

# Agilent 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

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.



**Agilent Technologies**

## Specifications

| <b>Specifications</b><br>(at 0 ° to 55 °C unless otherwise specified)       | <b>6680A</b>  | <b>6681A</b> | <b>6682A</b> | <b>6683A</b> | <b>6684A</b> | <b>6680A-J04</b><br>Special order option |         |
|---|---|--------------|--------------|--------------|--------------|--|---------|
| <b>Number of outputs</b>  | 1   | 1            | 1            | 1            | 1            | 1  |         |
| <b>GPIO</b>   | Yes   | Yes          | Yes          | Yes          | Yes          | Yes                                      |         |
| <b>Output ratings</b>   |   |              |              |              |              |  |         |
| 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                               |         |
| Current (40 °C then derate linearly 1%/°C from 40 °C to 55 °C)              | 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</b> at 25 °C ± 5 °C                                 |   |              |              |              |              |  |         |
| Voltage   | 0.04% +   | 5 mV         | 8 mV         | 21 mV        | 32 mV        | 40 mV                                    | 5 mV    |
| Current   | 0.1% +  | 450 mA       | 300 mA       | 125 mA       | 85 mA        | 65 mA                                    | 450 mA  |
| <b>Ripple and noise constant voltage mode</b><br>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  | 10 mV        | 10 mV        | 10 mV        | 10 mV        | 10 mV                                    | 15 mV   |
| <b>Readback accuracy</b> at 25 °C ± 5 °C<br>(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><br>(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>6684A</b> | <b>6680A-J04</b><br>Special order option |         |
|--|--------------|--------------|--------------|--------------|--------------|--|---------|
| <b>Ripple and noise constant current mode</b><br>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><br>(excluding command processing time)  |              | 9 ms         | 12 ms        | 45 ms        | 60 ms        | 60 ms                                    | 9 ms    |
| <b>Output common-mode noise current</b><br>(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 ± 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 kΩ 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

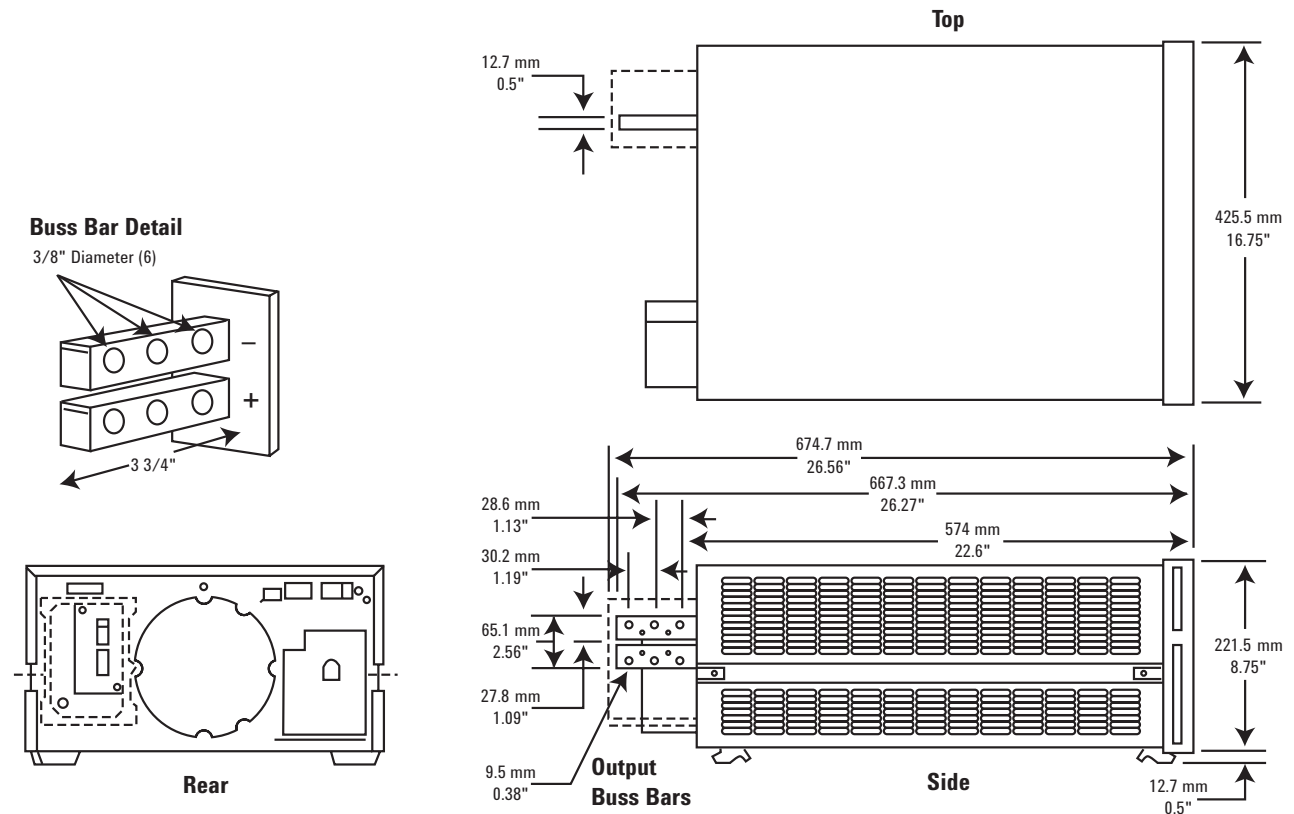
**Size:**

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

**Agilent 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 Agilent 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

*Agilent 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



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## Americas

|               |                |
|---------------|----------------|
| Canada        | (877) 894 4414 |
| Brazil        | (11) 4197 3600 |
| Mexico        | 01800 5064 800 |
| 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) 375 8100  |

## Europe & Middle East

|                |                      |
|----------------|----------------------|
| Belgium        | 32 (0) 2 404 93 40   |
| Denmark        | 45 45 80 12 15       |
| Finland        | 358 (0) 10 855 2100  |
| France         | 0825 010 700*        |
|                | *0.125 €/minute      |
| Germany        | 49 (0) 7031 464 6333 |
| Ireland        | 1890 924 204         |
| Israel         | 972-3-9288-504/544   |
| Italy          | 39 02 92 60 8484     |
| Netherlands    | 31 (0) 20 547 2111   |
| Spain          | 34 (91) 631 3300     |
| Sweden         | 0200-88 22 55        |
| United Kingdom | 44 (0) 118 927 6201  |

For other unlisted countries:

[www.agilent.com/find/contactus](http://www.agilent.com/find/contactus)

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Product specifications and descriptions in this document subject to change without notice.

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