Agilent AC6800 Series Basic AC Power Sources

Because you can't afford downtime

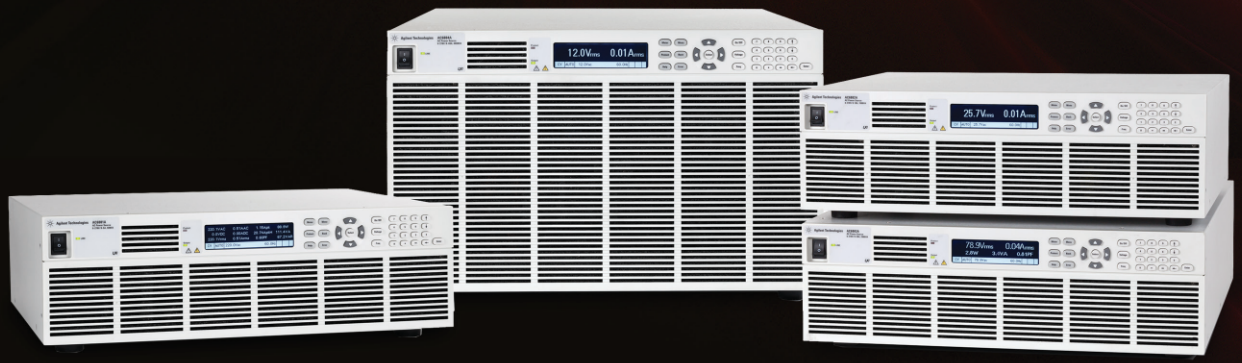
Data Sheet

Engineer reliability into your designs with a new basic AC source alternative from Agilent and test with confidence that your products will perform as designed...

Maximize your uptime with Agilent's new AC6800 Series basic AC power sources, and test your devices with confidence your products will perform as designed – even if voltage from the AC power grid is fluctuating or you are facing extreme inrush current or transient spikes.

Agilent's new AC6800 Series basic AC sources offer the quality and capability you need:

- Intuitive user interface – If you've used an Agilent DC power supply, you'll feel right at home with these AC sources.
- Flexible I/O – LAN/LXI Core and USB (standard), and GPIB (optional). And you can access and control the source remotely via a standard browser.
- Low cost of ownership – backed with global support and the longest standard warranty in the industry



Models up to 4000 VA are available to meet your basic AC source requirements

Anticipate ___Accelerate ___Achieve

Agilent Technologies

A New Basic AC Power Source Alternative for Bench and Production-Line Testing

Whether you want to manually control your basic AC source on your R&D bench or program it to use in a fully automated test rack, it must provide stable, dependable AC power to your DUT.

You can use the AC6800 Series basic AC power sources for:

- Simple tasks such as simulating global AC power conditions
- Testing varying frequency and voltage combinations to simulate real-world conditions
- Power factor correction testing and similar AC + DC applications (for example, test your input circuitry to look at ripple voltage)

Choose from models up to 4000 VA, all with 0 to 270 Vrms and 40 to 500 Hz capability.

	AC6800 Series Basic AC Sources			
	AC6801A	**AC6802A**	**AC6803A**	**AC6804A**
Phases	Single-phase			
Maximum output power	500 VA	1000 VA	2000 VA	4000 VA
AC output mode				
Voltage ranges (low/high range)	135 Vrms/270 Vrms			
Maximum rms current (low/high range)	5 A/2.5 A	10 A/5 A	20 A/10 A	40 A/20 A
Frequency	40-500 Hz			
DC output mode				
Voltage ranges (low/high range)	190 V/380 V			
Maximum current (low/high range)	4 A/2 A	8 A/4 A	16 A/8 A	32 A/16 A
Power capacity	400 W	800 W	1600 W	3200 W
Measurements & I/O				
Measurements	Voltage, current, power, AC, DC and AC+DC			
Transients	Basic transient capability via optional analog card (Option: AC68ALGU)			
I/O	LAN/LXI Core with remote Web interface USB GPIB (Option: AC68GPBU)			

Need higher-performance capabilities?

If you need to generate and analyze more-sophisticated waveforms, harmonics or more complex transient signals, the Agilent 6800B Series AC power source/analyzers with built-in arbitrary waveform generator give you the ability to source and analyze more-complex AC applications up to 1750 VA.
See www.agilent.com/find/ACSources for more information.

Easy Operation with an Intuitive, Time-Tested User Interface

The AC6800's simple user interface allows you to easily access and view setup and measurement information directly from the front panel or programmatically. And you won't need to spend a lot of time learning to use the interface. If you've used an Agilent DC power supply, you'll feel right at home with the AC6800 Series basic sources.

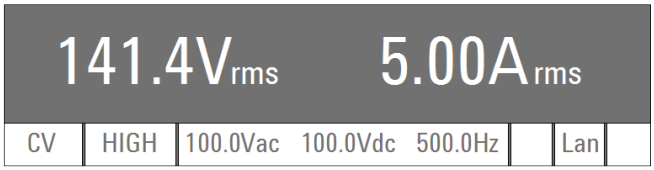
Set your display to show just the information you want

Simply click through the metering options to modify the display to show your measurement priorities and increasing levels of details.

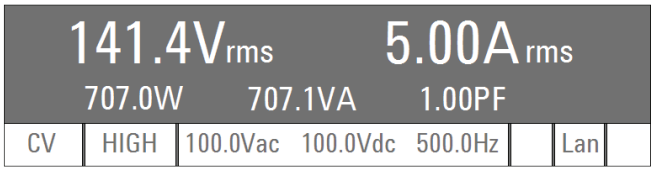
The information displayed indicates both the setting levels and the selected output coupling mode or configuration to allow you to control the AC source programmatically.

Measurements may be AC coupled, DC coupled, or AC+DC coupled independent of the output coupling mode.

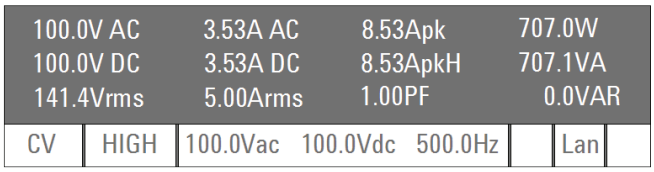
Whether you use the front panel or control your AC source programmatically via SCPI (Standard Commands for Programmable Instruments), you can fully access all features.



See basic voltage and current measurement information



See voltage, current and power measurement information



See full details of all measurement information available

Flexible I/O to meet your needs

Agilent AC6800 Series basic AC power sources come with LAN/LXI Core and USB interfaces (standard). For your legacy applications, an optional GPIB interface is also available that you can easily install yourself.

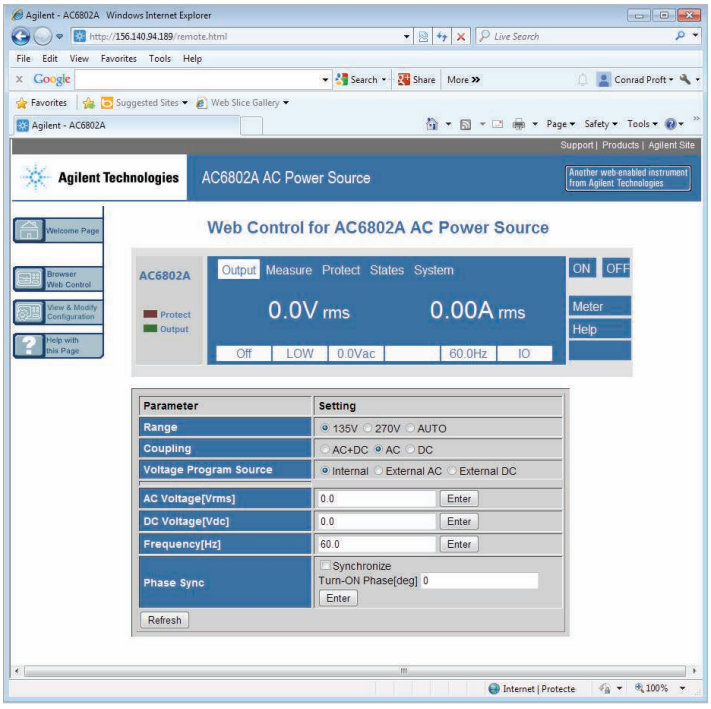
Set up, monitor and operate your AC6800 sources remotely

You can use the built-in Web server to remotely access and control your AC6800 Series AC sources via a standard browser. This control goes above and beyond the LXI Core specification, giving you the ability to monitor and control the instrument from anywhere.

Add more flexibility with an optional analog input board to add basic transient signals

COMING SOON!

If you want to generate non-sinusoidal output waveforms or output transient events, use the optional analog input, which allows you to create analog waveforms using your function generator. See page 12 to learn more about the analog card's characteristics. The analog input option is also useful in situations where you want to control the output voltage level with an external DC control signal.



Low Cost of Ownership – Backed with Global Support and the Industry's Longest Standard Warranty

In manufacturing test applications, the upfront cost of your power supplies is just one factor in the total cost of test. Agilent's new AC6800 Series sets a new standard for reliability, so you can expect the lowest overall cost of ownership. You can:

- Increase your confidence in your AC source uptime. With the industry's longest standard warranty for an AC power source, you'll see a lower total cost of ownership and fewer budgetary surprises.
- Take advantage of Agilent's network of global service and support centers. You can easily move AC6800 Series sources between global locations. If you ever need a repair, Agilent's global support network offers the convenience of nearby support.
- Easily document calibration. Each AC6800 Series AC source ships with a printed copy of the commercial calibration certificate along with all the test data obtained from the calibration cycle.

Example applications where AC6800 basic AC sources are ideal

- **Manufacturing test for power adapters for battery-powered devices**

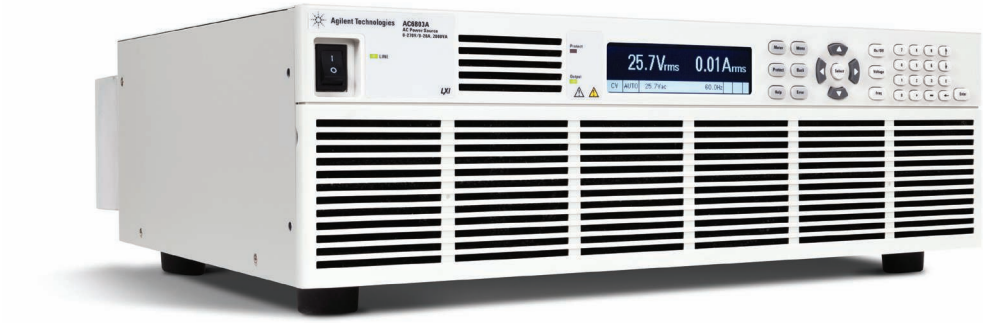
  For AC adapters for mobile and consumer products (mobile phones, computers, tablets, etc.), you need basic AC sources to vary frequency and voltage during manufacturing test to represent different worldwide power conditions. If you need robust inrush surge current capability for panel testing, the AC6800 basic AC sources are ideal.

- **Avionics – Testing cabin electronic devices**

  If you need to simulate single-phase 400 Hz power for powering cabin electronics like lighting and stereo systems during development, manufacturing test or repair, the reliable, AC6800 basic AC sources are a great solution.

- **European and Asian lighting applications**

  If you are manufacturing ballasts for LEDs or fluorescent lights that range from 1 kVA to 3 kVA and up to 270 Vrms you can count on the AC6800 basic AC sources for reliable power. Use them to vary the input voltage and measure the output voltage, current and power at different frequencies to make sure the voltage is within your specified range.



Specifications

Model	AC6801A	AC6802A	AC6803A	AC6804A
Output ratings for AC mode				
Voltage range (135 V/270 V range) Rated voltage range	1 to 135 Vrms/2 to 270 Vrms			
Voltage setting accuracy [1]	0.3% of full scale (for 135 V range), 0.25% of full scale (for 270 V range)			
Output phase	Single			
Maximum rms current [2]	5 A/2.5 A	10 A/5 A	20 A/10 A	40 A/20 A
Maximum peak current [3]	15 A/7.5 A	30 A/15 A	60 A/30 A	120 A/60 A
Load power factor capability	0 to 1 (leading or lagging)			
Maximum power	500 VA	1 kVA	2 kVA	4 kVA
Frequency setting range	40 to 500 Hz			
Frequency accuracy	Within $\pm 2 \times 10^{-4}$			
Output rating for DC mode				
Voltage range (135 V/270 V range) Rated voltage range	1.4 to 190 V/2.8 to 380 V			
Voltage setting accuracy [4]	0.3 % of full scale (for 135 V range), 0.25% of full scale (for 270 V range)			
Maximum current [5]	4 A/2 A	8 A/4 A	16 A/8 A	32 A/16 A
Maximum power	400 W	800 W	1600 W	3200 W

1. *For an output voltage of 13.5 to 135 V/27 to 270 V, no load, and 23 ± 5 °C*
2. *For an output voltage of 1 to 100 V/2 to 200 V*
   Limited by the output power when the output voltage is 100 to 135 V /200 to 270 V
3. *With respect to the capacitor-input rectifying load; limited by the maximum current*
4. *For an output voltage of 19 to 190 V/38 to 380 V, no load, and 23 ± 5 °C*
5. *For an output voltage of 1.4 to 100 V/2.8 to 200 V*
   Limited by the power capacity when the output voltage is 100 to 190 V/200 to 380 V

Model			AC6801A	AC6802A	AC6803A	AC6804A
Output voltage stability						
Load regulation [1] (135 V/270 V range)			For 40 to 100 Hz: within ±0.15 V/±0.3 V For other frequencies: within ±0.5 V/±1 V			
Measurements[2]						
Voltage	Accuracy (135 V/270 V range)	RMS, AVG [3]	For 45 to 65 Hz and DC: ±(0.5 % of reading + 0.3 V/0.6 V) Typical: ±0.25% of reading + 0.15/0.3V			
			For all other frequencies: ±(0.7 % of reading + 0.9 V/1.8 V)			
Current [4]	Accuracy (135 V/270 Vrange)	RMS, AVG[5]	For 45 to 65 Hz and DC: ±(0.5% of reading + 0.02 A/0.01 A) Typical: ±(0.25% of reading + 0.02 A/ 0.01 A) For all other frequencies: ±(0.7% of reading + 0.04 A/0.02 A)	For 45 to 65 Hz and DC: ±(0.5% of reading + 0.04 A/0.02 A) Typical: ±(0.25% of reading + 0.04 A/ 0.02 A) For all other frequencies: ±(0.7% of reading + 0.08 A/0.04 A)	For 45 to 65 Hz and DC: ±(0.5% of reading + 0.08 A/0.04 A) Typical: ±(0.25% of reading + 0.08 A/ 0.04 A) For all other frequencies: ±(0.7% of reading + 0.16 A/0.08 A)	For 45 to 65 Hz and DC: ±(0.5% of reading + 0.16 A/0.08 A) Typical: ±(0.25% of reading + 0.16 A/ 0.08 A) For all other frequencies: ±(0.7% of reading + 0.32 A/0.16 A)
Power	Accuracy (45-65 Hz) [6]		±(2% of reading + 0.5 W) Typical: ±(1% of reading + 0.5 W)	±(2% of reading + 1 W) Typical: ±(1% of reading + 1 W)	±(2% of reading + 2 W) Typical: ±(1% of reading + 2 W)	±(2% of reading + 4 W) Typical: ±(1% of reading + 4 W)
	Accuracy (DC) [6]		±(2% of reading + 0.5 W + 0.02 W/ 0.01 W per VDC) Typical: ±(1% of reading + 0.5 W + 0.01 W/0.005 W per VDC)	±(2% of reading + 1 W + 0.04 W/ 0.02 W per VDC) Typical: ±(1% of reading + 1 W + 0.02 W/0.01 W per VDC)	±(2% of reading + 2 W + 0.08 W/ 0.04 W per VDC) Typical: ±(1% of reading + 2 W + 0.04 W/0.02 W per VDC)	±(2% of reading + 4 W + 0.16W/ 0.08W per VDC) Typical: ±(1% of reading + 4 W + 0.08 W/0.04 W per VDC)

1. *For an output voltage of 80 to 135 V/160 to 270 V, a load power factor of 1, stepwise change from an output current of 0 A to maximum current (or its reverse), using the output terminal on the rear panel*
2. *RMS, average (AVG), and power (W) are derived using the following equations:*
   RMS (true rms computation) = √ (Σ(square of the instantaneous voltage or instantaneous current)/the number of samples)
   AVG = (instantaneous voltage or instantaneous current)/the number of samples
   WAC = Σ(instantaneous voltage × instantaneous current)/the number of samples
   WDC = VAVG × IAVG
   - *Sample period: 100 ms to 125 ms for AC output (an integer multiple of the output waveform period, 125 ms for DC output*
   - *Update interval: Approx. 3 times/s, averaging up to 16 intervals when averaging is turned on*
   - *Peak current value holds the maximum value of the absolute value of the peak current for 0.3 s or approximately 5 s*
   - *The voltage display is set to RMS in AC mode and AVG in DC mode*
3. *AC mode: For an output voltage of 13.5 to 135 V/27 to 270 V and 23 ± 5 °C*
   DC mode: For an output voltage of 19 to 190 V/38 to 380 V and 23 ± 5 °C
4. *Peak hold current measurement available but not specified*
5. *For a waveform of crest factor 3 or less, an output current in the range of 5% to 100% of the maximum current, and 23 ± 5 °C*
6. *For an output voltage of 50 V or greater, an output current in the range of 10% to 100% of the maximum current, DC or an output frequency of 45 to 65 Hz, a load power factor of 1, and 23 ± 5 °C*

Supplemental Characteristics

Model	AC6801A	AC6802A	AC6803A	AC6804A
Common				
Isolation to ground	270 Vrms/380 VDC			
Insulation resistance (Between input and chassis, output and chassis, input and output)	500 VDC, 30 MΩ or more			
Withstand voltage (Between input and chassis, output and chassis, input and output)	1.5 kV AC for 1 minute			
Earth continuity	25 A AC, 0.1 Ω or less			
Electromagnetic compatibility (EMC)[1]	Complies with the requirements of the following directive and standards EMC Directive 2004/108/EC EN 61326-1 Under following conditions: The maximum length of all connecting cables and wires to the unit is less than 3 m.			
Safety	Complies with the requirements of the following directive and standards Low Voltage Directive 2006/95/EC EN 61010-1 Class I Pollution Degree 2			
Environment				
Operating environment	Indoor use, Overvoltage Category II			
Operating temperature and humidity range	0 to 40 °C (32 to 104 °F), 20% to 80% R.H. non-condensing			
Storage temperature and humidity range	–10 to 60 °C (14 to 140 °F), 90% or less R.H. non-condensing			
Altitude	Up to 2000 m			
Acoustic noise	< 70 dbA			
Physical				
Dimensions (Depth includes Barrier Block Safety Cover)	428 × 128 × 370 mm 16.9 x 5.0 x 14.6″	428 × 128 × 370 mm 16.9 x 5.0 x 14.6″	428 × 128 × 581 mm 16.9 x 5.0 x 22.9″	428 × 262 × 611 mm 16.9 x 10.3 x 24″
Weight	Approx. 8 kg (17.64 lb)	Approx. 11 kg (24.25 lb)	Approx. 15 kg (33.07 lb)	Approx. 31 kg (68.34 lb)
Input terminal	IEC 320 inlet	M4 terminal block	M6 terminal block	M6 terminal block
Output terminal	M4 terminal block			
LAN interface				
Hardware	IEEE 802.3 100Base-TX or 10Base-T Ethernet Complies with LXI Specification version 1.4 Class C IPv4, RJ-45 connector2			
Communication protocol	VXI-11, HiSLIP, or SCPI-RAW			
Program message terminator	VXI-11 and HISLIP: LF or END during reception, LF + END during transmission SCPI-RAW: LF during reception, LF during transmission			
USB interface				
Hardware	Complies with USB 2.0; Data rate: 12 Mbps (full speed)			
Program message terminator	LF or EOM during reception, LF + EOM during transmission			
Device class	Complies with the USBTMC-USB488 device class specifications			
GPIB interface (Option AC68GPBU)				
Hardware	Complies with IEEE Std 488.1-1978 SH1, AH1, T6, L4, SR1, RL1, PP0, DC1, DT1, C0, E1			
Program message terminator	LF or EOI during reception, LF + EOI during transmission			
Primary address	1 to 30			
Common interface specifications				
Software protocol	IEEE Std 488.2-1992			
Command language	SCPI Specification 1999.0			
Save/recall states	Save and recall up to 10 instrument states in non-volatile memory			

1. *Only on models that have CE marking on the panel. AC68xx models will not be in compliance with EMC limits unless the ferrite core is attached on the load wires*

Supplemental Characteristics *continued*

Model			AC6801A	AC6802A	AC6803A	AC6804A
Accessories included						
Power cord			1 standard power cord[1] Length: Approx. 2.5 m	Not included	Not included	Not included
Ferrite core			1			
Cable tie			1			
Analog programming interface (Option AC68ALGU) - *COMING SOON!*						
Input	Maximum voltage		±15 V			
	Connector		BNC			
	Impedance		10 kΩ ± 5% (unbalanced)			
	Isolation voltage		±100 Vmax			
EXT-AC mode (VCA mode)[2]	Input voltage range		0 V to +10 V (DC)			
	Voltage amplification ratio (135 V/270 V range)		13.5x/27x (Outputs an AC voltage of 0 V to 135 V/0 V to 270 V with respect to a DC voltage input of 0 V to 10 V)			
	Frequency setting range		40 Hz to 500 Hz			
	Other output rating specifications		Same as the specifications of the output rating for AC mode			
EXT-DC mode (AMP mode)	Input voltage range	When ATT is OFF	0 V to ±1.91 Vpeak (0 V to 1.35 Vrms sine wave)			
		When ATT is ON	0 V to ±10 V (DC)			
	Input frequency range	When ATT is OFF[3]	40 to 500 Hz (sine wave)/40 to 100 Hz (rectangular wave)/DC			
	Frequency response	When ATT is OFF	–0.3 dB at 500 Hz with respect to 55 Hz (typical)			
	Voltage amplification ratio (135 V/270 V range)	When ATT is OFF	100x/200x (Outputs an AC voltage of 0 to 135 V/0 to 270 V with respect to a AC voltage input of 0 to 1.35 V)			
		When ATT is ON	19x/38x (Outputs a DC voltage of 0 to ±190 V/0 to ±380 V with respect to a DC voltage input of 0 to ±10 V)			
	Other output rating specifications		Same as the specifications of the output rating for DC mode			
Output voltage distortion ratio[4]			Main specifications + 0.5% or less			
Output voltage temperature coefficient			Main specifications + 200 ppm/°C (typical)			
Insulation resistance	Between input (BNC) and chassis, input (BNC) and output		500 V DC, 30 MΩ or more			
Withstand voltage	Between input (BNC) and chassis, input (BNC) and output		500 V AC for 1 minute			

1. *Based on country of use; power cords for Continental Europe, United States/Canada or China included. For other countries, applicable power cord can be selected*
2. *ATT ON at all times*
3. *The measurable range of voltage, current, and power is DC and 40 Hz to 500 Hz. To improve measurement stability of an AC output, set the frequency to match the frequency of the external input signal*
4. *When DC voltage is applied for EXT-AC mode or when a sine wave with distortion ratio of 0.1% or less is applied for EXT-DC mode*

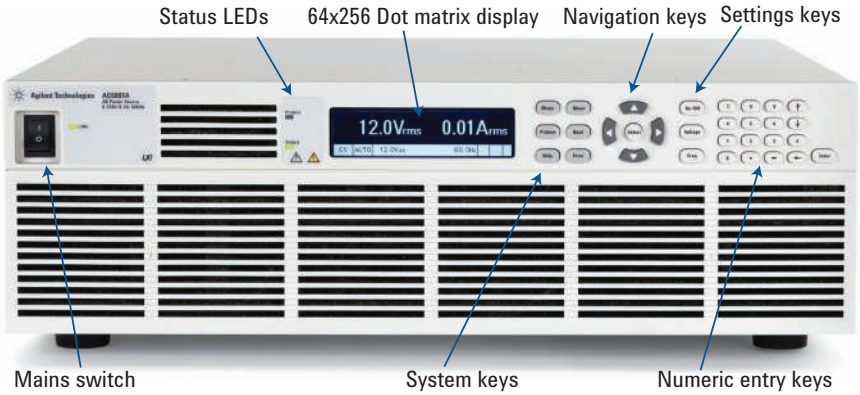
Supplemental Characteristics *continued*

Model		AC6801A	AC6802A	AC6803A	AC6804A
Input rating					
Nominal input rating		100 to 120 Vrms/200 to 240 Vrms, 50 Hz/60 Hz, single-phase			
Input voltage range		90 to 132 Vrms/180 to 264 Vrms (auto detected when the power is turned on)			
Input frequency range		47 Hz to 63 Hz			
Apparent power		800 VA or less	1600 VA or less	3200 VA or less	6400 VA or less
Power factor [1]		0.9 (typical)			
Current		8 A/4 A or less (@100 V/200 V)	16 A/8 A or less (@100 V/200 V)	32 A/16 A or less (@100 V/200 V)	64 A/32 A or less (@100 V/200 V)
		6.7 A/3.5 A or less (@120 V/230 V)	13.4 A/7.0 A or less (@120 V/230 V)	26.8 A/14.0 A or less (@120 V/230 V)	53.6 A/28.0 A or less (@120 V/230 V)
Frequency setting resolution		0.1 Hz			
Voltage range (135 V/270 V range)	Presettable voltage range	–194.5 to 194.5 V/–389 to 389 V			
Voltage setting resolution		0.1 V			
Maximum instantaneous current [2]		12 A/6 A	24 A/12 A	48 A/24 A	96 A/48 A
Line regulation [3]		Within ±0.15%			
Total harmonic distortion (THD) [4]		0.5% or less			
Efficiency [5]		70% or greater			
Voltage Measurement Resolution		0.1 V			
Current Measurement Resolution [6]		0.01 A			
	Peak current measurement accuracy [7]	±(2% of reading + 0.1 A/0.05 A) (typical)	±(2% of reading + 0.2 A/0.1 A) (typical)	±(2% of reading + 0.4 A/0.2 A) (typical)	±(2% of reading + 0.8 A/0.4 A) (typical)
Power	Resolution	0.1 W, 1 W (for 1000 W or more)			
Output ratings for AC mode					
Voltage range (135 V/270 V range)	Presettable voltage range	0 to 137.5 Vrms/0 to 275 Vrms			
Voltage setting resolution		0.1 V			
Ripple noise [2]		0.7 Vrms/1.4 Vrms (typical)			
Ambient temperature variation [3]		100 ppm/°C (typical)			
Output voltage response time [4]		150 µs (typical)			

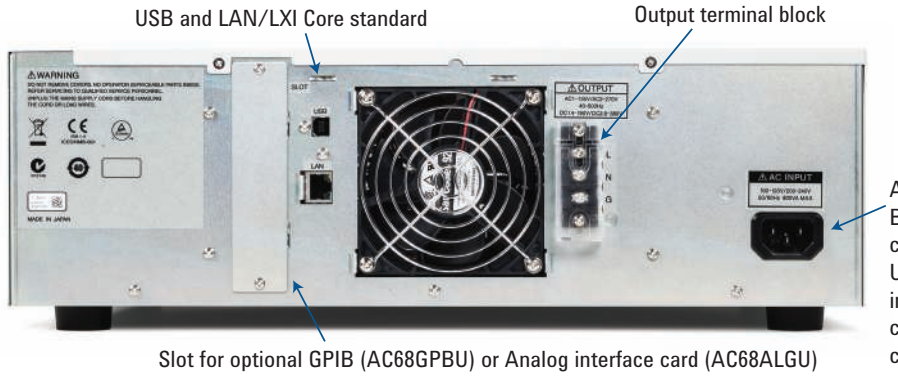
Models	
AC6801A	Basic AC power source, 500 VA, 270 V, 2.5 A
AC6802A	Basic AC power source, 1000 VA, 270 V, 5 A
AC6803A	Basic AC power source, 2000 VA, 270 V, 10 A
AC6804A	Basic AC power source, 4000 VA, 270 V, 20 A
Options	
AC68ALGU	Upgrade - user-installable analog interface board for AC6800 Series AC sources
AC68GPBU	Upgrade - user-installable GPIB interface board for AC6800 Series AC sources
AC68RAC3	Rack mount flange kit for AC6801A, AC6802A, AC6803A
AC68RAC6	Rack mount flange kit for AC6804A

1. *For an output voltage of 100 V/200 V (135 V/270 V range), maximum current, and a load power factor of 1*
2. *Limited by the maximum current*
3. *For changes within the rated range*
4. *At an output voltage of 50 to 135 V/100 to 270 V, a load power factor of 1, and settling within an error band of ±1% of nominal value, and in AC mode*
5. *For AC mode, at an output voltage of 100 V/200 V, maximum current, load power factor of 1, and an output frequency of 40 to 500 Hz*
6. *Peak hold current measurement available but not specified*
7. *For a waveform of crest factor 3 or less, an output current in the range of 5 to 100% of the maximum peak current in AC mode, an output current in the range of 5 to 100% of the maximum instantaneous current in DC mode, and 23 ± 5 °C*
8. *For 5 Hz to 1 MHz components in DC mode measured at the output terminal on the rear panel*
9. *For an output voltage of 100 V/200 V, an output current of 0 A, and within the operating temperature range*
10. *For an output voltage of 100V/200V, a load power factor of 1, and settling within a band of ±1% about nominal, with respect to a stepwise change from an output current of 0A to the maximum current (or its reverse)*

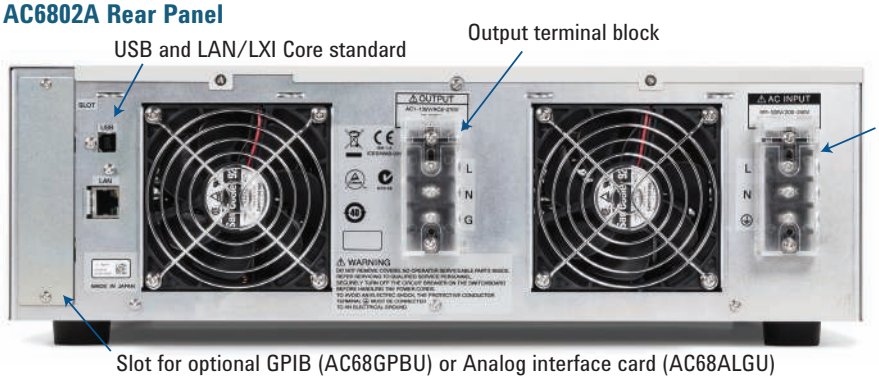
AC6801/2/3A Front Panel



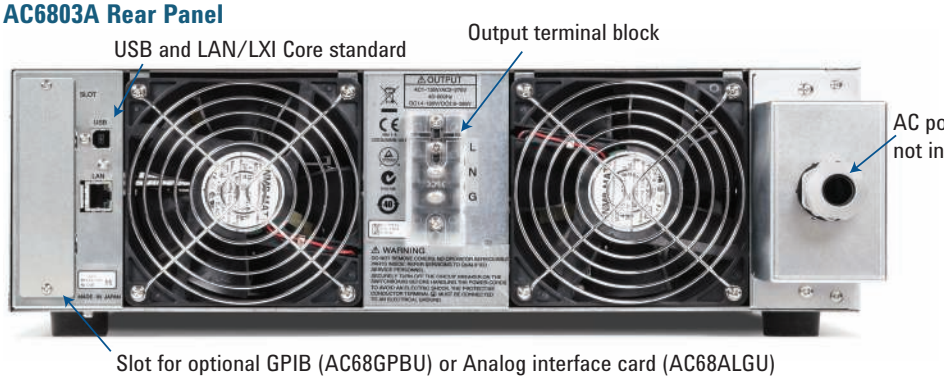
AC6801A Rear Panel



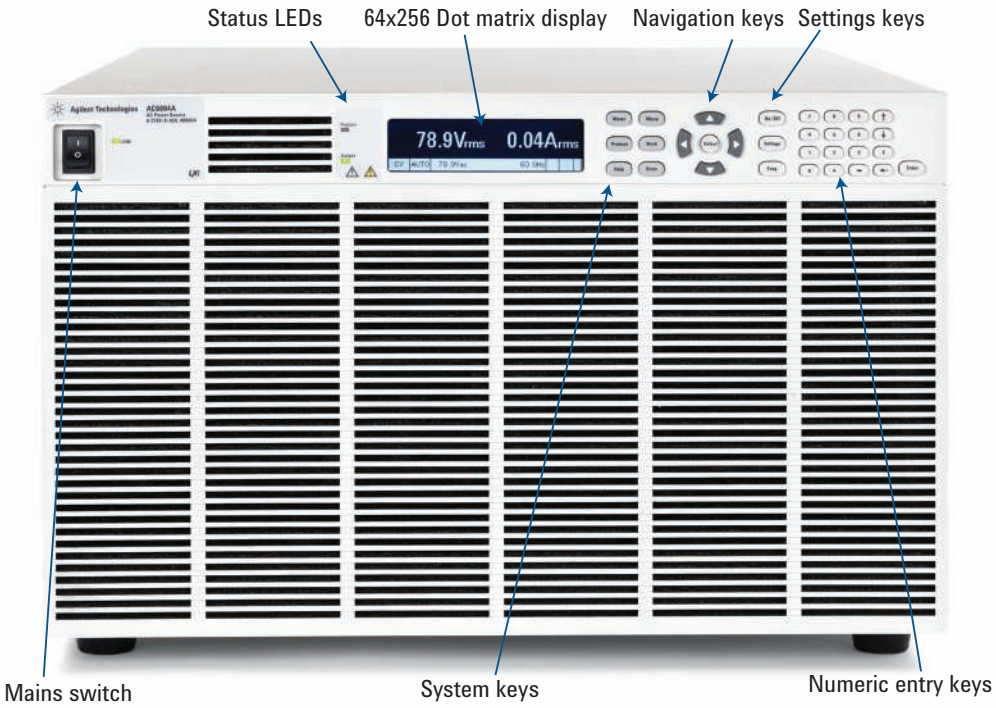
AC6802A Rear Panel



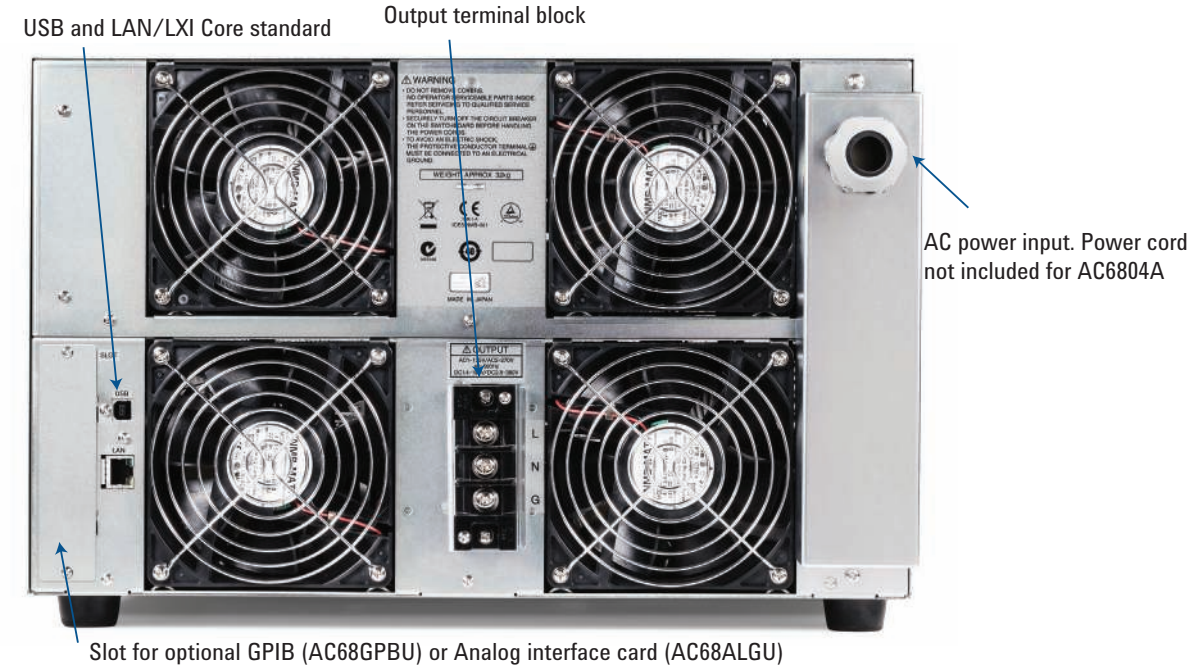
AC6803A Rear Panel



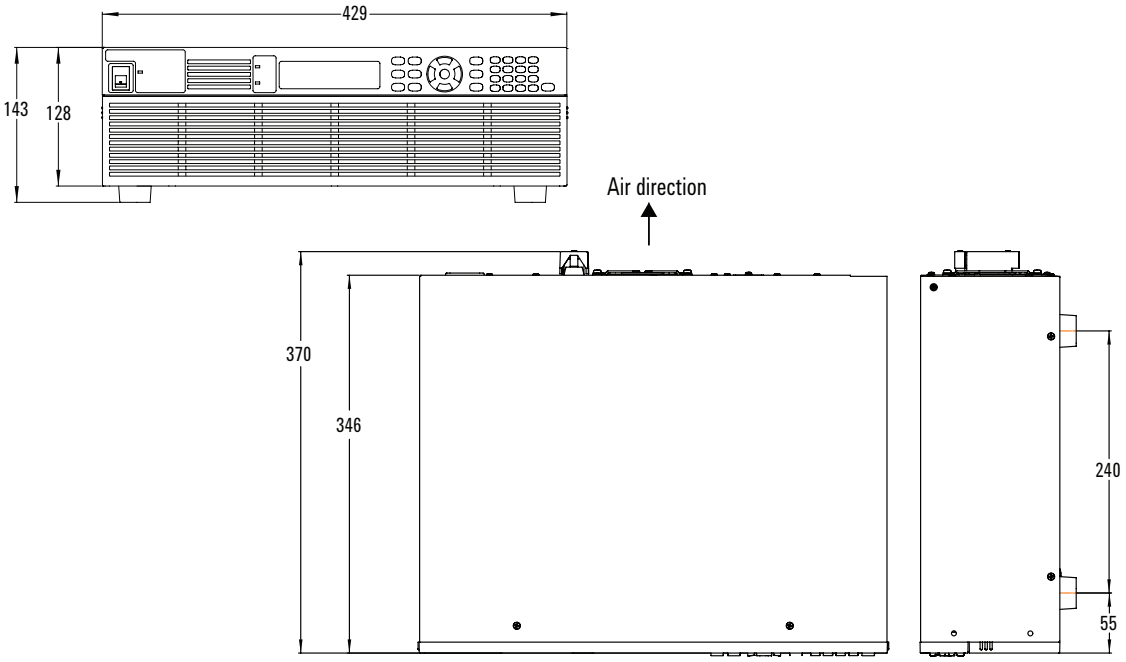
AC6804A Front Panel



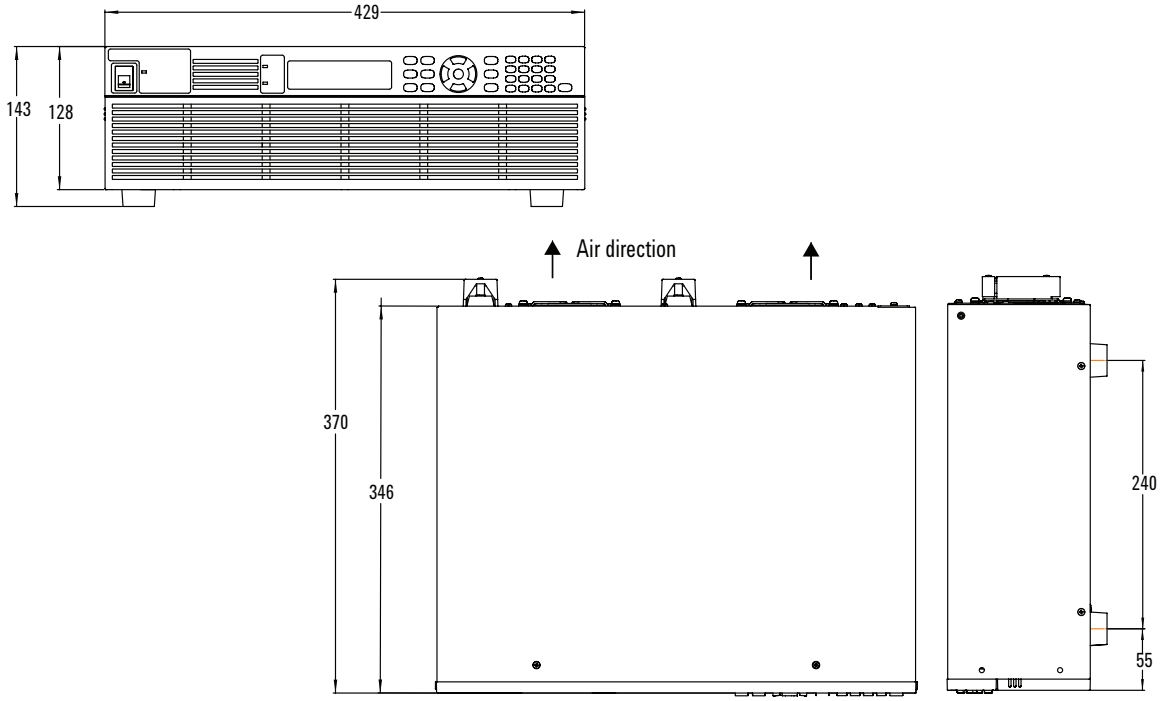
AC6804A Rear Panel



Model AC6801A

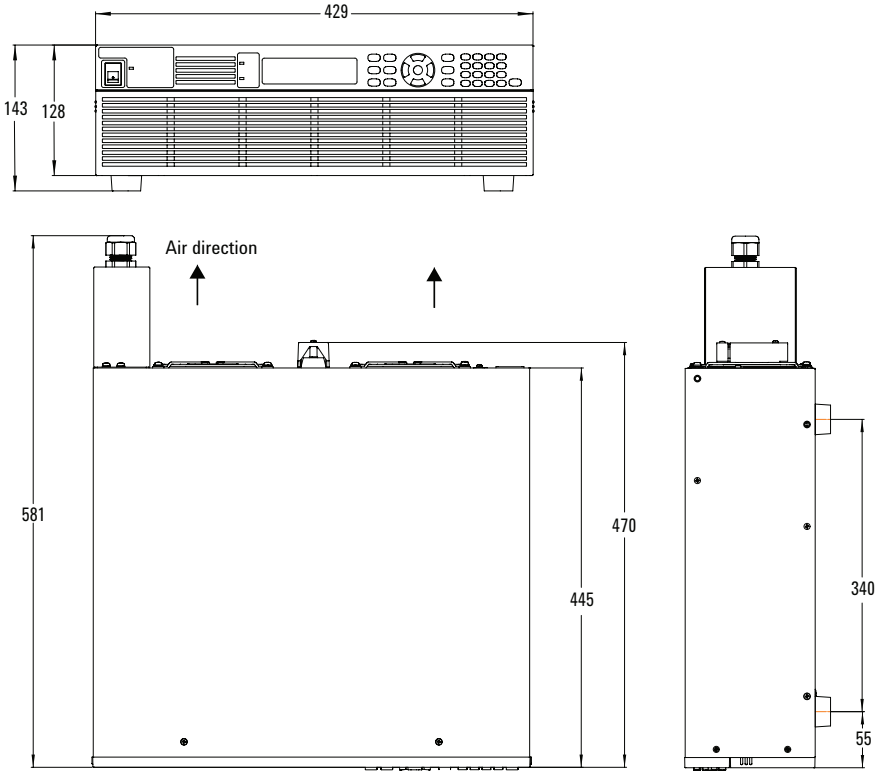


Model AC6802A

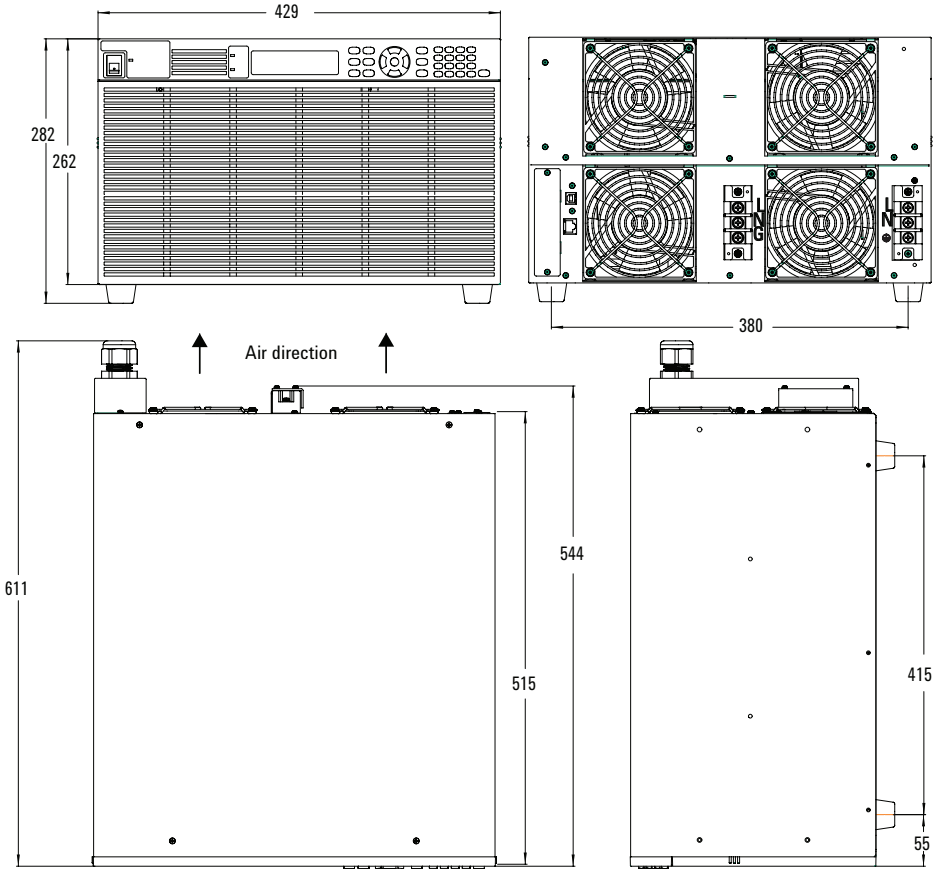


All dimensions in millimeters

Model AC6803A



Model AC6804A



All dimensions in millimeters

Definition

Specifications

Unless otherwise noted, specifications are warranted over the ambient temperature range of 0 to 40 °C after a 30-minute warm-up period. Specifications apply at the output terminals. Accuracy specifications are warranted for three years.

Supplemental characteristics/typical values

Supplemental characteristics are not warranted but are descriptions of performance determined either by design or by type testing. All supplemental characteristics are typical unless otherwise noted.

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