



66205

KEY FEATURES

- Embedded high speed DSP, 16 bits Analog/Digital converters
- 5mA minimum current range(66203/66204) and 0.1mW power resolution
- Meets ENERGY STAR / IEC 62301 / ErP ecodesign / SPEC POWER measurement requirement
- Meets IEC 61000-4-7 standard requirement for harmonics measurement (66205)
- Accumulated energy methods for unstable power measurement
- User-define criteria for automatic PASS/FAIL judgment
- Half rack width and small 2U height, suitable for system integration
- Dual shunts for current range selection providing high accuracy over a wide current range (66202)
- THD and user-specify orders distortion measurement (66202)
- Inrush current and Energy measurement (66202)
- Optional remote interface: USB or GPIB+USB
- Voltage/current harmonics measurement up to 50 orders
- Capable of displaying input waveform DC component measurement reading
- Half rack width and suitable for system integration, 2U height (66201/66202,66205)
- 3U height, 4 input modules design (66203/66204)
- Support different wiring configuration power measurement (1P2W/1P3W/3P3W/3P4W) (66203/66204)
- Support external shunt and CT for higher current measurement application (66204)
- SMART Range function provides seamless power measurement capability (66205)
- Capable of extending current measurement range up to 30A (66205)
- USB (Host) interface provides data logging functionality (66205)
- Optional remote interface: USB or GPIB+USB
- Support GPIB, USB, RS232, Ethernet (LXI) interface (66205)



66203/66204



66201/66202

All specifications are subject to change without notice.



Chroma Digital Power Meter 66200 series provide both single and multiple phase power measurement solution designed for measurement of AC or AC+DC power signals and related parameters common to most electronic products. Instead of traditional analog measurement circuits, the Power Meter 66200 uses state-of-the-art DSP digitizing technology. The internal 16 bits analog/digital converters with sampling rates of up to 250kHz provide both high speed and high accuracy measurements. The instrument provides excellent function and stability compared to other power meters of same class currently available on the market. It includes a front panel 4 display area with 5 digits, 7-segment LED readouts as well as optional remote control using USB or GPIB interfaces.

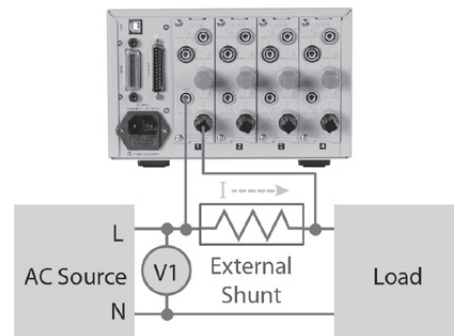
The 66200 series Power Meter is also designed to meet ENERGY STAR/IEC 62301/ErP ecodesign/SPEC POWER measurement requirements. The instrument provides 5mA (66203/66204) minimum current range and 0.1mW power resolution providing less than 2% uncertainty for No-Load mode power measurement. Included are not only traditional averaging methods but also accumulated energy approach method used to calculate active power data. In this way, users can achieve accurate readings even if power consumption levels are not stable or operating on in non-linear modes (i.e. hiccup modes). The Model 66202 can even measure Total-Harmonic-Distortion (THD) and to user-specify distortion orders. Thus, the instrument can easily measure distortion values up to and including the 13th harmonic as required by ENERGY STAR requirements. The 66200 Power Meter also includes limit test GO/NG functions. This feature allows users to set pass/fail limits to automatically display PASS/FAIL according to these user-define criteria.

The 66201 includes simple measurement functions designed for testing at low power levels (maximum current 4A). Examples of these devices are AC adapters, battery chargers, LCD monitors and similar devices. Included measurement data is Voltage (Vrms, Vpeak+, Vpeak-), Current (Irms, Ipeak+, Ipeak-), Power (W, Power Factor, Apparent Power VA, Reactive Power VAR), Current Crest Factor and Frequency. The Model 66201 Power meter is competitively priced to be suitable for bench-top testing and automated production line testing.

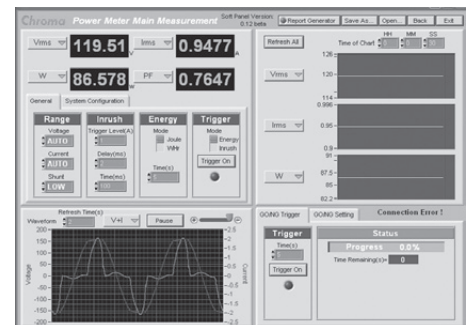
The 66202 includes a 2-shunt design to get 66202 highly accurate for both low and high current measurements. Besides the parameters measured on Model 66201, it also provides Inrush Current, Total Harmonic Distortion of V/I and Energy measurement. With these practical functions, The Model 66202 is suitable for meeting the demanding tasks of R&D and quality control departments.

The 66203/66204 are packaged in a 3U high, half rack enclosure suitable for bench top or system integration. The power meters are capable of supporting external shunts and CT for higher current application. The 4 channel 66204 is suitable for input and output parameter measurement and efficiency of 3 phase PV inverters can be calculated with measurement of the DC voltage/current at the input side of the inverter.

The 66203/66204 power meters include a 2-shunt design to provide high accurate readings for both low and high current measurements. The power meters also support features such as Inrush current, Total Harmonic Distortion of V/I, and Energy measurements. With these practical functions, the 66203/66204 power meters are suitable for meeting the demanding tasks of R&D, production and quality control departments.



66203/66204 Power Meters support external shunt function for high current (>20A) measurement application.



Softpanel for Model 66200 Series

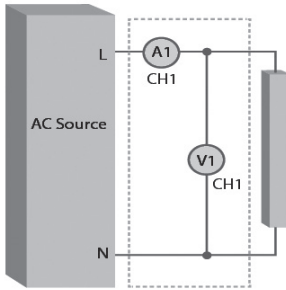


Power Efficiency Test Softpanel

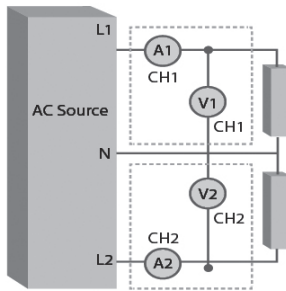
The multi-channel of 66203/66204 Power Meters are capable of supporting different wiring modes. As shown the instruments can be configured for single and 3 phase configurations by selection preset modes.

Each channel of 66203/66204 has the ability to provide independent measurements; hence the meters are suitable for multi-point measurement applications such as PV inverter testing. Instruments are designed for measuring DC input parameters as well as three phase AC readings on the output side. The overall efficiency for the PV inverter can easily be obtained by built-in functions. In order to meet high voltage applications (up to 1200Vrms) Chroma offers an HV option kit.

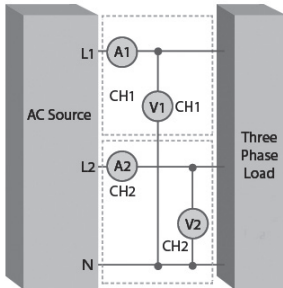
User could also implement 3P3W (Three Phase Three Wire) wiring mode for three phase power measurement application. Such as Power Supplies.



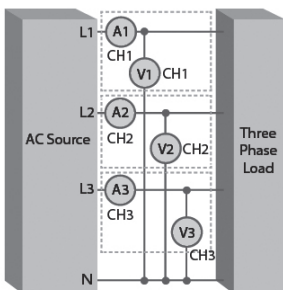
1P2W (Single Phase Two Wire)



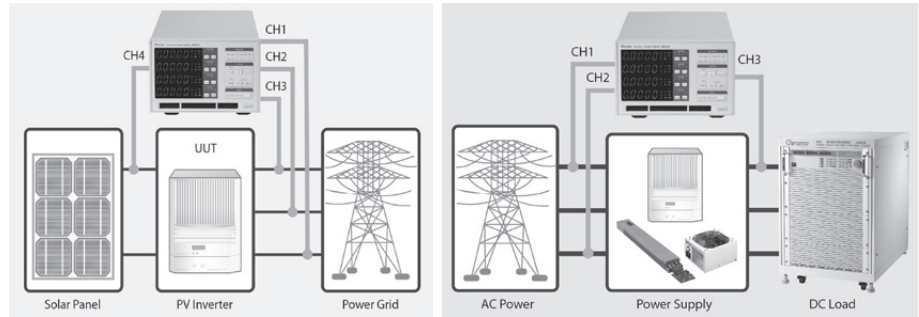
1P3W (Single Phase Three Wire)



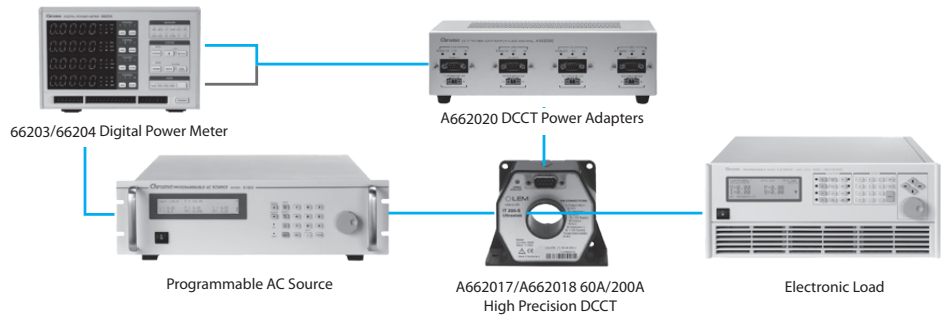
3P3W (Three Phase Three Wire)



3P4W (Three Phase Four Wire)



Support Ultra High Precision DCCT 60A/200A Optional Kit for High Current Measurement Application



ORDERING INFORMATION

- 66201** : Digital Power Meter
- 66202** : Digital Power Meter
- 66203** : Digital Power Meter (3ch)
- 66204** : Digital Power Meter (4ch)
- * **66205** : Digital Power Meter (1ch)
- A662001** : USB Remote Interface Board for Model 66201/66202
- A662002** : GPIB+USB Remote Interface Board for Model 66201/66202
- A662003** : Measurement Test Fixture (250V/10A) for Model 66201/66202
- A662004** : Rack Mounting Kit for Model 66201/66202
- A662005** : USB Cable (180cm)
- A662006** : External CT 50 Arms for Model 66202
- A662007** : External CT 100 Arms for Model 66202
- A662008** : Power Efficiency Test Softpanel
- A662009** : Softpanel for Model 66200 Series
- A662010** : Rack Mount Kit for Model 66203/66204
- A662012** : 1200V HV option kit for Model 66203/66204
- A662013** : External CT 50Arms for Model 66203/66204
- A662014** : External CT 100Arms for Model 66203/66204
- A662015** : Voltage and current measurement cables for Model 66204
- A662016** : Voltage and current measurement cables for Model 66203
- A662017** : Ultra High Precision DCCT 60A
- A662018** : Ultra High Precision DCCT 200A
- A662019** : DCCT Power Adapter for single channel
- A662020** : DCCT Power Adapter for multi- channels



A662003



A662019



A662020

* Call for availability

SPECIFICATIONS-1		
Model	66201	66202
Channel	1	1
Parameters	V, Vpk, I, Ipk, W, VA, VAR, PF, CF_I, F	V, Vpk, I, Ipk, Is, W, VA, VAR, PF, CF_I, F, THD_V, THD_I, Energy
Voltage		
Range	150/300/500Vrms (CF = 1.6)	150/300/500Vrms (CF = 1.6)
Accuracy	DC, 15Hz - 1kHz: 0.1% of rdg + 0.08% of rng 1kHz - 10kHz: (0.1+0.05*KHz)% of rdg + 0.08% of rng	DC, 15Hz - 1kHz: 0.1% of rdg + 0.08% of rng 1kHz - 10kHz: (0.1+0.05*KHz)% of rdg + 0.08% of rng
Harmonics Accuracy	--	15Hz - 1kHz: 0.1% of rdg + 0.08% of rng 1kHz - 10kHz: (0.1+0.05*KHz)% of rdg + 0.08% of rng
Input Resistance	1MΩ	1MΩ
Current		
Range	0.01/0.1/0.4/2 Arms (CF=4) *1	SHUNT H : 0.2/2/8/20Arms (CF=2@0.2/2/8A, CF = 4@ 20A) SHUNT L : 0.01/0.1/0.4/2Arms (CF=4)
Accuracy *2	0.01A Range: DC, 15Hz - 1kHz: 0.1% of rdg + 0.25% of rng 1kHz - 10kHz: (0.1+0.05 x kHz)% + 0.25% of rng 0.1A/0.4A/2A Range: DC, 15Hz - 1kHz: 0.1% of rdg + 0.1% of rng 1kHz - 10kHz: (0.1+0.05 x kHz)% + 0.1% of rng	SHUNT H: 0.2A Range: DC, 15Hz - 1kHz: 0.1% of rdg + 0.12% of rng 1kHz - 10kHz: (0.1+0.05 x kHz)% + 0.12% of rng 2A/8A/20A Range: DC, 15Hz - 1kHz: 0.1% of rdg + 0.1% of rng 1kHz - 10kHz: (0.1+0.05 x kHz)% + 0.1% of rng SHUNT L: 0.01A Range: DC, 15Hz - 1kHz: 0.1% of rdg + 0.25% of rng 1kHz - 10kHz: (0.1+0.05 x kHz)% + 0.25% of rng 0.1A/0.4A/2A Range: DC, 15Hz - 1kHz: 0.1% of rdg + 0.1% of rng 1kHz - 10kHz: (0.1+0.05 x kHz)% + 0.1% of rng
Harmonics Accuracy	--	SHUNT H: 0.2A Range: DC, 15Hz - 1kHz: 0.1% of rdg + 0.12% of rng 1kHz - 10kHz: (0.1+0.05 x kHz)% + 0.12% of rng 2A/8A/20A Range: DC, 15Hz - 1kHz: 0.1% of rdg + 0.1% of rng 1kHz - 10kHz: (0.1+0.05 x kHz)% + 0.1% of rng SHUNT L: 0.01A Range: DC, 15Hz - 1kHz: 0.1% of rdg + 0.25% of rng 1kHz - 10kHz: (0.1+0.05 x kHz)% + 0.25% of rng 0.1A/0.4A/2A Range: DC, 15Hz - 1kHz: 0.1% of rdg + 0.1% of rng 1kHz - 10kHz: (0.1+0.05 x kHz)% + 0.1% of rng
Power		
Range	1.5W ~ 1000W, 12 ranges	1.5W ~ 10kW, 24 ranges
Accuracy	47Hz~63Hz : 0.1% of rdg + 0.1% of rng 15Hz~1kHz : (0.1+ 0.2/PF x kHz)% of rdg+0.18% of rng	47Hz~63Hz : 0.1% of rdg + 0.1% of rng 15Hz~1kHz : (0.1+ 0.2/PF x kHz)% of rdg+0.18% of rng
Power Factor accuracy *3	0.006+(0.003/PF) x kHz	0.006+(0.003/PF) x kHz
Frequency		
Range	DC, 15Hz ~ 10kHz	DC, 15Hz ~ 10kHz
Measuring Condition	Voltage (10 ~ 100% of the voltage range)	Voltage (10 ~ 100% of the voltage range)
Others		
Display Resolution	5 Digits	
Display update rate	0.25~2 sec	
Input Voltage	90V ~ 130V /180V ~ 250V, 50Hz/ 60Hz, 30VA	
Interface	Option: USB or GPIB+USB	
Operating Temperature	0°C ~ 40°C	
Storage	-40°C ~ 85°C	
Safety & EMC	CE (include EMC & LVD)	
Dimension (H x W x D)	88 x 212 x 348.1 mm / 3.46 x 8.35 x 13.7 inch (excluding projections)	
Weight	Approx. 3.8 kg / 8.37 lbs	

The specifications are valid only after the power meter is turned on more than one hour in a thermally stable environment.

Note*1 : The maximum measurable current of 66201 is 4 Arms.

Note*2 : The current accuracy applies temperature range $23 \pm 1^\circ\text{C}$ for 0.01A & 0.2A(CF=2). For all the other current ranges, the spec. applied under $23 \pm 5^\circ\text{C}$.

Note*3 : The PF spec. applies only when the signals are higher than 50% of the selected voltage and current ranges.

SPECIFICATIONS-2			
Model	66203	66204	66205 *1
Channel	3	4	1
Parameters	V, Vpk, I, Ipk, Is, W, VA, VAR, PF, Cfi, F, THD V, THD I, Energy		
Voltage			
Range	15V/30V/60V/150V/300V/600Vrms (CF=2), 6 range HV option up to 1200Vrms		15V/30V/60V/150V/300V/600Vrms (CF=2), 6 range
Accuracy	DC, 10Hz to 1kHz: 0.1% RD + 0.08% RNG 1kHz to 10kHz: (0.1+0.05*kHz)% RD + 0.08% RNG		DC, 10Hz to 850Hz: 0.1% rdg+0.05% rng 850Hz to 10kHz: (0.1+0.05xkHz)% rdg+0.08% rng
Harmonics Accuracy	10Hz to 1kHz: 0.1% RD + 0.08% RNG 1kHz to 10kHz: (0.1+0.05*kHz)% RD + 0.08% RNG		DC, 10Hz to 850Hz: 0.1% rdg+0.05% rng 850Hz to 10kHz: (0.1+0.05xkHz)% rdg+0.08% rng
Input Resistance	2M Ω		
Current			
Range	5mA/20mA/50mA/200mA/500mA/2A/5A/20Arms (CF=4)		Low Shunt: 5mA/20mA/50mA/200mA/300mA (CF=4) High Shunt: 500mA/2A/5A/20Arms/30Arms (CF=4)
Accuracy	DC, 10Hz to 1kHz: 0.1% RD + 0.1% RNG 1kHz to 10kHz: (0.1+0.05 x kHz)% RD + 0.1% RNG		DC, 10Hz to 850Hz: 0.1% rdg+0.05% rng 850Hz to 10kHz: (0.1+0.05xkHz)% rdg+0.1% rng
Harmonics Accuracy	10Hz to 1kHz: 0.1% RD + 0.1% RNG 1kHz to 10kHz: (0.1+0.05 x kHz)% RD + 0.1% RNG		DC, 10Hz to 850Hz: 0.1% rdg+0.05% rng 850Hz to 10kHz: (0.1+0.05xkHz)% rdg+0.1% rng
Power			
Range	75mW ~ 12kW (48 ranges)		75mW ~ 18kW (60 ranges)
Accuracy	DC, 47Hz ~ 63Hz: 0.1% RD + 0.1% RNG 10Hz ~ 1KHz: 0.1% RD + 0.18% RNG 1KHz ~ 10KHz: (0.1+0.1 x kHz)% RD + 0.18% RNG		DC, 10Hz to 850Hz: 0.1% rdg+0.05% rng 850Hz to 10kHz: (0.1+0.07xkHz)% rdg+0.15% rng
Power Factor accuracy	0.001+(15ppm/PF) x Hz		
Frequency			
Range	DC, 10Hz ~ 10kHz		
Measuring Condition	Voltage (10 ~ 100% of the voltage range)		
Others			
Display Resolution	5 Digits		
Display Update Rate	0.25sec/0.5sec/1sec/2sec		50ms/100ms/250ms/500ms/1s/2s/5s
Input Voltage	100~240V \pm 10%, 50/60Hz		
Interface	USB+GPIB (Standard)		USB+GPIB+USB (Host)+ RS232+Ethernet (LXI) *1
Operation Temperature	0°C ~ 40°C		
Storage	-40°C ~ 85°C		
Safety & EMC	CE (include EMC & LVD)		
Dimension (H x W x D)	133 x 212 x 420 mm / 5.25 x 8.25 x 16.3 inch		88 x 212 x 348mm / 3.46 x 8.35 x 13.7 inch
Weight	7.5 kg / 16.5 lbs	8.5 kg / 18.7 lbs	Approx. 4kg / 8.8 lbs

Note*1 : Call for availability

The specifications are valid only after the power meter is turned on more than one hour in a thermally stable environment.