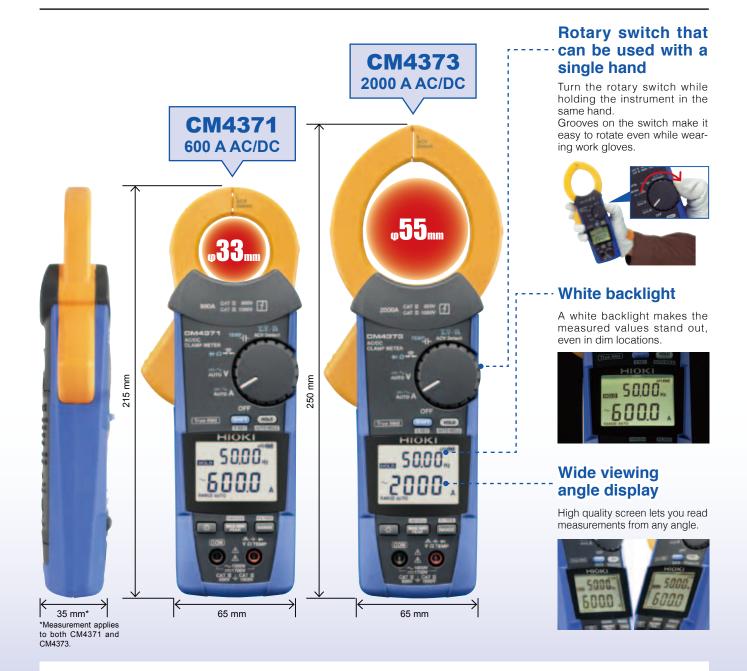
### Safety test

Temperature of the various parts of the clamp meter was measured while 1700 V DC was applied in order to ensure that there is no risk of burns or other

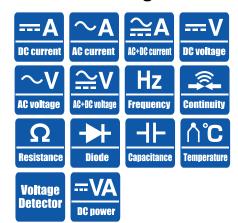


# Get Jobs Done Faster

# Giving shape to ease of use and intuitive operation



# Extensive range of measurable parameters







# More Than Just Tough

# Packed with useful features

# ■ Testing current has never been more convenient

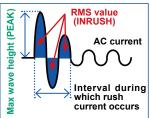
# Inrush (Rush current)

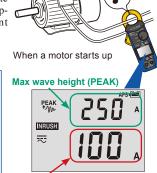
The CM4371 and CM4373 can simultaneously measure inrush current in RMS as well as maximum crest values at motor startup and for welding currents.

The clamp meters automatically detect the duration of the inrush current (which can range from several dozen milliseconds to several

hundred milliseconds) and measure the current during that interval, enabling them to yield more accurate measurements than standard clampon meters whose measurement interval is fixed to 100 ms.

\*Sampling frequency: 7.2 kHz





RMS value (INRUSH)

# **Automatic AC/DC detection**

Simply rotate the rotary switch to the CURRENT MEASUREMENT or VOLTAGE MEASUREMENT function to take measurements after automatically detecting whether the signal is AC or DC.

Since this functionality eliminates the need to operate the rotary switch in locations where AC and DC wires are intermingled, it helps boost work efficiency.









Current measurement

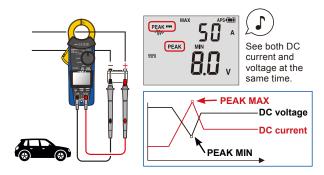
Voltage measurement

# See DC current and voltage at the same time

During DC measurement, current and voltage values can be displayed simultaneously on the screen.

In addition, the CM4370 Series can simultaneously display DC current and voltage peak values by measuring the peak maximum and peak minimum for both current and voltage.

\*Sampling frequency: 7.2 kHz



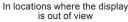
In this way, the clamp meter can provide voltage and current values when a self-starting motor is operated.

# AUTOHOLD

The clamp meters beep when the measured value stabilizes and then automatically hold the display value.

This is useful when using the instrument in locations where it is difficult to see the display or press the hold button.







You can obtain a stable reading

### **Ensuring peace of mind**

# Designed and manufactured in Japan

All development, design, and manufacturing processes for almost all Hioki clamp meters are carried out at our Head Office in Nagano Prefecture. Some of the industry's most advanced technological capabilities enable us to deliver products of the highest possible quality.



# From a one-year to a three-year warranty

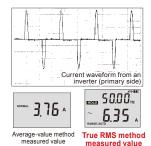
Hioki has extended the original one-year product warranty to three years so that operators can use the instrument for a longer period of time with peace of mind. After the first year of use, the instrument delivers measurement accuracy within 1.5 times the one-year accuracy. (3-year accuracy is for reference only.)



# ■ Useful functions and exceptional performance

# **Obtain accurate** readings with true **RMS** measurement

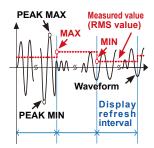
Since the CM4370 Series calculates measured values using the RMS method, it can accurately measure distorted current waveforms from equipment such as inverters.



# Identify fluctuating current values

The CM4370 Series displays maximum, minimum, and average measured values as well as maximum and minimum peak values.

\*Sampling frequency: 10 kHz



# Determine whether a target is live

### AC Voltage detection function

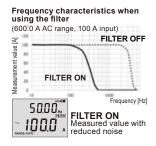
Check for safety before performing electrical work. The clamp meter instantly detects whether the wire is energized and warns the user by sounding a beep and turning the backlight red.



# Display stable measured values

### Low-pass filter function

The CM4370 Series cuts highfrequency components to stabilize values for measurement, enabling it to be used to measure switching power supplies and the secondary side of inverters.



# Avoid wasting batteries

### **Auto Power Save**

To help conserve battery power, the CM4370 Series enter into a sleep state after 15 minutes of no operation and turns off completely after 45 minutes.



# Avoid missing DC wiring mistakes

When DC V or DC A is a negative value, the clamp meter alerts you with a beeping tone as well as a warning backlight.

Thresholds: -10 V, -10 A



# Remain alert to hazards

### Double warnings with sound and light When the clamp meter detects excessively high input or a short-

circuit during a continuity check, it alerts you with a red backlight and beeping tone in order to help prevent accidents.



# Choose from an extensive selection of probe tips

With the CM4371 and CM4373, you can choose the type of probe that best suits your measurement location, letting vou measure in areas that can't be reached with conventional probes and busbars that you wish to clamp between probes.



# Enjoy fast operation thanks to a proprietary dedicated IC

The CM4371 and CM4373 feature a dedicated IC that delivers the world's fastest speed for a chip of its kind\* by bringing together a number of Hioki's high-speed measurement technologies. \*Based on market research conducted by Hioki in April 2015.



# Transport in a specially designed carrying case

The CM4370 Series comes with a carrying case for easy portability.



# **Specifications**

### CM4371 Measurement specifications

Measurement accuracy pertains to 1-year accuracy specifications Figures in parentheses for ranges indicate the guaranteed accuracy range.

AC Current				
Range	Resolution	Accuracy guarantee frequency range	Measurement accuracy	
20.00 A		10 Hz ≤ f <45 Hz	±1.8% rdg.±0.10 A	
(1.00 A to	0.01 A	45 Hz ≤ f ≤66 Hz	±1.3% rdg.±0.08 A	
20.00 A)		66 Hz < f ≤1 kHz	±2.0% rdg.±0.10 A	
600.0 A		10 Hz ≤ f <45 Hz	±1.8% rdg.±0.5 A	
(1.0 A to	0.1 A	45 Hz ≤ f ≤66 Hz	±1.3% rdg.±0.3 A	
600.0 A)		66 Hz < f ≤1 kHz	±2.0% rdg.±0.5 A	

DC Current			
Range	Resolution	Measurement accuracy	
20.00 A (±1.00 A to ±20.00 A)	0.01 A	±1.3% rdg.±0.08 A	
600.0 A (±1.0 A to ±600.0 A)	0.1 A	±1.3% rdg.±0.3 A	

DC+AC	DC+AC Current			
Range	Resolution	Accuracy guarantee frequency range	Measurement accuracy	
20.00 A		10 Hz ≤ f <45 Hz	±1.8% rdg.±0.10 A	
(1.00 A to	0.01 A	DC, 45 Hz ≤ f ≤66 Hz	±1.3% rdg.±0.13 A	
20.00 A)		66 Hz < f ≤1 kHz	±2.0% rdg.±0.10 A	
600.0 A		10 Hz ≤ f <45 Hz	±1.8% rdg.±0.7 A	
(1.0 A to 0.1 A	0.1 A	DC, 45 Hz ≤ f ≤66 Hz	±1.3% rdg.±1.3 A	
600.0 A)		66 Hz < f ≤1 kHz	±2.0% rdg.±0.7 A	

DC Power				
Display range switching	Resolution	Measurement accuracy		
0.000 VA to 1020 kVA	0.001 VA	±2.0% rdg.±20 dgt.		

### CM4373 Measurement specifications

Measurement accuracy pertains to 1-year accuracy specifications Figures in parentheses for ranges indicate the guaranteed accuracy range.

AC Current			
Range	Resolution	Accuracy guarantee frequency range	Measurement accuracy
600.0 A		10 Hz ≤ f <45 Hz	±1.8% rdg.±0.5 A
(1.0 A to	0.1 A	45 Hz ≤ f ≤66 Hz	±1.3% rdg.±0.3 A
600.0 A)*		66 Hz < f ≤1 kHz	±2.0% rdg.±0.5 A
2000 A		10 Hz ≤ f <45 Hz	±1.8% rdg.±5 A
(10 A to	1 A	45 Hz ≤ f ≤66 Hz	±1.3% rdg.±3 A
1800 A)		66 Hz < f ≤1 kHz	±2.0% rdg.±5 A
2000 A		10 Hz ≤ f <45 Hz	±2.8% rdg.±5 A
(1801 A to	1 A	45 Hz ≤ f ≤66 Hz	±2.3% rdg.±3 A
2000 A)		66 Hz < f ≤1 kHz	-

\*For currents of 30.0 A or less, add 0.5 A to the measurement accuracy.

DC Current				
Range	Resolution	Measurement accuracy		
600.0 A (±1.0 A to ±600.0 A)*	0.1 A	±1.3% rdg.±0.3 A		
2000 A (±10 A to ±2000 A)	1 A	±1.3% rdg.±3 A		

\*For currents of 30.0 A or less, add 0.5 A to the measurement accuracy.

DC+AC Current			
Range	Resolution	Accuracy guarantee frequency range	Measurement accuracy
600.0 A		10 Hz ≤ f <45 Hz	±1.8% rdg.±0.7 A
(1.0 A to	0.1 A	DC, 45 Hz ≤ f ≤66 Hz	±1.3% rdg.±1.3 A
600.0 A)		66 Hz < f ≤1 kHz	±2.0% rdg.±0.7 A
2000 A		10 Hz ≤ f <45 Hz	±1.8% rdg.±7 A
(10 A to	1 A	DC, 45 Hz ≤ f ≤66 Hz	±1.3% rdg.±13 A
1800 A)		66 Hz < f ≤1 kHz	±2.0% rdg.±7 A
2000 A		10 Hz ≤ f <45 Hz	±2.8% rdg.±7 A
(1801 A to	1 A	DC, 45 Hz ≤ f ≤66 Hz	±2.3% rdg.±13 A
2000 A)		66 Hz < f ≤1 kHz	-

DC Power				
Display range switching	Resolution	Measurement accuracy		
0.000 VA to 3400 kVA	0.001 VA	±2.0% rdg.±20 dgt.		

### Shared specifications -CM4371, CM4373-

Measurement accuracy pertains to 1-year accuracy specifications Figures in parentheses for ranges indicate the guaranteed accuracy range.

AC Voltage				
Range	Resolution	Accuracy guarantee frequency range	Measurement accuracy	Input impedance
6.000 V		15 Hz ≤ f <45 Hz	±1.5% rdg.±0.015 V	
(0.000 V to	0.001 V	45 Hz ≤ f ≤66 Hz	±0.9% rdg.±0.013 V	
0.299 V)		66 Hz < f ≤1 kHz	±1.5% rdg.±0.015 V	3.2 MO+5%
6.000 V		15 Hz ≤ f <45 Hz	±1.5% rdg.±0.005 V	3.2 IVIL/±3 /6
(0.300 V to	0.001 V	45 Hz ≤ f ≤66 Hz	±0.9% rdg.±0.003 V	
6.000 V)		66 Hz < f ≤1 kHz	±1.5% rdg.±0.005 V	
60.00 V		15 Hz ≤ f <45 Hz	±1.5% rdg.±0.05 V	
(3.00 V to	0.01 V	45 Hz ≤ f ≤66 Hz	±0.9% rdg.±0.03 V	3.1 MΩ±5%
60.00 V)		66 Hz < f ≤1 kHz	±1.5% rdg.±0.05 V	
600.0 V		15 Hz ≤ f <45 Hz	±1.5% rdg.±0.5 V	
(30.0 V to	0.1 V	45 Hz ≤ f ≤66 Hz	±0.9% rdg.±0.3 V	
600.0 V)		66 Hz < f ≤1 kHz	±1.5% rdg.±0.5 V	3.0 MO+5%
1000 V		15 Hz ≤ f <45 Hz	±1.5% rdg.±5 V	3.0 IVIL1±3%
(50 V to	1 V	45 Hz ≤ f ≤66 Hz	±0.9% rdg.±3 V	
1000 V)		66 Hz < f ≤1 kHz	±1.5% rdg.±5 V	

Frequency range of 15 Hz≤f<20 Hz is designed value.

DC Voltage				
Range	Resolution	Measurement accuracy	Input impedance	
600.0 mV (0.0 mV to ±600.0 mV)	0.1 mV	±0.5% rdg.±0.5 mV	6.7 MO+5%	
6.000 V (0.000 V to ±6.000 V)	0.001 V	±0.5% rdg.±0.003 V	0.7 M12±3%	
60.00 V (0.00 V to ±60.00 V)	0.01 V	±0.5% rdg.±0.03 V	6.1 MΩ±5%	
600.0 V (0.0 V to ±600.0 V)	0.1 V	±0.5% rdg.±0.3 V		
1500 V (0 V to ±1000 V)	- 1 V	±0.5% rdg.±3 V	6.0 MΩ±5%	
1500 V (±1001 V to ±1700 V)	] v	±2.0% rdg.±5 V		

DC+AC	DC+AC Voltage			
Range	Resolution	Accuracy guarantee frequency range	Measurement accuracy	Input impedance
6.000 V		10 Hz ≤ f <45 Hz	±1.5% rdg.±0.023 V	
(0.000 V to	0.001 V	DC, 45 Hz ≤ f ≤66 Hz	±1.0% rdg.±0.023 V	
0.299 V)		66 Hz < f ≤1 kHz	±1.5% rdg.±0.023 V	DC: 6.7 MΩ±5%
6.000 V		10 Hz ≤ f <45 Hz	±1.5% rdg.±0.013 V	AC: 3.2 MΩ±5%
(0.300 V to	0.001 V	DC, 45 Hz ≤ f ≤66 Hz	±1.0% rdg.±0.013 V	
6.000 V)		66 Hz < f ≤1 kHz	±1.5% rdg.±0.013 V	
60.00 V		10 Hz ≤ f <45 Hz	±1.5% rdg.±0.13 V	DC: 6.1 MΩ±5%
(3.00 V to	0.01 V	DC, 45 Hz ≤ f ≤66 Hz	±1.0% rdg.±0.13 V	
60.00 V)		66 Hz < f ≤1 kHz	±1.5% rdg.±0.13 V	AC: 3.1 MΩ±5%
600.0 V		10 Hz ≤ f <45 Hz	±1.5% rdg.±0.7 V	
(30.0 V to	0.1 V	DC, 45 Hz ≤ f ≤66 Hz	±1.0% rdg.±0.7 V	
600.0 V)		66 Hz < f ≤1 kHz	±1.5% rdg.±0.7 V	DC: 6.0 MΩ±5%
1000 V		10 Hz ≤ f <45 Hz	±1.5% rdg.±7 V	AC: 3.0 MΩ±5%
(50 V to	1 V	DC, 45 Hz ≤ f ≤66 Hz	±1.0% rdg.±7 V	1
1000 V)		66 Hz < f ≤1 kHz	±1.5% rdg.±7 V	

Frequency range of 10 Hz≤f<20 Hz is designed value.

Frequency				
Range	Resolution	Measurement accuracy		
9.999 Hz (1.000 Hz to 9.999 Hz)	0.001 Hz	±0.1% rdg.±0.003 Hz		
99.99 Hz (1.00 Hz to 99.99 Hz)	0.01 Hz	±0.1% rdg.±0.01 Hz		
999.9 Hz (1.0 Hz to 999.9 Hz)	0.1 Hz	±0.1% rdg.±0.1 Hz		

Continu	Continuity check			
Range	Resolution	Measurement current	Measurement accuracy	Open terminal voltage
600.0 Ω (0.0 Ω to 600.0 Ω)	0.1 Ω	200 μA±20%	±0.7% rdg.±0.5 Ω	2.0 V DC or less

Continuity on threshold: 25  $\Omega$ ±10  $\Omega$ , Continuity off threshold: 245  $\Omega$ ±10  $\Omega$ 

Diode				
Range	Resolution	Measurement current	Measurement accuracy	Open terminal voltage
1.800 V (0.000 V to 1.800 V)	0.001 V	200 μA±20%	±0.7% rdg.±0.005 V	2.0 V DC or less

Resistance				
Range	Resolution	Measurement current	Measurement accuracy	Open terminal voltage
600.0 Ω (0.0 Ω to 600.0 Ω)	0.1 Ω	200 μA±20%	±0.7%rdg.±0.5 Ω	
6.000 kΩ (0.000 kΩ to 6.000 kΩ)	0.001 kΩ	100 μA±20%	±0.7%rdg.±0.005 kΩ	2.0 V DC or
60.00 kΩ (0.00 kΩ to 60.00 kΩ)	0.01 kΩ	10 μA±20%	±0.7%rdg.±0.05 kΩ	less
600.0 kΩ (0.0 kΩ to 600.0 kΩ)	0.1 kΩ	1 μA±20%	±0.7%rdg.±0.5 kΩ	

Electrostatic capacity				
Range	Resolution	Discharge current Measurement accuracy		Open terminal voltage
1.000 μF (0.000 μF to 1.100 μF)	0.001 µF	10n/ 100n/ 1µA±20%	±1.9%rdg.±0.005 μF	
10.00 μF (0.00 μF to 11.00 μF)	0.01 μF	100n/ 1μ/ 10μA±20%	±1.9%rdg.±0.05 µF	2.0 V DC or
100.0 μF (0.0 μF to 110.0 μF)	0.1 μF	1μ/ 10μ/ 100μA±20%	±1.9%rdg.±0.5 µF	less
1000 μF (0 μF to 1100 μF)	1 μF	10μ/ 100μ/ 200μA±20%	±1.9%rdg.±5 μF	

Temperature				
Thermocouple type	Range	Resolution	Accuracy	
K	-40.0 °C to 400.0 °C	0.1 °C	±0.5%rdg.±3.0 °C	
	-40.0 °F to 752.0 °F	0.1 °F	±0.5%rdg.±5.4 °F	

Accuracy does not include the error of the K thermocouple

AC Voltage detection function			
Range (detection sensitivity)	Detection voltage range	Detection target frequency	
Hi	AC 40 V to AC 600 V	50/60 Hz	
Lo	AC 80 V to AC 600 V		

### General Specifications -CM4371, CM4373-

True RMS measurement		
1 year 2nd and 3rd year accuracy is 1.5 times the 1-year accuracy specifications and should be used for reference only.		
1 year		
23°C±5°C (73.0°F±9.0°F) 90% rh or less (no condensation)		
3 years (Measurement accuracy is defined in terms of a 1-year accuracy and a 3-year accuracy*.) *2nd and 3rd year accuracy values are for reference only.  Number of sensor open/close cycles: 30,000		
CM4371: For the 20.00 A range, 7.5 For the 600.0 A range (500.0 A or less), 3 For the 600.0 A range (greater than 500.0 A and less than o equal to 600.0 A), 2.5 CM4373: For the 600.0 A range (500.0 A or less), 3 For the 600.0 A range (greater than 500.0 A and less than o equal to 600.0 A), 2.5 For the 2000 A range (1000 A or less), 2.84 For the 2000 A range (greater than 1000 A and less than o equal to 2000 A), 1.42		
Measured value excluding electrostatic capacity, frequency, a temperature: 5 times/s (after the range is fixed) Electrostatic capacity: 0.5 to 5 times/s (The number of times var depending on the capacitance.) Frequency: 0.3 to 5 times/s (The number of times varies depending the capacitance.) Temperature: 1 times/s (including thermocouple wiring break chec		
Indoors, pollution degree 2, altitude up to 2000 m (6562 ft.)		
-25°C to 65°C (-13.0°F to 149.0°F) 90% rh or less (no condensation)		
-30°C to 70°C (-22.0°F to 158.0°F) 90% rh or less (no condensation)		
Grip: IP54 Jaw (the current sensor portion of the instrument), barrier: IP50		
Between the jaw (the current sensor portion of the instrument) and chassis Between the terminal and chassis 7.4 kV AC sine wave (50 Hz/60 Hz, 60 seconds)		
1000 V AC (up to 1 kHz) /1700 V DC		
1000 V AC (Measurement category III) 600 V AC (Measurement category IV)		
Safety: EN61010, EMC: EN61326		
LR03 Alkaline battery ×2		
Approx. 45 hours (Backlight OFF)		
CM4371: Approx. 65 mm (2.56 in) W × 215 mm (8.46 in) H × 35 mm (1.38 in) D mm, 340 g (12.0 oz) CM4373: Approx. 65 mm (2.56 in) Wx250 mm (9.84 in) Hx35 mm (1.38 in) D mm, 530 g (18.7 oz)		
СМ4371: 69 mm (2.72 in) W×14 mm (0.55 in) D, ф33 mm (1.30 in СМ4373: 92 mm (3.62 in) W×18 mm (0.71 in) D, ф55 mm (2.17 in		
TEST LEAD L9207-10, CARRYING CASE C0203,		

### **Coming next spring**

## Making measurement more intelligent

# Clamp-on meter with Bluetooth



The instruments listed below will be able to send measured values to a smart phone or tablet using Bluetooth® wireless technology, enabling you to display measured values and waveforms in real time.

AC/ DC Clamp Meter CM4372 (600 A AC/ DC) AC/ DC Clamp Meter CM4374 (2000 A AC/ DC)



### Key features of the Bluetooth®-enabled CM4372 and CM4374

### Simple logging function

### **Waveform monitor function**

### **Hold save function**

Convenient for observing fluctuations over a short period of time when it's not practical to set up large-scale recording equipment.

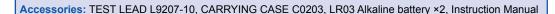
Review waveforms at the same time as measured values during current or voltage measurement, allowing the instrument to be used as a simple oscilloscope.

Automatically save measured values while they are being held and at the completion of inrush measurement.

# **Order code/ Options**

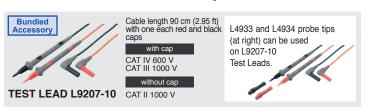
### ■ Order code

AC/ DC Clamp Meter CM4371 (600 A AC/ DC, \phi33 mm) AC/ DC Clamp Meter CM4373 (2000 A AC/ DC,  $\phi$ 55 mm)





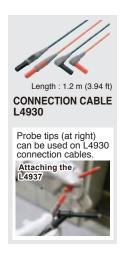
### **■ TEST LEAD L9207-10 Options**







### **■ CONNECTION CABLE L4930 Options**



















### ■ Other options





- · Thermal junction form: exposed weld · Sensor length: approx. 800 mm
  - Measurement temperature range: -40 to 260 °C
  - Allowable tolerance:±2.5 °C
  - $\bullet$  Operating temperature range: -15 to 55  $^{\circ}\text{C}$

Note: Company names and Product names appearing in this catalog are trademarks or registered trademarks of various companies

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