



DIGITAL POWER METER MODEL 66205

The 66205 is the 2nd generation of the 66200 series power meter designed specifically for single channel measurement. Its state of art design is capable of providing highly accurate power measurements to meet the requirements of IEC 62301/EN50564 standards. Functionality improvements of the 66205 increase power measurement capabilities to a wider range of applications.

The Smart Range function is one of the most important new features added to the 66205 power meter. Smart Range allows the power integration mode to perform active power measurements with the measurement range in auto mode. Chroma's proprietary design automatically selects the appropriate range, based on changes in sensed voltage and current, ensures the best accuracy when integrating the measurements over time.

The 66205 provides 10 selectable current measurement ranges from 5mA up to 30A. External current sensor options with current rating ranging from 60A~1200A are available to increase the current measurement range.

Six selectable voltage ranges are available up to 600V. External sensor option A662023 can

be used to increase the voltage measurement range to 1.8kV. The 66205 provides a low range error up to 0.05% and is capable of meeting the measurement uncertainty requirement of IEC 62301/EN50564.

66205 power meter is designed to comply with IEC 61000-4-7. Continuous high performance harmonic measurement, with 5Hz frequency resolution and a packet harmonic function, it can accurately measure sub-harmonics, inter-harmonics and harmonics.

For remote operation, the 66205 offers 4 types of communication interfaces including GPIB, USB, RS-232 and LAN (optional). Using the softpanel, it can create complete test reports and perform power quality as well as regulation tests. In addition, its STORE function records the measured values and saves them to a USB storage device. The Limit function can be used for production tests by performing GO/NG tests on the upper and lower limits of voltage, current and power parameters; additionally, it can be integrated into automated production when I/O port is used. The 66205 is a great fit for meeting the demanding tasks of R&D, production and quality control.



MODEL 66205

KEY FEATURES

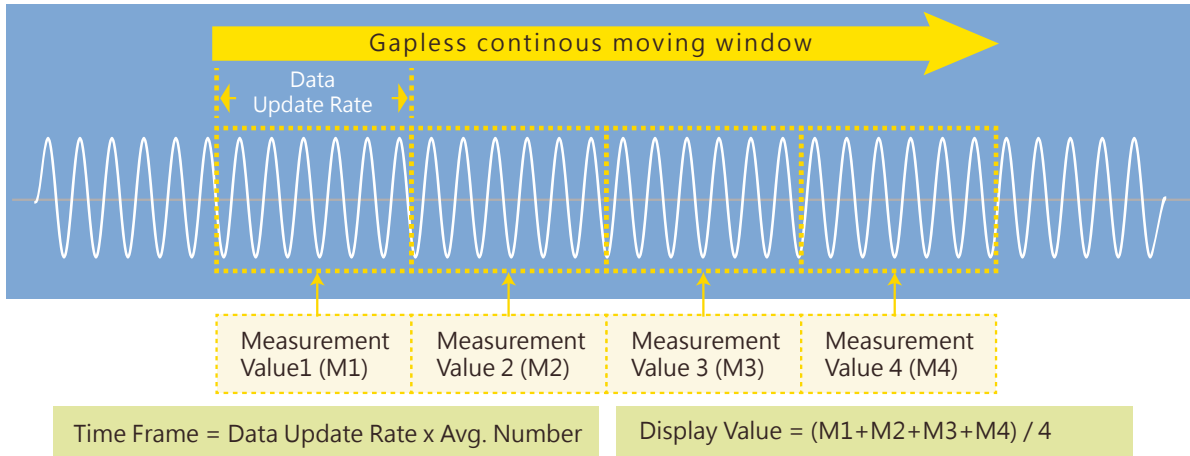
- Voltage Ranges: 15/30/60/150/300/600 Vrms
1200/1800 Vrms (option)
- Current Ranges : 0.005/0.02/0.05/0.2/0.3/0.5/2/5/20/30 Arms
- Frequency Range : DC, 10Hz~10kHz
- Embedded high speed DSP, 16 bits Analog/Digital converters with max sampling rate up to 250kHz
- Capable of meeting the IEC 61000-4-7 harmonics measurement requirements
- Smart Range function provides seamless power integration measurement under auto range mode
- Supports external shunt and CT for higher current applications
- 5 mA minimum current range & 0.1mW power resolution
- Meets ENERGY STAR /EN 50564/ IEC 62301/ErP requirements
- User-define criteria provides automatic PASS/FAIL indications
- THD and user-specify order distortion measurement
- Inrush current and energy measurements
- Voltage/ Current harmonics measurements up to 100 orders
- USB (Host) interface provides data logging functionality
- Support GPIB, USB, RS232, LAN (option) interface
- Provides IEC 62301, IEC 61000-3-2:2018 pre-compliance test solution (with 66200 softpanel)



MEASUREMENT PARAMETERS

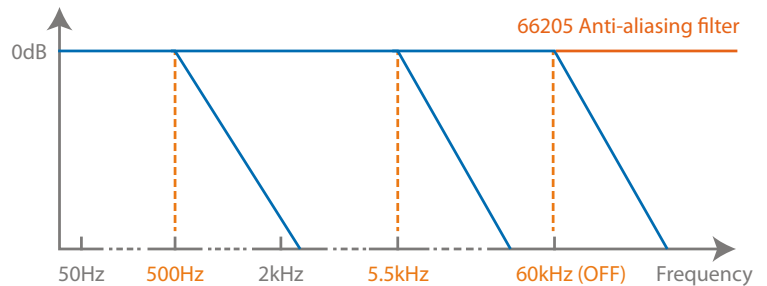
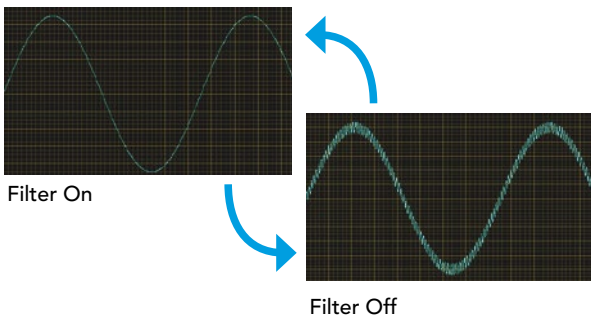
The 66205 power meter is capable of providing the following reliable and accurate measurement parameters : Vrms, Vpeak+, Vpeak-, V_harmonic, V_THD, CFV (Crest Factor Voltage), Irms, Ipeak+, Ipeak-, I_harmonic, I_THD, Is (Inrush Current), CFI (Crest Factor Current), W, VA, VAR, PF, Freq_V, Freq_I, Wh, Ah, ° (phase degree).

Parameter Measurement Method : a gapless continuous moving window average out the voltage and current parameter measurements within the time frame. Please note the time setting for the time frame is equivalent to data update rate x AVG number setting.



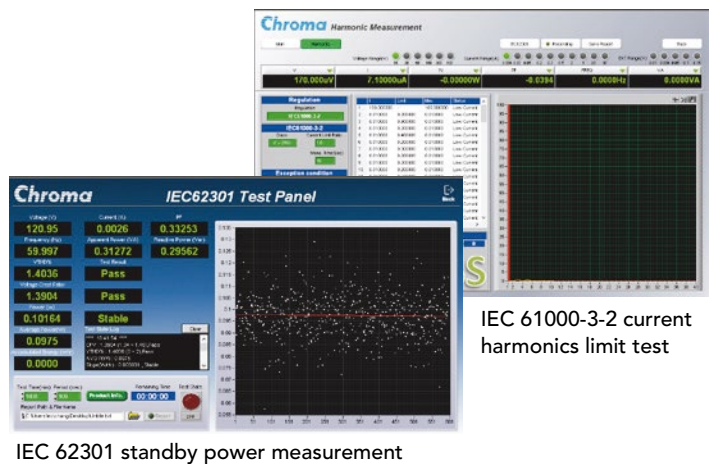
LINE FILTER FUNCTION

Line filter is a digital low pass filter with a high attenuation rate of $\geq 70\text{dB}$. When line filter is enabled, the measured value will not include high frequency content, such as the high frequency noise of a switching converter. The 66205 offers three sets of line filter with cutoff frequency: OFF, 500 Hz and 5.5 kHz. The line filter with 5.5 kHz cutoff frequency is compliant to IEC 61000-3-2 international standards. It is suggested to turn this filter on when measuring harmonics.



HARMONIC MEASUREMENT FUNCTION (IEC MODE)

The 66205 is designed to meet harmonics measurement requirements in accordance to IEC 61000-4-7. Under the harmonics measurement IEC mode, it allows user to obtain THD measurement consistent with the THD measurement result of high end IEC 61000-4-7 compliance power analyzers. By incorporating with 66200 softpanel, the 66205 is capable of providing IEC 62301 (standby power measurement) and IEC 61000-3-2:2018 (current harmonics limit test) pre-compliance test solution.



IEC 62301 standby power measurement

IEC 61000-3-2 current harmonics limit test

HARMONIC MEASUREMENT (DISPLAY FUNCTION)

The harmonic measurement display function when enabled will show the amplitude, phase angle of each harmonic order on the front panel displays. The following example demonstrates the harmonics display function.

```
COMPOSE= PERCENT-1_ [SYN]
Vac_fund= 220.0 F_fund= 50 Hz
Vdc= 0.0 DEGREE= 0.0
(SHIFT)(ENTER) to Execute ▼
```

N	%	0	N	%	0	[SYN]
2	0.00	0.00	3	10.00	30.0	
4	0.00	0.00	5	0.00	0.0	▲
6	0.00	0.00	7	0.00	0.0	▼

Use the AC Source synthesis function to generate a voltage waveform consisting of 220V at fundamental frequency 50Hz and 3rd harmonics with 22V as amplitude and 30 degree as phase angle.



Displaying the amplitude of 220V for fundamental frequency



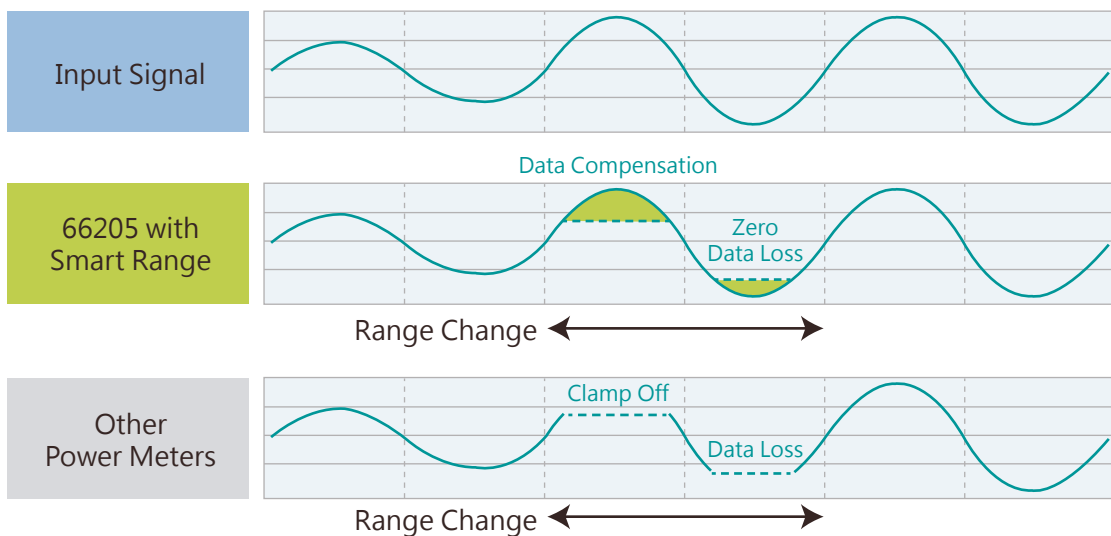
The amplitude for the 3rd harmonic order is displayed



The phase angle for the 3rd harmonic order is displayed

SMART RANGE (FOR POWER INTEGRATION FUNCTION)

The Smart Range function, proprietary design, allows power integration with the measurement range in auto mode. It selects the most appropriate measurement range in response to the changing voltage and current measurements, to ensure no data loss during transition of measurement range change under power integration mode.



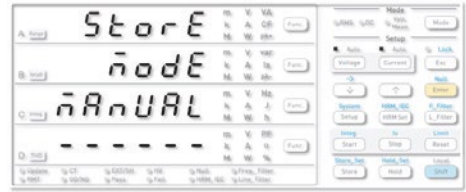
INRUSH CURRENT MEASUREMENT FUNCTION

The 66205 power meter includes a built-in inrush current (I_s) measurement function. Users can set a current level for triggering the starting point of the measurement. Users can also use an external TTL signal to trigger inrush current measurements through the control I/O signal port located in the back of the unit. The delay parameter can help users to bypass the peak value B after the trigger point A. The parameter, T, allows a set time period to be established for measuring the peak value during a preset time (T).



STORE FUNCTION - STORING MEASURED DATA

The Store function allows user to record the measured data based on specific parameters format. Once the store procedures to the internal memory is completed, user can transfer the measured data file (in .CSV format) to the USB storage device via USB host interface for post data analysis.



Store Parameter						
V	Vdc	Vmean	Vpk+	Vpk-	CF_V	Hz_V
I	Idc	Ipk+	Ipk-	CF_I	Hz_I	--
P	Pdc	S	Q	PF	ϕ	--
V (k)	I(k)	P(k)	S(k)	Q(k)	PF(k)	--
ϕ (k)	Vhdf(k)	Ihdf(k)	Phdf(k)	Vdeg(k)	Ideg(k)	--

Store Parameter			
V	I	P	PF
Wh	Ah	--	--

HIGH VOLTAGE (HV) FUNCTION

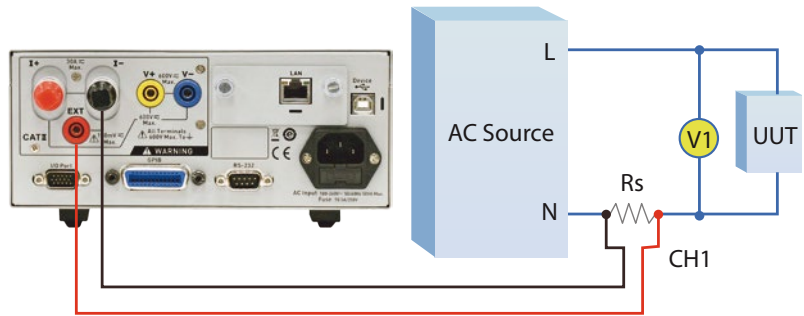
With the addition of the optional A662023 HV Measurement Kit, the 66205 is capable of providing high voltage measurements solution up to 1800Vrms in DC or AC (47Hz~63Hz frequency range) for HV PV inverter, PCS test application.



A662023: 1800V HV Measurement Kit

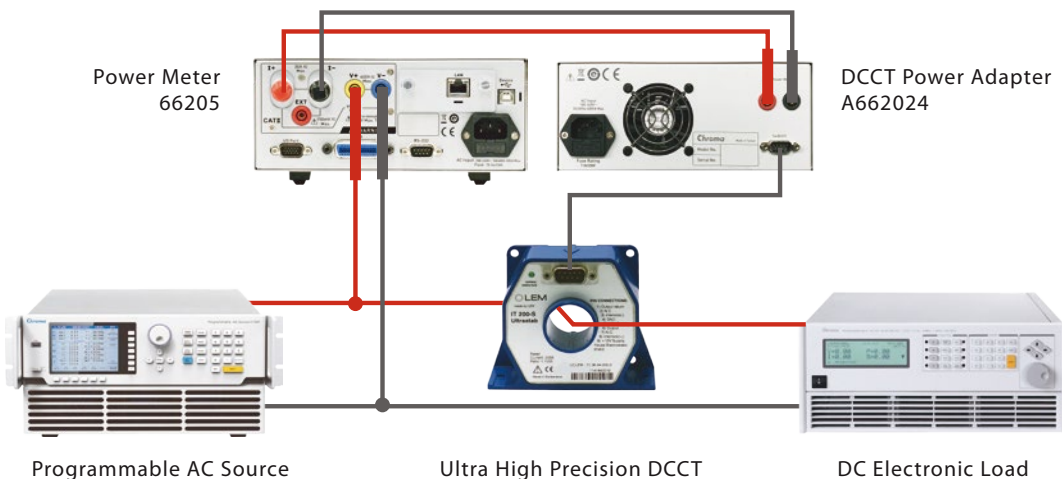
EXTERNAL SHUNT FUNCTION

External Shunt is an alternative method when the measured current is greater than the 30Arms current range. Users can set the resistance value of the external shunt with setting range from 0.0001m to 99.999 ohm. Please note the external shunt function is applicable for AC and DC current measurement.



CT FUNCTION (DCCT)

The CT function supports both CT and DCCT and provides an alternative method when the measured current is greater than the current range of 30Arms. Please note the CT supports AC current measurement only (NO DC) and the DCCT supports both AC and DC current measurement. External current options with current rating ranging from 60A ~ 1200A are available in order to extend the current measurement range.

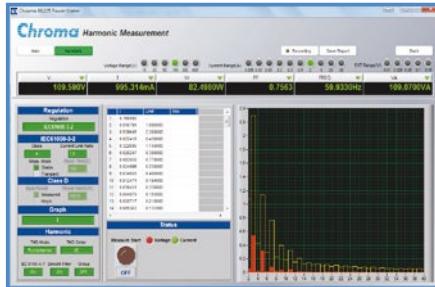


POWER METER SOFTPANEL

The 66200 Power Meters provide graphical user interface software (softpanel) which allow users to control and read measured parameters from a computer via USB, GPIB or LAN interface. Users can easily observe measured voltage and current waveforms and monitor the changes in parameter readings by using the chart function. Additional features include a recording function which can record selected parameters and write data to a file for further analysis. The 66200 Softpanel supports IEC 61000-3-2 harmonic current limit test (pre-compliance) allowing users to examine whether the UUT has met the harmonic current requirement. The Power Efficiency Softpanel integrates the Chroma's electronic loads and AC Sources to provide an effective method for power efficiency testing and recording of data using the test report function which automatically generates a report at the completion of testing.



66200 Softpanel

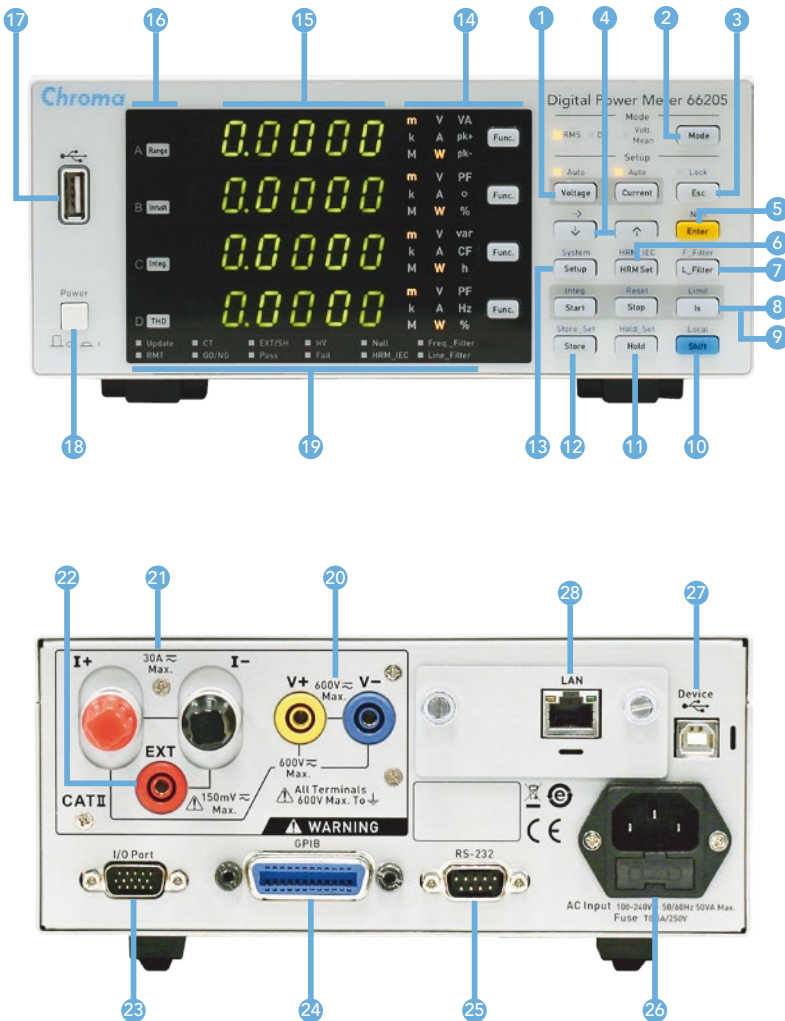


IEC 61000-3-2 Current Harmonics Test (Pre-compliance)



Power Efficiency Test Softpanel

PANEL DESCRIPTION



1. Voltage/Current range selection and auto range indicator
2. Measurement mode selection and status indicator
3. Quit the setting page and lock panel key
4. Function selection and adjust setting value
5. Confirm settings and current offset compensation
6. Harmonics menu and IEC function
7. Line Filter and Frequency Filter select
8. Power integration, inrush measurement and limit function settings
9. Power integration, inrush measurement and limit function control
10. Switch from remote to local mode
11. Hold function
12. Access to store function menu
13. Setup menu and system configuration
14. Measurement parameter selection & measurement parameter indicator
15. Display window
16. Function operation indicator
17. USB port
18. Power switch
19. Measurement function setup indicator
20. Voltage measurement input terminal
21. Current measurement input terminal
22. External sensing voltage signal input terminal
23. Control signal input/output terminal
24. GPIB Port
25. RS-232 Port
26. AC LINE socket
27. USB Port
28. LAN Port (optional)

SPECIFICATIONS

Model	66205
Channel	1
Parameters	Vrms, Vpk+, Vpk-, V_harm, V_THD, CFv, Irms, Ipk+, Ipk-, I_harmonic, I_THD, CFi, Is, W, VA, var, PF, Freq_V, Freq_I, Wh, Ah, ° (degree)
AC/DC Voltage	
Range	15V/30V/60V/150V/300V/600Vrms (CF=2), 6 ranges
Accuracy	DC, 10Hz to 850Hz : 0.1% rdg+0.05% rng 850Hz to 10kHz : (0.1+0.05*kHz)% rdg+0.08% rng
Harmonics Accuracy	DC, 10Hz to 850Hz : 0.1% rdg+0.05% rng 850Hz to 10kHz : (0.1+0.05*kHz)% rdg+0.08% rng
Input Resistance	2MΩ
AC/DC Current	
Range	Low Shunt: 5mA/20mA/50mA/200mA/300mA (CF=4) High Shunt: 500mA/2A/5A/20Arms/30Arms (CF=4)
Accuracy	DC, 10Hz to 850Hz : 0.1% rdg+0.05% rng 850Hz to 10kHz : (0.1+0.05*kHz)% rdg+0.1% rng
Harmonics Accuracy	DC, 10Hz to 850Hz : 0.1% rdg+0.05% rng 850Hz to 10kHz : (0.1+0.05*kHz)% rdg+0.1% rng
Power	
Range	75mW ~ 18kW (60 ranges)
Accuracy	DC, 10Hz to 850Hz : 0.1% rdg+0.05% rng 850Hz to 10kHz : (0.1+0.07*kHz)% rdg+0.15% rng
Power Factor accuracy	0.001+(15ppm/PF) x Hz
Frequency	
Range	DC, 10Hz ~ 10kHz
Measuring Condition	Synchronizing by voltage signal (10%~100% of the voltage range) Synchronizing by current signal (30%~100% of the current range)
Others	
Display Resolution	5 digits
Display Update Rate	50ms/100ms/250ms/500ms/1s/2s/5s/10s
Input Voltage	100~240 ± 10%, 50/60Hz
Interface	Standard : USB (host), USB (device), GPIB and RS232 Optional : LAN
Operation Temperature	0°C ~ 40°C
Storage	-40°C ~ 85°C
Safety & EMC	CE (include EMC & LVD)
Dimension (H x W x D)	88mm x 208mm x 348mm / 3.47" x 8.19" x 13.7"
Weight	Approx. 4.4kg / 9.7lbs

* Specifications are subject to change without notice

ORDERING INFORMATION

- | | | |
|-------------------------------|---|---|
| 66205 : Digital Power Meter | A662017 : Ultra High Precision DCCT 60Apeak | B662002 : Rack Mount Kit |
| A662012 : 1200V HV option kit | A662018 : Ultra High Precision DCCT 200Apeak | B662004 : 1200A AC Current Clamp |
| A662013 : External CT 50Arms | A662021 : LAN Remote Interface Board | B662005 : Alligator Clips |
| A662014 : External CT 100Arms | A662022 : Measurement Test Fixture (250V/10A) | L11-002987 : Ultra High Precision DCCT 400A peak |
| | A662023 : 1800V HV Measurement Kit | L11-002986 : Ultra High Precision DCCT 600A peak |
| | A662024 : DCCT Power Adapter for single channel | L11-002985 : Ultra High Precision DCCT 1000A peak |

