

CP-268 Series Multi-range power meter



Introduction

CP-268 series provides 9 voltage ranges, 15 current ranges composed of 135 Watt ranges.

The current ranges are based on 10~10000 times of the multiplicand of 1mA, 2mA, 5mA. Which is the most ranges meter in the market and helps to gain the best resolution and accuracy. Moreover the single terminal for full range of measurement had simplified the testing, not necessary to change the connection terminal for higher or lower current.

Product Features

- Meet the requirement of ENERGY STAR
- Proper for low capacity rectification load, the accuracy will not deviate even when PF=0.1
- 135 watt ranges .(CP-268-5), widely measure -ment range from “standby power” to 30kW.
- Multi-range power meter Watt resolution up to 0.01mW at 150V/300V range.
- True RMS volatge, current measure.
- All digitized type.
- Close case calibration, by software, high stability, long interval between two calibrations.
- Peak current over range indication.
- Current phase lead or lag indication.
- 4 display windows, 4 test values at same time, all function refresh rate is 5 times/sec.
- Frequency resolution 0.001Hz.
- Last panel setting memory.
- Build-in RS-485 interface, baud rate up to 115kbps
- GPIB SCPI compatible (optional).
- CE approved

Application example

- LCD monitor and the others display equipments, Green PC, Switching power suply, AC adapter (For DC, DSLR, DV, NB, PDA, Cell phone, Hub, Wireless AP, LCD monitor, External storage..)
- Solar power, Battery, Home Appliances(Refrigerator, Air conditioner, Washer, AV equipment, TV, PDPTV, Prjector, Rear Projection TV, Audio equipment, Microwave ovens), Lighting equipment, Electronic Ballast, Energy saving bulbs
- UPS, Rectifier, Welding, Generator, Power Tools, AC motor, DC motor, Electric Bus, Electric Cars, Electric Motorcycle, Electric Bicycle, Electric Wheelchair, Fitness Equipment, Motor Testing, Fuel cells testing, Education Unit (Department of Electrical Engineering, Department of Power Electronics)

CP-268 Series Multi-range power meter

General Specifications

● Voltage (V)

Ranges (Auto or Manual)	CP-268-1	5 range : 30V 60V 150V 300V 600V RMS
	CP-268-2	9 range : 1.5V 3V 6V 15V 30V 60V 150V 300V 600V RMS
	CP-268-5	9 range : 1.5V 3V 6V 15V 30V 60V 150V 300V 600V RMS
	CP-268-PS	9 range : 1.5V 3V 6V 15V 30V 60V 150V 300V 600V RMS
Display Resolution		5 digits
Operating Principle		Digital Calculation True RMS
Crest Factor		Up to 1.7(at full scale)
Frequency Range		10Hz to 1000Hz
Accuracy(23°C ± 5°C)	10 to 20Hz	±1% reading ± 1% range ± 2C
	20 to 30Hz	±0.5% reading ± 0.5% range ± 2C
	30 to 45Hz	±0.2% reading ± 0.2% range ± 2C
	45 to 66Hz	±0.1% reading ± 0.1% range ± 2C
	66 to 550Hz	±0.2% reading ± 0.2%range ± 0.1% / 100Hz
	550 to 1000Hz	±0.2% reading ± 0.5%range ± 0.2% / 100Hz
Maximum Input	Continuous	Continuous 600Vrms / 1000Vpk
Input impedance		2 MΩ and 10 pF on all ranges
Effective input range		20% to 120% of the range

● Current (A)

Ranges (Auto or Manual)	CP-268-1	8 range : 100mA 200mA 500mA 1A 2A 5A 10A 20A RMS
	CP-268-2	14 range : 1mA 2mA 5mA 10mA 20mA 50mA 100mA 200mA 500mA 1A 2A 5A 10A 20A RMS
	CP-268-5	15 range : 1mA 2mA 5mA 10mA 20mA 50mA 100mA 200mA 500mA 1A 2A 5A 10A 20A 50A RMS
	CP-268-PS	14 range : 1mA 2mA 5mA 10mA 20mA 50mA 100mA 200mA 500mA 1A 2A 5A 10A 20A RMS
Display Resolution		5 digits
Operating Principle		Digital Calculation True RMS
Crest Factor		CP-268-1、CP-268-2、CP-268-5 : Up to 2 (at full scale) CP-268-PS : Up to 4 (at full scale)
Frequency Range		10Hz to 1000Hz
Accuracy(23°C ± 5°C)	10 to 20Hz	±1% reading ± 1% range ± 2C
	20 to 30Hz	±0.5% reading ± 0.5% range ± 2C
	30 to 45Hz	±0.2% reading ± 0.2% range ± 2C
	45 to 66Hz	±0.1% reading ± 0.1% range ± 2C
	66 to 550Hz	±0.2% reading ± 0.2%range ± 0.1% / 100Hz
	550 to 1000Hz	±0.2% reading ± 0.3%range ± 0.2% / 100Hz
Maximum Input (Continuous)	CP-268-1	20Arms / 40Apk
	CP-268-2	20Arms / 40Apk
	CP-268-5	50Arms / 100Apk
	CP-268-PS	20Arms / 80Apk
Input impedance		All ranges ≤ 2mΩ
Effective input range		10% to 110% of the range

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● Power (W)

Ranges	CP-268-1	40 range : 3W to 12kW
(Auto or Manual)	CP-268-2	126 range : 1.5mW to 12kW
	CP-268-5	135 range : 1.5mW to 30kW
	CP-268-PS	126 range : 1.5mW to 12kW
Display Resolution	5 digits	
Operating Principle	Digital Calculation True Watt	
Frequency Range	10Hz to 1000Hz	
Accuracy(23°C ± 5°C)	10 to 20Hz	± 1% reading ± 1% range ± 2C
	20 to 30Hz	± 0.5% reading ± 0.5% range ± 2C
	30 to 45Hz	± 0.2% reading ± 0.2% range ± 2C
	45 to 66Hz	± 0.1% reading ± 0.1% range ± 2C
	66 to 550Hz	± 0.2% reading ± 0.2% range ± 0.1% / 100Hz
	550 to 1000Hz	± 0.2% reading ± 0.3% range ± 0.2% / 100Hz
Effective input range	2% to 110% of the range (at 47 to 63Hz)	
	5% to 110% of the range (at all range)	

● Frequency (Hz)

Display Resolution	5 digits
Maximum resolution	0.001Hz of 10.000Hz to 99.999Hz
	0.01Hz of 100.00Hz to 999.99Hz
	0.1Hz of 1000.0Hz to 2000.0Hz
Operating Principle	Reciprocal Counting method
Accuracy(23°C ± 5°C)	± 0.02% ± 1C
Measuring Input	Voltage
Effective input range	10% to 100% of the voltage range
Measuring Range	10 Hz to 2000Hz

● Computing function

Apparent Power	$VA = V \cdot A$
Reactive power	$VAR = \sqrt{(VA^2 - W^2)}$
Power factor	$PF = W / (VA)$
Computing Range	VA , VAR : Voltage and current range
	PF : Zero to unity leading or lagging
Computing Accuracy	VA x VAR ± 0.05% of rated value
	PF : ± 0.001

● Interface

Standard	RS-232(CP-268-1 only)
	RS-485 (CP-268-2,CP-268-5,CP-268-PS only)
Optional	GPIO (CP-268-2,CP-268-5,CP-268-PS only)

● Baud rate

RS-485 /RS-232	9600 / 19200 / 38400 / 57600 / 115200 bps selectable
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● Address

RS-485	001~254
GPIO	01~31

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Others

Dielectric strength	2.2kV AC (50/60Hz) for one minute between input terminals and case.
Insulation resistance	more than 20MΩ at 500V dc between input terminals and case between case and power line.
Operating temperature	5 to 50 °C (41 to 104°F)
Humidity range	10 to 90% (relative humidity) non-condensing.
Line requirements	AC115V or 230V ± 15%, 47 to 63 Hz 24VA
Dimensions / Weight	260x110x360(WxHxD)/ 3.9kg net.

- Custom-made specifications are on request .
- Specifications here are only for your reference, the actual specificities depends on attached specification.
- IDRC operates a policy of continuous development and reserves the right to alter specifications without notice.

Order information

Item	Name
CP-268-1	Digital Power Analyzer - 100mA ~ 20A type
CP-268-2	Digital Power Analyzer - 1mA ~ 20A type
CP-268-5	Digital Power Analyzer - 1mA ~ 50A type
CP-268-PS	Digital Power Analyzer - 1mA ~ 20A CF=4 type
CP-268-OPT01	GPIB interface for CP-268
CPA-668	Universal socket Adapter , Max 15Arms
CPA-669	Universal socket Adapter , Max 15Arms , with NFB, Line filter
CPR-200	Rack mounting kit

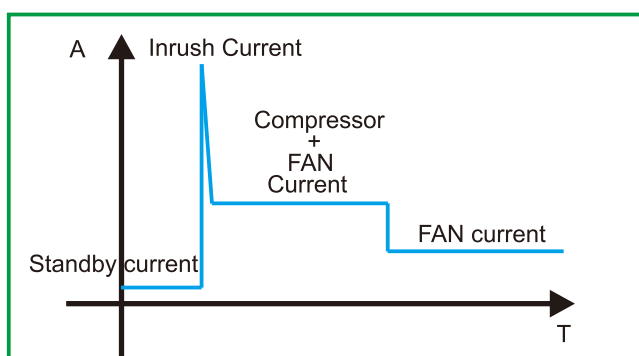
Application

CP-268 series has the most ranges power meter in the market, widest measuring from standby through the inrush current to operating current all by single terminal, not necessary to change the wiring/connection for higher or lower current. The range changes either automatically or manually.

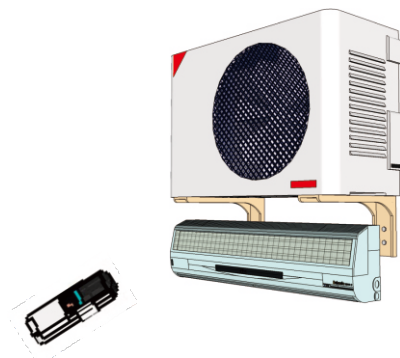
As the example shown below, the inrush current is approximately 1,500 times of standby current, you must watch out if you are measuring with the other brands since the shunt may get burned.

Type	Standby Current	Standby Power	Low-speed operation Current	Low-speed operation Power	Full-speed operation Current	Full-speed operation Power	Inrush Current
Window	8.683mA	1.359W	359.0mA	83.94W	3.287A	755.6W	42.4Apk
Multi-Split	32.881mA	3.640W	265.1mA	61.00W	6.530A	1.488kW	48.8Apk

All parameters are specified base on power on after 30 minutes, Ambient temperature 23±5 °C / Humidity : Under 80% RH, AC Voltage : ± 5%, Frequency : ± 5%.



Air conditioner operating current



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Abundant Range

CP-268 series ranges table

	Voltage Range	Current Range	Watt Range
CP-268-1	5	8	40
CP-268-2	9	14	126
CP-268-5	9	15	135
CP-268-PS	9	14	126

CP-268-1 Voltage , Current and Watt range resolution table :

A/V	30.000V	60.00V	150.00V	300.00V	600.00V
100.00mA	3.0000W	6.000W	15.000W	30.000W	60.00W
200.00mA	6.000W	12.000W	30.000W	60.00W	120.00W
500.0mA	15.000W	30.000W	75.00W	150.00W	300.00W
1.0000A	30.000W	60.00W	150.00W	300.00W	600.0W
2.0000A	60.00W	120.00W	300.00W	600.0W	1.2000kW
5.000A	150.00W	300.00W	750.0W	1.5000kW	3.0000kW
10.000A	300.00W	600.0W	1.5000kW	3.0000kW	6.000kW
20.000A	600.0W	1.2000kW	3.0000kW	6.000kW	12.000kW

CP-268-2 Voltage , Current and Watt range resolution table :

A \ V	1.5000V	3.0000V	6.000V	15.000V	30.000V	60.00V	150.00V	300.00V	600.0V
1. 0000mA	1.5000mW	3.0000mW	6.000mW	15.000mW	30.000mW	60.00mW	150.00mW	300.00mW	600.0mW
2.0000mA	3.0000mW	6.000mW	12.000mW	30.000mW	60.00mW	120.00mW	300.00mW	600.0mW	1.2000W
5.0000mA	7.500mW	15.000mW	30.000mW	75.00mW	150.00mW	300.00mW	750.0mW	1.5000W	3.0000W
10.000mA	15.000mW	30.000mW	60.00mW	150.00mW	300.00mW	600.0mW	1.5000W	3.0000W	6.000W
20.000mA	30.000mW	60.00mW	120.00mW	300.00mW	600.0mW	1.2000W	3.0000W	6.000W	12.000W
50.000mA	75.00mW	150.00mW	300.00mW	750.0mW	1.5000W	3.0000W	7.500W	15.000W	30.000W
100.00mA	150.00mW	300.00mW	600.0mW	1.5000W	3.0000W	6.000W	15.000W	30.000W	60.00W
200.00mA	300.00mW	600.0mW	1.2000W	3.0000W	6.000W	12.000W	30.000W	60.00W	120.00W
500.00mA	750.0mW	1.5000W	3.0000W	7.500W	15.000W	30.000W	75.00W	150.00W	300.00W
1.0000A	1.5000W	3.0000W	6.000W	15.000W	30.000W	60.00W	150.00W	300.00W	600.0W
2.0000A	3.0000W	6.000W	12.000W	30.000W	60.00W	120.00W	300.00W	600.0W	1.2000kW
5.0000A	7.500W	15.000W	30.000W	75.00W	150.00W	300.00W	750.0W	1.5000kW	3.0000kW
10.000A	15.000W	30.000W	60.00W	150.00W	300.00W	600.0W	1.5000kW	3.0000kW	6.000kW
20.000A	30.000W	60.00W	120.00W	300.00W	600.0W	1.2000kW	3.0000kW	6.000kW	12.000kW

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CP-268-5 Voltage ,Current and Watt range resolution table :

A \ V	1.5000V	3.0000V	6.000V	15.000V	30.000V	60.00V	150.00V	300.00V	600.0V
1.0000mA	1.5000mW	3.0000mW	6.000mW	15.000mW	30.000mW	60.00mW	150.00mW	300.00mW	600.0mW
2.0000mA	3.0000mW	6.000mW	12.000mW	30.000mW	60.00mW	120.00mW	300.00mW	600.0mW	1.2000W
5.0000mA	7.500mW	15.000mW	30.000mW	75.00mW	150.00mW	300.00mW	750.0mW	1.5000W	3.0000W
10.000mA	15.000mW	30.000mW	60.00mW	150.00mW	300.00mW	600.0mW	1.5000W	3.0000W	6.000W
20.000mA	30.000mW	60.00mW	120.00mW	300.00mW	600.0mW	1.2000W	3.0000W	6.000W	12.000W
50.000mA	75.00mW	150.00mW	300.00mW	750.0mW	1.5000W	3.0000W	7.500W	15.000W	30.000W
100.00mA	150.00mW	300.00mW	600.0mW	1.5000W	3.0000W	6.000W	15.000W	30.000W	60.00W
200.00mA	300.00mW	600.0mW	1.2000W	3.0000W	6.000W	12.000W	30.000W	60.00W	120.00W
500.00mA	750.0mW	1.5000W	3.0000W	7.500W	15.000W	30.000W	75.00W	150.00W	300.00W
1.0000A	1.5000W	3.0000W	6.000W	15.000W	30.000W	60.00W	150.00W	300.00W	600.0W
2.0000A	3.0000W	6.000W	12.000W	30.000W	60.00W	120.00W	300.00W	600.0W	1.2000kW
5.0000A	7.500W	15.000W	30.000W	75.00W	150.00W	300.00W	750.0W	1.5000kW	3.0000kW
10.000A	15.000W	30.000W	60.00W	150.00W	300.00W	600.0W	1.5000kW	3.0000kW	6.000kW
20.000A	30.000W	60.00W	120.00W	300.00W	600.0W	1.2000kW	3.0000kW	6.000 kW	12.000kW
50.000A	75.00W	150.00W	300.00W	750.0W	1.5000kW	3.0000 kW	7.500 kW	15.000kW	30.000kW

CP-268-PS Voltage ,Current and Watt range resolution table :

A \ V	1.5000V	3.0000V	6.000V	15.000V	30.000V	60.00V	150.00V	300.00V	600.0V
1.0000mA	1.5000mW	3.0000mW	6.000mW	15.000mW	30.000mW	60.00mW	150.00mW	300.00mW	600.0mW
2.0000mA	3.0000mW	6.000mW	12.000mW	30.000mW	60.00mW	120.00mW	300.00mW	600.0mW	1.2000W
5.0000mA	7.500mW	15.000mW	30.000mW	75.00mW	150.00mW	300.00mW	750.0mW	1.5000W	3.0000W
10.000mA	15.000mW	30.000mW	60.00mW	150.00mW	300.00mW	600.0mW	1.5000W	3.0000W	6.000W
20.000mA	30.000mW	60.00mW	120.00mW	300.00mW	600.0mW	1.2000W	3.0000W	6.000W	12.000W
50.000mA	75.00mW	150.00mW	300.00mW	750.0mW	1.5000W	3.0000W	7.500W	15.000W	30.000W
100.00mA	150.00mW	300.00mW	600.0mW	1.5000W	3.0000W	6.000W	15.000W	30.000W	60.00W
200.00mA	300.00mW	600.0mW	1.2000W	3.0000W	6.000W	12.000W	30.000W	60.00W	120.00W
500.00mA	750.0mW	1.5000W	3.0000W	7.500W	15.000W	30.000W	75.00W	150.00W	300.00W
1.0000A	1.5000W	3.0000W	6.000W	15.000W	30.000W	60.00W	150.00W	300.00W	600.0W
2.0000A	3.0000W	6.000W	12.000W	30.000W	60.00W	120.00W	300.00W	600.0W	1.2000kW
5.0000A	7.500W	15.000W	30.000W	75.00W	150.00W	300.00W	750.0W	1.5000kW	3.0000kW
10.000A	15.000W	30.000W	60.00W	150.00W	300.00W	600.0W	1.5000kW	3.0000kW	6.000kW
20.000A	30.000W	60.00W	120.00W	300.00W	600.0W	1.2000kW	3.0000kW	6.000kW	12.000kW