NEW

YOKOGAWA

Clamp-on Power Meter

CW10

A Simple Yet A Powerful Power Measuring Tool.

Features

- AC / DC Power up to 600 kW
- True RMS for AC .
- Harmonics 1st to 25th order
- Power fluctuation using the ACA Inrush and Peak hold functions.
- AC / DC Voltage max. 1000 V
- AC / DC Current max. 600 A
- Frequency, Resistance, Continuity, Diode check, Power factor.
- Up to 9999 counts, approx. 37mm max. diameter of measurable conductor (the jaw opens approx. 45mm max.)

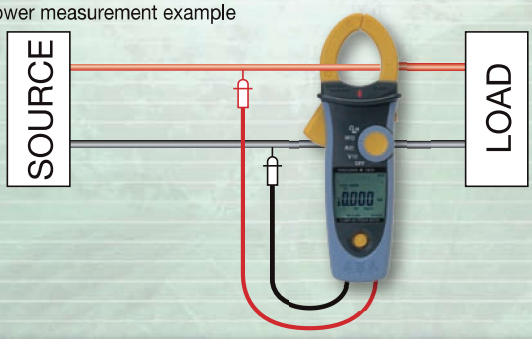
For Safety

- CATIV 600V and CATIII 1000V compliant.

Useful Functions

- Backlight on the display area turns on and a white LED automatically illuminates the front of jaw when clamping.
- Non-contact Voltage Detection (Red LED lights up on detection).
- Easy Operation with the Navigator key.
- Low Pass Filter, Phase Detection, AC / DC Auto Sense.

Power measurement example



CE

<URL : tmi.yokogawa.com>

Application

■ Inrush Current Measurement Method

Figure 1 Small motor

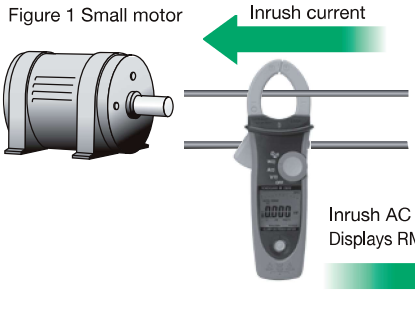
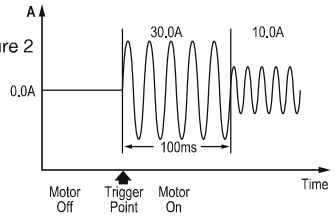


Figure 2



Explanation

A function to measure inrush current is available. This function allows you to easily measure inrush current that occurs when starting a motor, relay, or the like. Just clamp the CW10 to the motor and set INRUSH before starting the motor to automatically measure and hold the inrush current that occured in 100 ms period (Figure 2).

What is inrush current?

Starting current or inrush current is the instantaneous electrical current that flows when the power is initially turned on.

Specifications

Accuracy

23± 5°C, 80%RH or less
Accuracy: ±(% of reading + digits)

Voltage

Rms-value detection

Function	Range	Resolution (Maximum reading)	Accuracy*
DCV	100 V	99.99 V	0.7% + 2
	1000 V	999.9 V	
ACV	100 V	99.99 V	1.0% + 5 50 ~ 500Hz
	1000 V	999.9 V	
LPF ACV	100 V	99.99 V	50 ≤ f ≤ 60Hz: 1.0% + 5 60 < f ≤ 400Hz: 5.0% + 5
	1000 V	999.9 V	

* DCV<1000digits: add 6digits to accuracy
ACV<1000digits: add 3digits to accuracy
Maximum input voltage: 1000 Vrms, 1414.2 Vpk
Input impedance: approx. 3.5MΩ, <100pF
AC+DC Vrms accuracy=ACV accuracy + DCV accuracy

Crest factor effects
1.4 < CF ≤ 2.0: add 1.0% of reading to accuracy
2.0 < CF ≤ 2.5: add 2.5% of reading to accuracy
2.5 < CF ≤ 3.0: add 4.0% of reading to accuracy
Maximum input voltage: 690 Vrms CF=2 460 Vrms CF=3

Current

Rms-value detection

Function	Range	Resolution (Maximum reading)	Accuracy*
DCA	100 A	99.99 A	1.5% + 20
	600 A	600.0 A***	1.5% + 5*
ACA	100 A**	99.99 A	50 ≤ f ≤ 60Hz : 1.5% + 5* 60 < f ≤ 400Hz : 2.0% + 5*
	600 A	600.0 A***	
LPF ACA	100 A**	99.99 A	50 ≤ f ≤ 60Hz : 1.5% + 5 60 < f ≤ 400Hz: 5.0% + 5
	600 A	600.0 A***	

*The measured value <1000digits: add 5digits to accuracy
**Input current ≥ 0.10A at 100 A range of ACA and LPF ACA
***600 A : Guaranteed accuracy (not maximum reading)
Maximum input current: 600 Arms, 848.5Apk
Conductor position effects: ±1.0% of reading
AC+DC Arms accuracy=ACA accuracy + DCA accuracy

Crest factor effects
1.4 < CF ≤ 2.0: add 1.0% of reading to accuracy
2.0 < CF ≤ 2.5: add 2.5% of reading to accuracy
2.5 < CF ≤ 3.0: add 4.0% of reading to accuracy
Maximum input current: 420 Arms CF=2 280 Arms CF=3

Peak Hold (AC mode only)

Function	Range	Resolution (Maximum reading)	Accuracy
ACV	100 V	140.0 V	3.0% + 15
	1000 V	1400 V	
ACA	100 A	140.0 A	3.0% + 15
	600 A	850 A	

PEAK MAX: polarity+, polarity-
Maximum input voltage and current: 1000 Vrms, 600 Arms
Sine wave, ACV ≥ 5 Vrms, ACA ≥ 5 Arms, 50 to 400 Hz continuous wave

Frequency (Hz)

Function	Resolution (Measuring range)	Accuracy
100 Hz	20.00 to 99.99 Hz	0.5% + 3
1000 Hz	20.0 to 999.9 Hz	
10 kHz	0.020 to 9.999 kHz	

Maximum input voltage and current: 1000 Vrms, 600 Arms
Input condition; 100 V range: 10 to 100 Vrms
(Sine wave) 1000 V range: 100 to 1000 Vrms
100 A range: 10 to 100 Arms (<400Hz)
600 A range: 100 to 600 Arms (<400Hz)
The measured value < approx. 10 Hz: 0.00Hz

Harmonic Measurement

Individual Harmonic

Harmonic order	Resolution (Maximum reading)	Accuracy
1st to 12th (h01- h12)	99.9 %	5% + 10
13th to 25th (h01- h12)		10% + 10

Maximum input voltage and current: approx. 1000 Vrms, 600 Arms
The "rdy" is displayed at ACV < 10 Vrms, ACA < 10 Arms
The "OutF" is displayed at f < 45, 65 < f (f: fundamental frequency)

Inrush Current

Function	Range	Resolution (Maximum reading)	Accuracy
ACA	100 A	99.99 A	2.5% + 20
	600 A	600.0 A*	2.5% + 5

Maximum input current: approx. 600 Arms
*600 A : Guaranteed accuracy (not maximum reading)
100A range: ACA1 ≥ 10 Arms (Sine wave, 50Hz/60Hz)
600A range: ACA ≥ 100 Arms (Sine wave, 50Hz/60Hz)
Measurement time: approx. 100ms

Active Power

Function	Range	Resolution (Maximum reading)	Accuracy
ACW DCW	10 kW	9.999 kW*	ACW: 2.5% + 11** DCW: 2.2% + 22**
	100 kW	99.99 kW	
	600 kW	600.0 kW**	

* The measured value < 1.000kW: add 10digits to the accuracy.
**Conditions of accuracy (combination of Voltage and Current range)
10 kW range: 100 V and 100 A
100 kW range: 100 V and 600 A or 1000 V and 100 A
600 kW range: 1000V and 600 A
Other combinations:
Accuracy: (Current accuracy×Voltage reading) + (Voltage accuracy×Current reading)

**600 kW : Guaranteed accuracy (not maximum reading)
Maximum input voltage and current: 1000 Vrms, 600 Arms
ACW: ACV ≥ 10 Vrms and ACA ≥ 5 Arms (Sine wave, 50 ≤ f ≤ 60Hz, PF=1.00)
DCW: at DCV ≥ 10 V and DCA ≥ 5 A

Power Factor

Function	Resolution (Measuring range)	Accuracy
Power factor	-1.00~0.00~1.00	±(3°+2digits)

Maximum input voltage and current: 1000 Vrms, 600 Arms
PF: ACV ≥ 10 Vrms and ACA ≥ 5 Arms (Sine wave, 50 ≤ f ≤ 60Hz)

Resistance/Continuity check

Function	Range	Resolution (Maximum reading)	Accuracy
Resistance Ω	1000 Ω	999.9 Ω	1.0% + 5
	10 kΩ	9.999 kΩ	1.0% + 3
	100 kΩ	99.99 kΩ	
Continuity check	1000 Ω	999.9 Ω	1.0% + 5
	The buzzer turns on for resistances lower than approx. 30Ω. (Response time: approx. 100msec)		

Maximum input voltage: 1000 Vrms
Maximum test current: approx. 0.5mA
Open circuit voltage: approx. 3V

Diode Test

Function	Resolution (Measuring range)	Accuracy
Diode Test	0.40~0.80 V	±0.1 V

Maximum test current: approx. 0.5mA
Open circuit voltage: approx. 1.8V

General Specifications

Display count: 9999 / 6000
Measuring rate: 3 times / sec.
Over range indicator: "OL" or "-OL"
Auto Power Off: Approx. 15 minute.
Low-battery indicator: (four steps)
Power supply: 9V alkaline battery (6LR61)
Battery life: When using alkaline battery, backlight off
Approx. 20 hours
Operating temperature and humidity: 0 ~ 50 °C (with no condensation)
≤ 80% RH (0 ~ 30 °C)
≤ 75% RH (30 ~ 40 °C)
≤ 45% RH (40 ~ 50 °C)
Temperature coefficient: At 0 to 18 °C and 28 to 50 °C
Add 23±5 °C accuracy x 0.2 / °C
Storage temperature: -10 to 50 °C, 80% RH or less (remove the battery)
Withstand voltage: AC 6880 Vrms 5 sec. (between the core and the case)
AC 4300 Vrms 5 sec.
(between the core and the voltage input terminals)
AC 6880 Vrms 5 sec.
(between the voltage input terminals and the case)
Insulation resistance: 100MΩ or greater at 1000 VDC
(between the core and the case, the core and the voltage input terminals and the voltage input terminals and the case)
Compliant standards:
Safety standards: EN 61010-1, EN 61010-2-032
1000V CAT.III, 600V CAT.IV
EN 61010-031 (the test leads)
Pollution degree 2, Indoor use, Altitude 2000m or less
EMC standards: EN 61326-1, EN 61326-2-1, EN 61326-2-2,
EN 55011
Dimensions: Approx 87.5 mm(W) x 242 mm(L) x 51 mm(D)
Diameter of measurable conductors: φ37mm (Maximum)
Weight: Approx. 435g (including the battery)
Accessories: Test leads 1set (Red and Black)
Carrying case
9V alkaline battery (6LR61)
User's Manual
Warranty 1 year
Accessories (Sold Separtely): Lead with Alligator Clip Model code 99014

YOKOGAWA

YOKOGAWA METERS & INSTRUMENTS CORPORATION
Global Sales Dept. /Phone: +81-42-534-1413 Facsimile: +81-42-534-1438