Single-Output: 500 W GPIB

6651A-6655A

Increase test throughput with fast up and down programming time

Protect valuable assemblies with fast protection features

Proven reliability

Low ripple and noise

This series of 500 W linear-regulated dc power supplies is designed to maximize the throughput of DUTs through the manufacturing test process with fast up and down programming time.

Valuable assemblies can be destroyed by a minor component failure that causes a surge of current to flow into the DUT. Fast protection features, including fast crowbar, mode crossover protection, and the ability to connect the protection circuitry of multiple power supplies can increase production yield.

Programming of the dc output and the 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 be using the VXI*Plug&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 helps to minimize the acoustic noise.

Specifications (at 0° to 55°C unless otherwise specified)	**6651A**	**6652A**	**6653A**	**6654A**	**6655A**	**6651A-J01** Special Order Option
Number of outputs	1	1	1	1	1	1
GPIB	Yes	Yes	Yes	Yes	Yes	Yes
Output ratings						
Output voltage	0 to 8 V	0 to 20 V	0 to 35 V	0 to 60 V	0 to 120 V	10 V
Output current (40°C)	0 to 50 A	0 to 25 A	0 to 15 A	0 to 9 A	0 to 4 A	50 A
Maximum current (50°C/55°C)	45 A/42.5 A	22.5 A/21.3 A	13.5 A/12.8 A	8.1 A/7.7 A	3.6 A/3.4 A	45 A/42.5 A
Programming accuracy at 25°C ±5°C						
Voltage 0.06% +	5 mV	10 mV	15 mV	26 mV	51 mV	6 mV
Current 0.15% +	60 mA	25 mA	13 mA	8 mA	4 mA	60 mA
Ripple and noise						
from 20 Hz to 20 MHz						
Voltage rms	300 µV	300 µV	400 µV	500 µV	700 µV	300 µV
peak-peak	3 mV	3 mV	4 mV	5 mV	7 mV	3 mV
Current rms	25 mA	10 mA	5 mA	3 mA	2 mA	25 mA
Readback accuracy at 25°C ±5°C (percent of reading plus fixed) System models only						
Voltage 0.07% +	6 mV	15 mV	25 mV	40 mV	80 mV	7.5 mV
+Current 0.15% +	67 mA	26 mA	15 mA	7 mA	3 mA	67 mA
–Current 0.35% +	100 mA	44 mA	24 mA	15 mA	7 mA	100 mA
Load regulation						
Voltage	1 mV	2 mV	3 mV	4 mV	5 mV	1 mV
Current	2 mA	1 mA	0.5 mA	0.5 mA	0.5 mA	2 mA
Line regulation						
Voltage	0.5 mV	0.5 mV	1 mV	1mV	2 mV	0.5 mV
Current	2 mA	1 mA	0.75 mA	0.5 mA	0.5 mA	2 mA
Transient response time	Less than 100 µs for the output voltage to recover to its previous level (within 0.1% of the voltage rating of the supply or 20 mV, whichever is greater) following any step change in load current of up to 50% of rated current					
Supplemental Characteristics	(Non-warranted characteristics determined by design and useful in applying the product)					
Average resolution						
Voltage	2 mV	5 mV	10 mV	15 mV	30 mV	2.5 mV
Current	15 mA	7 mA	4 mA	2.5 mA	1.25 mA	15 mA
OVP	12 mV	30 mV	54 mV	93 mV	190 mV	16 mV
OVP accuracy	160 mV	400 mV	700 mV	1.2 V	2.4 V	200 mV

Single-Output: 500 W GPIB (Continued)

Supplemental Characteristics for all model numbers

dc Floating Voltage: Output terminals can be floated up to ±240 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 the power supplies connected directly to the GPIB

Output Programming Response Time: The rise and fall time (10/90% and 90/10%) of the output voltage is less than 15 ms. The output voltage change settles within 1 LSB (0.025% x rated voltage) of final value in less than 60 ms.

Down Programming: An active down programmer sinks approximately 20% of the rated output current

Modulation: (Analog programming of output voltage and current)
Input signal: 0 to –5 V
Input impedance: 10 k Ohm nominal

ac Input: (ac input frequency 47 to 63 Hz)

Voltage	100 Vac	120 Vac	220 Vac	240 Vac
Current	12 A	10 A	5.7 A	5.3 A

Input Power: 1,380 VA, 1,100 W at full load; 120 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.

Regulatory Compliance: Listed to UL 1244; conforms to IEC 61010-1.

Size: 425.5 mm W x 132.6 mm H x 497.8 mm D (16.75 in x 5.22 in x 19.6 in)
See page 101 for more details

Weight: Net, 25 kg (54 lb); shipping, 28 kg (61 lb)

Warranty Period: Three years

Specifications (at 0° to 55°C unless otherwise specified)	6651A-J03 Special Order Option	6651A-J09 Special Order Option	6652A-J03 Special Order Option	6653A-J04 Special Order Option	6653A-J17 Special Order Option
Number of outputs	1	1	1	1	1
GPIB	Yes	Yes	Yes	Yes	Yes
Output ratings					
Output voltage	6 V	17V / 20 V	27 V	40 V	30 V
Output current (40°C)	60 A	30 A / 15 A	18.5 A	12.5 A	17.5 A
Maximum current (50°C / 55°C)	54 A / 51A	27 A / 25.5 A 13.5 A / 12.75 A	16.65 A / 15.72 A	11.25 A / 10.6 A	15.75 A / 14.87 A
Programming accuracy at 25°C ±5°C					
Voltage 0.06% +	5 mV	10 mV	13.5 mV	17.5 mV	15 mV
Current 0.15% +	75 mA	36 mA	25 mA	13 mA	16 mA
Ripple and noise					
from 20 Hz to 20 MHz					
Voltage rms	300 µV	300 µV	450 µV	1.6 mV	400 µV
peak-peak	3 mV	4 mV	4.5 mV	5 mV	4 mV
Current rms	30 mA	13 mA	10 mA	5 mA	6 mA
Readback accuracy at 25°C ±5°C (percent of reading plus fixed) System models only					
Voltage 0.07% +	6 mV	15 mV	20.5 mV	30 mV	25 mV
+Current 0.15% +	80 mA	40 mA	26 mA	15 mA	18 mA
–Current 0.35% +	150 mA	55 mA	44 mA	24 mA	28 mA
Load regulation					
Voltage	1 mV	2 mV	2 mV	3.5 mV	3 mV
Current	6.5 mA	2 mA	1 mA	1 mA	0.5 mA
Line regulation					
Voltage	0.5 mV	0.5 mV	0.5 mV	1 mV	1 mV
Current	2 mA	2 mA	2 mA	0.75 mA	0.75 mA
Transient response time	Less than 100 µs for the output voltage to recover to its previous level (within 0.1% of the voltage rating of the supply or 20 mV, whichever is greater) following any step change in load current of up to 50% of rated current				
Supplemental Characteristics	(Non-warranted characteristics determined by design and useful in applying the product)				
Average resolution					
Voltage	2 mV	5 mV	6.75 mV	12mV	10 mV
Current	18 mA	9 mA	7 mA	4 mA	5 mA
OVP	12 mV	30 mV	30 mV	65 mV	54 mV
OVP accuracy	160 mV	500 mV	400 mV	750 mV	700 mV

Single-Output: 500 W GPIB (Continued)

Ordering Information

Opt 100 87 to 106 Vac, 47 to 63 Hz
Opt 120 104 to 127 Vac, 47 to 63 Hz
Opt 220 191 to 233 Vac, 47 to 63 Hz
Opt 240 209 to 250 Vac, 47 to 63 Hz
***Opt 908** Rack-mount Kit (p/n 5062-3977)
***Opt 909** Rack-mount Kit w/ Handles (p/n 5063-9221)
Opt 0L2 Extra Standard Documentation Package
Opt 0B3 Service Manual
Opt 0B0 No documentation package
*Support rails required

Accessories

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)
E3663AC Support rails for Agilent rack cabinets

Specifications (at 0° to 55°C unless otherwise specified)		6654A-J04 Special Order Option	6654A-J05 Special Order Option	6654A-J12 Special Order Option	6655A-J05 Special Order Option	6655A-J10 Special Order Option
Number of outputs		1	1	1	1	1
GPIB		Yes	Yes	Yes	Yes	Yes
Output ratings						
Output voltage		70 V	50 V	80 V	150 V	156 V
Output current (40°C)		7.5 A	10 A	6 A	3.2 A	3 A
Maximum current (50°C/55°C)		6.75 A/6.37 A	9 A/8.5 A	5.4 A/5.1 A	2.88 A/2.72 A	2.7 A/2.55 A
Programming accuracy at 25°C ±5°C						
Voltage	0.06% +	30 mV	26 mV	35 mV	64 mV	71 mV
Current	0.15% +	7 mA	9 mA	7 mA	3.5 mA	4 mA
Ripple and noise from 20 Hz to 20 MHz						
Voltage rms		600 µV	500 µV	700 µV	800 µV	900 µV
peak-peak		6 mV	5 mV	7 mV	8 mV	8 mV
Current rms		5 mA	4 mA	3 mA	2 mA	3 mA
Readback accuracy at 25°C ±5°C (percent of reading plus fixed) System models only						
Voltage	0.07% +	50 mV	40 mV	58 mV	100 mV	110 mV
+Current	0.15% +	6 mA	8 mA	6 mA	2.5 mA	3 mA
–Current	0.35% +	13 mA	17 mA	16 mA	6.5 mA	7.5 mA
Load regulation						
Voltage		4 mV	4 mV	4 mV	6 mV	7 mV
Current		0.5 mA	0.5 mA	0.5 mA	0.5 mA	1 mA
Line regulation						
Voltage		1 mV	1 mV	4.5 mV	2 mV	2 mV
Current		0.5 mA	0.5 mA	0.5 mA	0.5 mA	1 mA
Transient response time		Less than 100 µs for the output voltage to recover to its previous level (within 0.1% of the voltage rating of the supply or 20 mV, whichever is greater) following any step change in load current of up to 50% of rated current				
Supplemental Characteristics		(Non-warranted characteristics determined by design and useful in applying the product)				
Average resolution						
Voltage		17.5 mV	15 mV	20 mV	37.5 mV	39.5 mV
Current		1.9 mA	2.75 mA	1.7 mA	8 mA	8 mA
OVP		110 mV	93 mV	130 mV	240 mV	250 mV
OVP accuracy		1.4 V	1.2 V	1.6 V	3 V	3.3 V

Your Requested Excerpt from the Agilent Power Products Catalog

The preceding page(s) are an excerpt from the *2002-2003 Power Products Catalog*. We hope that these pages supply the information that you currently need. If you would like to have further information about the extensive selection of Agilent dc power supplies, ac sources, and dc electronic loads, please visit **www.agilent.com / find / power** to print a copy of the complete Power Products catalog, or to request that a copy be sent to you. You will also find a lot of other useful information on this web site.

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