

# Keysight Technologies

## 6680A Series Single-Output, 5000 W DC Power Supplies, GPIB

Data Sheet



Reliable DC power for manufacturing test and long-term burn-in

- Low output ripple and noise
- Selectable compensation for inductive loads
- Analog control of output voltage and current
- Fan-speed control to minimize acoustic noise
- Built-in measurements and advanced programmable features
- Protection features to ensure DUT safety



## Introduction

This series of 5000 watt DC power supplies has the exceptional, proven reliability that test system engineers look for. It also has the features needed for easy test system integration.

Programming of the DC output and the extensive protection features can be done either from the front panel or using industry standard SCPI commands via the GPIB. Using the serial link, up to 16 power supplies can be connected through one GPIB address. Test system integration can be further simplified by using the VXIplug&play drivers.

The output voltage and current can also be controlled with analog signals. This is helpful for certain types of noisy environments, and also immediate reactions to process changes.

The 6680A series has extremely low ripple and noise for a 5000 watt DC power supply. This helps the built-in measurement system make extremely accurate current and voltage measurements.

Selectable compensation is provided for problem-free powering of inductive loads.

## Specifications

<b>Specifications</b> (at 0 ° to 55 °C unless otherwise specified)		<b>6680A</b>	<b>6681A</b>	<b>6682A</b>	<b>6683A</b>	<b>6685A</b>	<b>6680A-J04</b> Special order option
<b>Number of outputs</b>		1	1	1	1	1	1
<b> GPIB</b>		Yes	Yes	Yes	Yes	Yes	Yes
<b>Output ratings</b>							
Output voltage		0 to 5 V	0 to 8 V	0 to 21 V	0 to 32 V	0 to 40 V	0 to 3.3 V
Output current		0 to 875 A	0 to 580 A	0 to 240 A	0 to 160 A	0 to 128 A	0 to 1000 A
<b>Programming accuracy (at 25 °C ± 5 °C)</b>							
Voltage	0.04% +	5 mV	8 mV	21 mV	32 mV	40 mV	5 V
Current	0.1% +	450 mA	300 mA	125 mA	85 mA	65 mA	450 A
<b>Ripple and noise constant voltage mode</b> from 20 Hz to 20 MHz							
Voltage	rms	1.5 mV	1.5 mV	1.5 mV	1.0 mV	1.0 mV	3.4 mV
	peak-to-peak	15 mV	10 mV	10 mV	10 mV	10 mV	15 mV
<b>Readback accuracy at 25 °C ± 5 °C</b> (percent of reading plus fixed)							
Voltage	0.05% +	7.5 mV	12 mV	32 mV	48 mV	60 mV	7.5 mV
±Current	0.1% +	600 mA	400 mA	165 mA	110 mA	90 mA	600 mA
<b>Load and line regulation</b>							
Voltage	0.002% +	0.19 mV	0.3 mV	0.65 mV	1.1 mV	1.5 mV	0.19 mV
Current	0.005% +	65 mA	40 mA	17 mA	12 mA	9 mA	77 mA
<b>Transient response time</b>	Less than 900 μs for the output voltage to recover to within 150 mV following a change in load from 100% to 50% or 50% to 100% of the output current rating of the supply						
<b>Supplemental Characteristics</b> (Non-warranted characteristics determined by design and useful in applying the product)		<b>6680A</b>	<b>6681A</b>	<b>6682A</b>	<b>6683A</b>	<b>6685A</b>	<b>6680A-J04</b> Special order option
<b>Ripple and noise constant voltage mode</b> from 20 Hz to 20 MHz							
Current	rms	290 mA	190 mA	40 mA	28 mA	23 mA	—
<b>Average programming resolution</b>							
Voltage		1.35 mV	2.15 mV	5.7 mV	8.6 mV	10.8 mV	12 mV
Current		235 mA	155 mA	64 mA	43 mA	34 mA	260 mA
OVP		30 mV	45 mV	120 mV	180 mV	225 mV	25 mV
<b>Output voltage programming response time*</b> (excluding command processing time)							
		9 ms	12 ms	45 ms	60 ms	60 ms	9 ms
<b>Output common-mode noise current</b> (to signal-ground binding post)							
	rms	1.5 mA	1.5 mA	3 mA	3 mA	3 mA	2.0 mA
	peak-to-peak	10 mA	10 mA	20 mA	20 mA	20 mA	12.5 mA

\* Full load programming rise/fall time (10% to 90% or 90% to 10%) with full resistive load equal to rated output voltage/rated output current.

## Supplemental characteristics for all model numbers

**DC floating voltage:** Output terminals can be floated up to  $\pm 60$  VDC from chassis ground

**Remote sensing:** Up to half the rated output voltage can be dropped in each load lead. The drop in the load leads subtracts from the voltage available for the load.

**Command processing time:** Average time required for the output voltage to begin to change following receipt of digital data is 20 ms for power supplies connected directly to the GPIB.

**Modulation:** (Analog programming of output voltage and current):  
 Input signal: 0 to  $-5$  V for voltage, 0 to  $+5$  V for current  
 Input impedance: 30 k $\Omega$  or greater

**AC input (47 to 63 Hz):**  
 180 to 235 VAC (line-to-line, 3 phase),  
 27.7 A rms maximum worst case,  
 21.4 A rms nominal; 360 to 440 VAC,  
 14.3 A rms maximum worst case,

10.7 A rms nominal (maximum line current includes 5% unbalanced phase voltage condition.) Output voltage derated 5% at 50 Hz and below 200 VAC

Input power: 7350 VA and 6000 W maximum; 160 W at no load

GPIB interface capabilities: SH1, AH1, T6, L4, SR1, RL1, PP0, DC1, DT1, E1, and C0. IEEE-488.2 and SCPI command set.

Software driver:

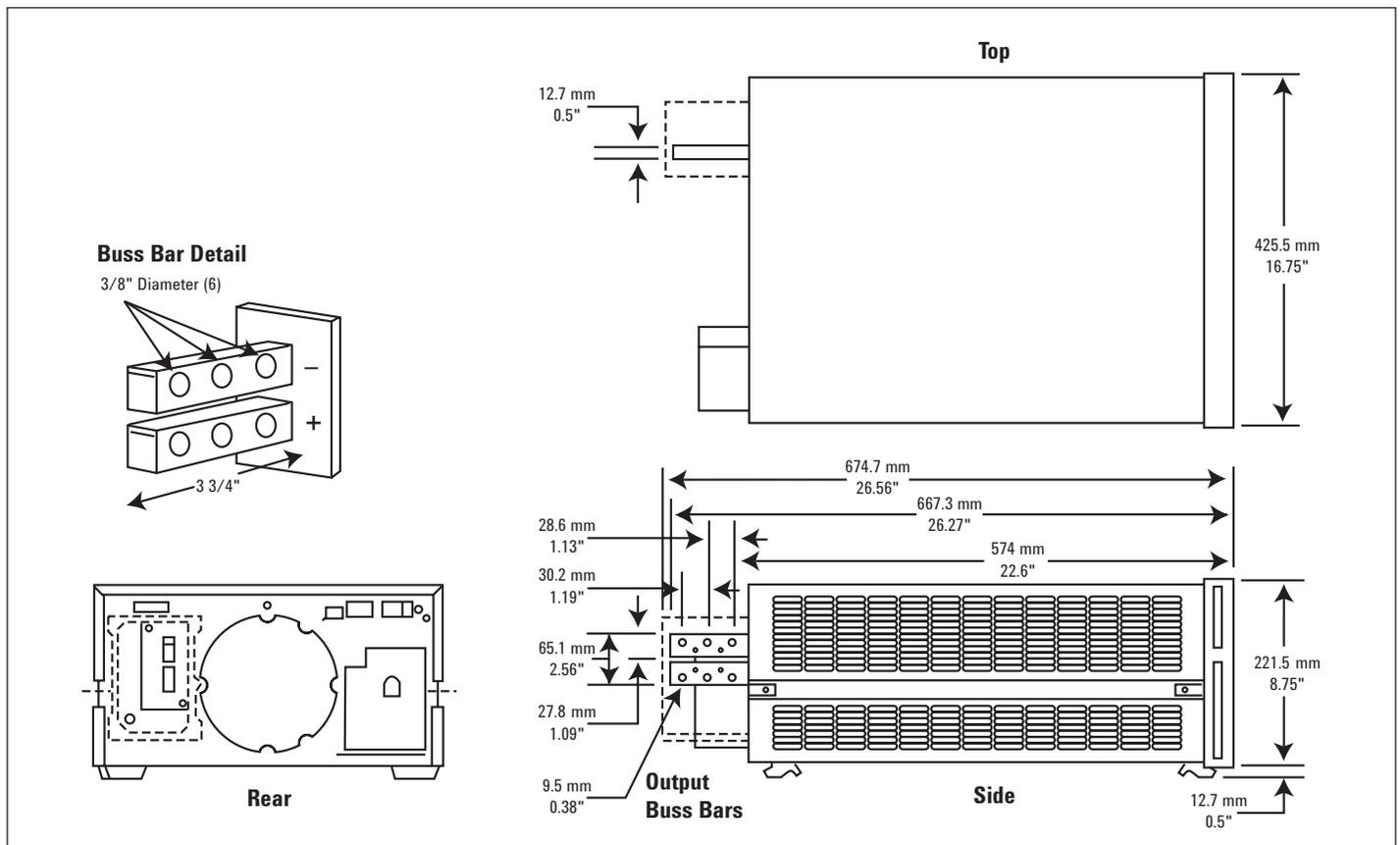
- IVI-COM
- VXIplug&play

Size: 425.5 mm W x 221.5 mm H x 674.7 mm D  
 (16.75 in x 8.75 in x 25.56 in)

Weight: Net, 51.3 kg (113 lbs); shipping, 63.6 kg (140 lbs)

Warranty: One year

Keysight Technologies, Inc. Models: 6680A, 6681A, 6682A, 6683A, 6684A



## Ordering information

The 6680A power supplies come with full documentation on CD-ROM. The CD-ROM includes user's guide, programming guide, service manual, quick start guide, and application notes.

Opt 208 180 to 235 VAC, 3 phase, 47 to 63 Hz  
Opt 400 360 to 440 VAC, 3 phase, 47 to 63 Hz  
Opt 602 Two bus bar spacers for paralleling power supplies (p/n 5060-3514)

Opt 0L1 Printed user's and programming guides  
Opt 0B3 Printed service manual

## Accessories

1CM028A\* Rack mount flange kit 88.1 mm H (3U) and 132.6 mm H (2U) – 4 brackets (5U total)

1CP014A\* Double rack mount flange and handle kit 88.1 mm H (2U) and 132.6 mm H (3U)

E3663AC Support rails for Keysight rack cabinets

P/n 5080-2148 Serial link cable 2 m (6.6 ft.)

P/n 5060-3513 Three 30 A replacement fuses for 180 to 235 VAC line

P/n 5060-3512 Three 16 A replacement fuses for 360 to 440 VAC line

## Application notes

*6671A/72A/81A/82A/90A System DC Power Supplies Product Overview*, 5988-3050EN

*Keysight DC Power Supplies for Base Station Testing*, 5988-2386EN

*10 Practical Tips You Need to Know About Your Power Products*, 5965-8239E

\*Support rails required

**myKeysight**

**myKeysight**

[www.keysight.com/find/mykeysight](http://www.keysight.com/find/mykeysight)

A personalized view into the information most relevant to you.

**Keysight Assurance Plans**

[www.keysight.com/find/AssurancePlans](http://www.keysight.com/find/AssurancePlans)

Up to five years of protection and no budgetary surprises to ensure your instruments are operating to specification so you can rely on accurate measurements.

[www.keysight.com/quality](http://www.keysight.com/quality)

Keysight Technologies, Inc.

DEKRA Certified ISO 9001:2008

Quality Management System

**Keysight Channel Partners**

[www.keysight.com/find/channelpartners](http://www.keysight.com/find/channelpartners)

Get the best of both worlds: Keysight's measurement expertise and product breadth, combined with channel partner convenience.

[www.keysight.com/find/6680](http://www.keysight.com/find/6680)



For more information on Keysight Technologies' products, applications or services, please contact your local Keysight office. The complete list is available at: [www.keysight.com/find/contactus](http://www.keysight.com/find/contactus)

**Americas**

Canada	(877) 894 4414
Brazil	55 11 3351 7010
Mexico	001 800 254 2440
United States	(800) 829 4444

**Asia Pacific**

Australia	1 800 629 485
China	800 810 0189
Hong Kong	800 938 693
India	1 800 112 929
Japan	0120 (421) 345
Korea	080 769 0800
Malaysia	1 800 888 848
Singapore	1 800 375 8100
Taiwan	0800 047 866
Other AP Countries	(65) 6375 8100

**Europe & Middle East**

Austria	0800 001122
Belgium	0800 58580
Finland	0800 523252
France	0805 980333
Germany	0800 6270999
Ireland	1800 832700
Israel	1 809 343051
Italy	800 599100
Luxembourg	+32 800 58580
Netherlands	0800 0233200
Russia	8800 5009286
Spain	0800 000154
Sweden	0200 882255
Switzerland	0800 805353
	Opt. 1 (DE)
	Opt. 2 (FR)
	Opt. 3 (IT)
United Kingdom	0800 0260637

For other unlisted countries:  
[www.keysight.com/find/contactus](http://www.keysight.com/find/contactus)  
(BP-07-01-14)