

# Keysight Technologies

## 6670A Series Single-Output, 2000 W DC Power Supplies, GBIP

Data Sheet



Speed and accuracy for test optimization

- Fast, low-noise outputs
- 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 2000 watt DC power supplies has the exceptional, proven reliability that test system engineers look for. It also has the unusual combination of high efficiency and low noise operation.

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.

Lab-bench use is enhanced by the fan-speed control, which minimizes acoustic noise. The extremely low ripple and noise helps the built-in measurement system make extremely accurate current and voltage measurements.

## Specifications

<b>Specifications</b>		<b>6671A</b>	<b>6672A</b>	<b>6673A</b>	<b>6674A</b>	<b>6675A</b>
(at 0 ° to 55 °C unless otherwise specified)						
<b>Number of outputs</b>		1	1	1	1	1
<b>GPIO</b>		Yes	Yes	Yes	Yes	Yes
<b>Output ratings</b>						
Output voltage		0 to 8 V	0 to 20 V	0 to 35 V	0 to 60 V	0 to 120 V
Output current		0 to 220 A	0 to 100 A	0 to 60 A	0 to 35 A	0 to 18 A
<b>Programming accuracy</b> (at 25 °C ± 5 °C)						
Voltage	0.04% +	8 mV	20 mV	35 mV	60 mV	120 mV
Current	0.1% +	125 mA	60 mA	40 mA	25 mA	12 mA
<b>Ripple and noise</b> from 20 Hz to 20 MHz						
Voltage	rms	650 µV	750 µV	800 µV	1.25 mV	1.9 mV
	peak-to-peak	7 mV	9 mV	9 mV	11 mV	16 mV
Current	rms	200 mA	100 mA	40 mA	25 mA	12 mA
<b>Readback accuracy</b> at 25 °C ± 5 °C (percent of reading plus fixed)						
Voltage	0.05% +	12 mV	30 mV	50 mV	90 mV	180 mV
±Current	0.1% +	150 mA	100 mA	60 mA	35 mA	18 mA
<b>Load and line regulation</b>						
Voltage	0.002% +	300 µV	650 µV	1.2 mV	2 mV	4 mV
Current	0.005% +	10 mA	7 mA	4 mA	2 mA	1 mA
<b>Transient response time</b>	Less than 900 µs for the output voltage to recover to within 100 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>6671A</b>	<b>6672A</b>	<b>6673A</b>	<b>6674A</b>	<b>6675A</b>
<b>Average programming resolution</b>						
Voltage		2 mV	5 mV	10 mV	15 mV	30 mV
Current		55 mA	25 mA	15 mA	8.75 mA	4.5 mA
OVP		15 mV	35 mV	65 mV	100 mV	215 mV
<b>Output voltage programming response time*</b>						
(excluding command processing time)		30 ms	60 ms	130 ms	130 ms	195 ms

\* 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.

## Specifications, continued

Specifications	6671A-J03	6671A-J04	6671A-J08	6671A-J17	6672A-J04	6673A-J03
(at 0 ° to 55 °C unless otherwise specified)	Special order option	Special order option	Special order option	Special order option	Special order option	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	14 V	10 V	3 V	15 V	24 V	37.5 V
Output current	150 A	200 A	300 A	120 A	85 A	45 A
<b>Programming accuracy (at 25 °C ± 5 °C)</b>						
Voltage	0.04% +	14 mV	10 mV	4 mV	15 mV	25 mV
Current	0.1% +	90 mA	125 mA	250 mA	90 mA	60 mA
<b>Ripple and noise from 20 Hz to 20 MHz</b>						
Voltage	rms	1.5 mV	750 µV	1 mV	1.5 mV	1 mV
	peak-to-peak	15 mV	9 mV	25 mV	15 mV	11 mV
Current	rms	150 mA	200 mA	275 mA	150 mA	100 mA
<b>Readback accuracy at 25 °C ± 5 °C (percent of reading plus fixed)</b>						
Voltage	0.05% +	25 mV	15 mV	6 mV	27 mV	40 mV
±Current	0.1% +	110 mA	150 mA	250 mA	110 mA	100 mA
<b>Load and line regulation</b>						
Voltage	0.002% +	600 µV	300 µV	300 µV	650 µV	650 µV
Current	0.005% +	7 mA	10 mA	15 mA	7 mA	7 mA
<b>Transient response time</b>	Less than 900 µs for the output voltage to recover to within 100 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)	6671A-J03	6671A-J04	6671A-J08	6671A-J17	6672A-J04	6673A-J03
	Special order option	Special order option	Special order option	Special order option	Special order option	Special order option
<b>Average programming resolution</b>						
Voltage	4 mV	2.5 mV	1 mV	4 mV	6 mV	10 mV
Current	40 mA	55 mA	75 mA	35 mA	22 mA	15 mA
OVP	28 mV	20 mV	8 mV	30 mV	42 mV	65 mV
<b>Output voltage programming response time*</b>						
(excluding command processing time)	30 ms	35 ms	30 ms	35 ms	70 ms	130 ms

\* 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.

## Specifications, continued

Specifications		6673A-J08	6674A-J03	6674A-J07	6675A-J04	6675A-J06
(at 0 ° to 55 °C unless otherwise specified)		Special order option	Special order option	Special order option	Special order option	Special order option
<b>Number of outputs</b>		1	1	1	1	1
<b>GPIB</b>		Yes	Yes	Yes	Yes	Yes
<b>Output ratings</b>						
Output voltage		40 V	56 V	50 V	160 V	135 V
Output current		50 A	38 A	42 A	13 A	16 A
<b>Programming accuracy</b> (at 25 °C ± 5 °C)						
Voltage	0.04% +	40 mV	60 mV	60 mV	160 mV	125 mV
Current	0.1% +	35 mA	28 mA	30 mA	10 mA	12 mA
<b>Ripple and noise</b> from 20 Hz to 20 MHz						
Voltage	rms	1 mV	1.25 mV	1.25 mV	2.8 mV	2 mV
	peak-to-peak	10.5 mV	11 mV	11 mV	20 mV	18 mV
Current	rms	40 mA	280 mA	25 mA	18 mA	12 mA
<b>Readback accuracy</b> at 25 °C ± 5 °C (percent of reading plus fixed)						
Voltage	0.05% +	60 mV	90 mV	90 mV	240 mV	185 mV
±Current	0.1% +	60 mA	38 mA	42 mA	14 mA	18 mA
<b>Load and line regulation</b>						
Voltage	0.002% +	1.4 mV	2 mV	2 mV	6 mV	4 mV
Current	0.005% +	4 mA	2 mA	2 mA	1 mA	4 mA
<b>Transient response time</b>		Less than 900 μs for the output voltage to recover to within 100 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>		6673A-J08	6674A-J03	6674A-J07	6675A-J04	6675A-J06
(Non-warranted characteristics determined by design and useful in applying the product)		Special order option	Special order option	Special order option	Special order option	Special order option
<b>Average programming resolution</b>						
Voltage		10.5 mV	14 mV	12 mV	40 mV	34 mV
Current		12.5 mA	9.5 mA	11 mA	3.25 mA	4 mA
OVP		75 mV	100 mV	85 mV	300 mV	242 mV
<b>Output voltage programming response time*</b>						
(excluding command processing time)		130 ms	130 ms	130 ms	280 ms	250 ms

\* 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.

## Specifications, continued

<b>Specifications</b> (at 0 ° to 55 °C unless otherwise specified)	<b>6675A-J07</b>	<b>6675A-J08</b>	<b>6675A-J09</b>	<b>6675A-J11</b>
	Special order option	Special order option	Special order option	Special order option
<b>Number of outputs</b>	1	1	1	1
<b>GPIB</b>	Yes	Yes	Yes	Yes
<b>Output ratings</b>				
Output voltage	200 V	100 V	110 V	150 V
Output current	11 A	22 A	20 A	15 A
<b>Programming accuracy</b> (at 25 °C ± 5 °C)				
Voltage	0.04% +	200 mV	120 mV	120 mV
Current	0.1% +	8 mA	15 mA	13,5 mA
<b>Ripple and noise</b> from 20 Hz to 20 MHz				
Voltage	rms	3.5 mV	1.9 mV	1.9 mV
	peak-to-peak	25 mV	16 mV	16 mV
Current	rms	15 mA	15 mA	13.5 mA
<b>Readback accuracy</b> at 25 °C ± 5 °C (percent of reading plus fixed)				
Voltage	0.05% +	300 mV	180 mV	180 mV
±Current	0.1% +	12 mA	22 mA	20 mA
<b>Load and line regulation</b>				
Voltage	0.002% +	7 mV	4 mV	4 mV
Current	0.005% +	1 mA	4 mA	4 mA
<b>Transient response time</b>	Less than 900 μs for the output voltage to recover to within 100 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>6675A-J07</b>	<b>6675A-J08</b>	<b>6675A-J09</b>	<b>6675A-J11</b>
	Special order option	Special order option	Special order option	Special order option
<b>Average programming resolution</b>				
Voltage	50 mV	30 mV	30 mV	37.5 mV
Current	2.75 mA	4.5 mA	4.5 mA	3.75 mA
OVP	360 mV	215 mV	215 mV	270 mV
<b>Output voltage programming response time*</b> (excluding command processing time)	350 ms	195 ms	195 ms	250 ms

\* 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  $\pm 240$  VDC from chassis ground

Output common-mode noise current: (to signal ground binding post) 500  $\mu$ A rms, 4 mA peak-to-peak

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 the power supplies connected directly to the GPIB

Modulation: (Analog programming of output voltage and current)  
 Input signal: 0 to  $-4$  V for voltage, 0 to 7 V for current  
 Input impedance: 60 k $\Omega$  or greater

Input power: 3,800 VA, 2,600 W at full load; 170 W at no load

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

Software driver:

- IVI-COM
- VXIplug&play

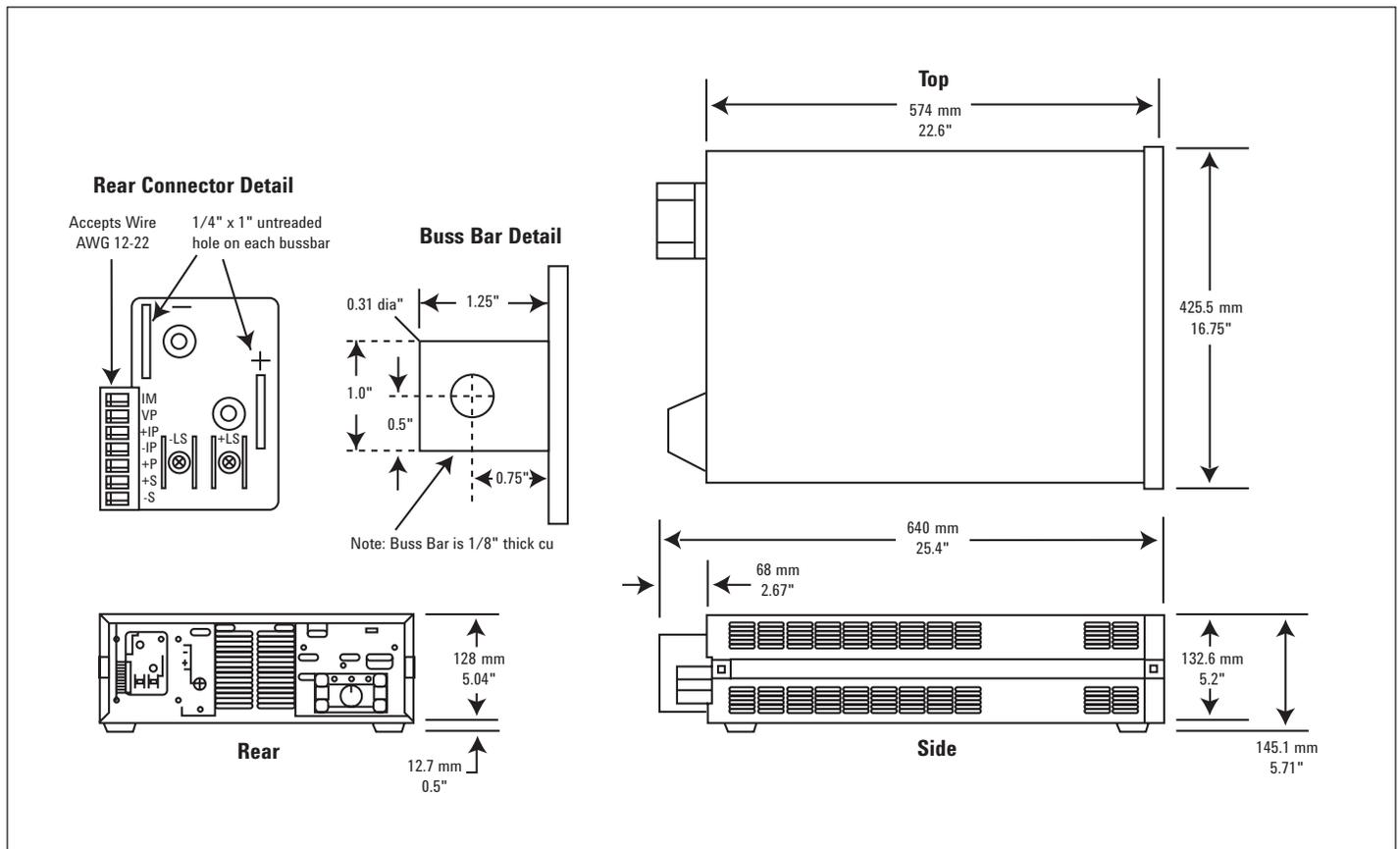
Regulatory compliance: Listed to UL1244; certified to CSA556B; conforms to IEC 61010-1

Size: 425.5 mm W x 132.6 mm H x 640 mm D  
 (16.75 in x 5.22 in x 25.2 in)

Weight: Net, 28.2 kg (62 lb); shipping, 31.8 kg (70 lb)

Warranty: One year

Keysight Technologies, Inc. Models: 6671A, 6672A, 6673A, 6674A, 6675A



## Ordering information

The 6670 Series 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 200 174 to 220 VAC, 47 to 63 Hz (Japan only)

Opt 230 191 to 250 VAC, 47 to 63 Hz

Opt 0L1 Printed user's and programming guides

Opt 0B3 Printed service manual

Opt S50 Non-latching remote inhibit

## Accessories

1CM003A\* Rack mount flange kit

132.6 mm H (3U) – two flange brackets

1CP002A\* Rack mount flange and handle kit 132.6 mm H (3U) – two brackets and front handles

E3663AC Support rails for Keysight rack cabinets

p/n 1494-0059 Accessory slide kit

p/n 1252-3698 7-pin analog plug

p/n 1252-1488 4-pin digital plug

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

## 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

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