

## **Agilent 6060B and 6063B Single-Input 250 to 300 W Electronic Loads, GPIB**

Data Sheet

Maximize throughput with real-life loading conditions



- Cost-effective for single input applications
- Convenient optional front panel input connection

The 6060B and 6063B each provides one load input. This is more convenient for single input applications than a mainframe product.

These electronic loads are particularly suited for the lab bench. Entering commands manually using the front panel keypad is simpler because the channel does not need to be specified, as in a mainframe configuration. The keypad entry is further simplified because these products do not have the downloadable LIST feature of the N3300A Series, which helps to maximize production throughput.

Extensive protection is included to help protect your valuable prototypes under test. This includes overvoltage, overcurrent, overtemperature, over-power, and reverse polarity.

These loads are suitable for manufacturing test systems where maximizing speed is not critical. They use industry standard SCPI instructions, and also have *VXIplug&play* drivers to simplify system design. For the greatest speed and accuracy in programming and measurement, see the N3300A series of DC electronic loads.



## Specifications

Specifications <i>(at 25 °C ± 5 °C unless otherwise specified)</i>	6060B	6063B
<b>DC Input ratings</b>		
Current	0 to 60 A	0 to 10 A
Voltage	3 to 60 V	3 to 240 V
Maximum power (at 40° C)	300 W	250 W
<b>Constant current mode</b>		
Ranges	0 to 6 A, 0 to 60 A	0 to 1 A, 0 to 10 A
Accuracy	0.1% ± 75 mA	0.15% ± 10 mA
Regulation	10 mA	8 mA
<b>Constant voltage mode</b>		
Accuracy	0.1% ± 50 mV	0.12% ± 120 mV
Regulation (w/remote sense)	10 mV	10 mV
<b>Constant resistance mode</b>		
Ranges	0.033 to 1.0 Ω 1 to 1,000 Ω 10 to 10,000 Ω	0.20 to 24.0 Ω 24 to 10,000 Ω 240 to 50,000 Ω
Accuracy	1 Ω: 0.8% ± 8 mΩ (with ≥ 6 A at input) 1 KΩ: 0.3% ± 8 mΩ (with ≥ 6 V at input) 10 KΩ: 0.3% ± 8 mΩ (with ≥ 6 V at input)	24 Ω: 0.8% ± 200 mΩ (with ≥ 1 A at input) 10 KΩ: 0.3% ± 0.3 mΩ (with ≥ 24 V at input) 50 KΩ: 0.3% ± 0.3 mΩ (with ≥ 24 V at input)
<b>Transient generator</b>		
Frequency range	0.25 Hz to 10 kHz	0.25 Hz to 10 kHz
Accuracy	3%	3%
Duty cycle range	3 to 97% (0.25 Hz to 1 kHz) 6 to 94% (1 to 10 kHz)	3 to 97% (0.25 Hz to 1 kHz) 6 to 94% (1 to 10 kHz)
Accuracy	6% of setting ± 2%	6% of setting ± 2%
Current level high range	0 to 60 A	0 to 10 A
Accuracy	0.1% ± 350 mA	0.18% ± 50 mA
Current level low range	0 to 6 A	0 to 1 A
Accuracy	0.1% ± 80 mA	0.18% ± 13 mA
Voltage level	0 to 60 V	0 to 240 V
Voltage level accuracy	0.1% ± 300 mV	0.15% ± 1.1 V
<b>Readback accuracy</b>		
Current	0.05% ± 65 mA	0.12% ± 10 mA
Voltage	± (0.05% + 45 mV)	± (0.1% + 150 mV)
<b>Ripple and noise (20 Hz to 10 MHz noise)</b>		
Current	4 mA rms 40 mA peak-to-peak	1 mA rms 10 mA peak-to-peak
Voltage	6 mV rms	6 mV rms

## Specifications, continued

<b>Supplemental characteristics</b> <i>(Non-warranted characteristics determined by design and useful in applying the product)</i>	<b>6060B</b>	<b>6063B</b>
<b>Constant current mode</b>		
Resolution	60 A range: 16 mA 6 A range: 1.6 mA	10 A range: 2.6 mA 1 A range: 0.26 mA
Temperature coefficient	100 ppm/°C ± 5 mA/°C	150 ppm/°C ± 1 mA/°C
<b>Constant voltage mode</b>		
Resolution	16 mV	64 mV
Temperature coefficient	100 ppm/°C ± 5 mV/°C	120 ppm/°C ± 10 mV/°C
<b>Constant resistance mode</b>		
Resolution	1 Ω : 0.27 mΩ 1 KΩ: 0.27 ms 10 KΩ: 0.027 ms	24 Ω: 6 mΩ 10 KΩ: 0.011 ms 50 KΩ: 0.001 ms
Temperature coefficient	1 Ω: 800 ppm/°C ± 0.4 mΩ/°C 1 KΩ: 300 ppm/°C ± 0.6 ms/°C 10 KΩ: 300 ppm/°C ± 0.6 ms/°C	24 Ω: 800 ppm/°C ± 10 mΩ/°C 10 KΩ: 300 ppm/°C ± 0.03 ms/°C 50 KΩ: 300 ppm/°C ± 0.03 ms/°C
<b>Transient generator</b>		
Frequency range	0.25 Hz to 10 kHz	0.25 Hz to 10 kHz
Resolution	4% or less	4% or less
Duty cycle range	3 to 97% (0.25 Hz to 1 kHz) 6 to 94% (1 to 10 kHz)	3 to 97% (0.25 Hz to 1 kHz) 6 to 94% (1 to 10 kHz)
Resolution	4%	4%
Current level high range	60 A range:	10 A range:
Resolution	260 mA	43 mA
Current level low range	6 A range:	1 A range:
Resolution	26 mA	4 mA
Current temperature coefficient	100 ppm/°C ± 7 mA/°C	180 ppm/°C ± 1.2 mA/°C
Voltage level resolution	260 mV	1 V
Voltage temperature coefficient	150 ppm/°C ± 5 mV/°C	120 ppm/°C ± 10 mV/°C
Programmable slew rate	60 A range: 1 A/ms to 5 A/μs 6 A range: 0.1 A/ms to 0.5 A/μs	10 A range: 0.17 A/ms to 0.83 A/μs 1 A range: 17 A/ms to 83 A/ms
Rise/fall time	12 μs to 8 ms	16 μs to 8 ms
<b>Analog programming bandwidth</b>	10 kHz (–3 dB frequency)	10 kHz (–3 dB frequency)
<b>Analog programming accuracy</b>		
Current (low range)	4.5% ± 75 mA	3% ± 8 mA
Current (high range)	4.5% ± 250 mA	3% ± 20 mA
Temperature coefficient	100 ppm/°C ± 6 mA/°C	150 ppm/°C ± 1 mA/°C
Voltage	0.8% ± 200 mV	0.5% ± 150 mV
Temperature coefficient	100 ppm/°C ± 1 mV/°C	120 ppm/°C ± 10 mV/°C
<b>Analog programming voltage</b>	0 to 10 V	0 to 10 V
<b>Readback specifications</b>		
Current readback resolution	17 mA (via GPIB) 20 mA (front panel)	2.7 mA (via GPIB) 10 mA (front panel)
Temperature coefficient	50 ppm/°C ± 5 mA/°C	100 ppm/°C ± 1 mA/°C
Voltage readback resolution	17 mV (via GPIB) 20 mV (front panel)	67 mV (via GPIB) 100 mV (front panel)
Temperature coefficient	50 ppm/°C ± 1.2 mV/°C	100 ppm/°C ± 8 mV/°C

### Notes:

1. Operating temperature range is 0° to 55 °C. All specifications apply for 25 °C ± 5 °C, except as noted.
2. Maximum continuous power available is derated linearly from 40 °C to 75% of maximum at 55 °C.
3. DC current accuracy specifications apply 30 seconds after input is applied.

## Specifications, continued

<b>Supplemental characteristics</b> <i>(Non-warranted characteristics determined by design and useful in applying the product)</i>	<b>6060B</b>	<b>6063B</b>
<b>Analog monitor accuracy</b>		
Current monitor (0 to 10 V <sub>out</sub> )	4% ± 85 mA	3% ± 10 mA
Temperature coefficient	50 ppm/°C ± 6 mA/°C	100 ppm/°C ± 1 mA/°C
Voltage monitor (0 to 10 V <sub>out</sub> )	0.25% ± 40 mV	0.4% ± 240 mV
Temperature coefficient	50 ppm/°C ± 0.2 mV/°C	70 ppm/°C ± 1.2 mV/°C
<b>Remote sensing</b>	5-VDC maximum between sense and load input	5-VDC maximum between sense and load input
<b>Minimum operating voltage</b> (at full rated current)	2 V (1.2 V typical)	2 V (1.2 V typical)
<b>Programmable short</b>	0.033 Ω (0.020 Ω typical)	0.20 Ω (0.10 Ω typical)
<b>Programmable open</b> (typical)	20 kΩ	80 kΩ
<b>Drift</b> (over 8-hour interval)		
Current	0.03% ± 10 mA	0.03% ± 15 mA
Voltage	0.01% ± 10 mV	0.01% ± 20 mV
<b>DC isolation voltage</b>	± 240 VDC, between any input and chassis ground	± 240 VDC, between any input and chassis ground
<b>Digital inputs</b>	V <sub>IL</sub> = 0.9 V <sub>max</sub> at I <sub>IL</sub> = -1 mA / V <sub>IH</sub> = 3.15 V <sub>min</sub> (pull-up resistor on input)	V <sub>IL</sub> = 0.9 V <sub>max</sub> at I <sub>IL</sub> = -1 mA / V <sub>IH</sub> = 3.15 V <sub>min</sub> (pull-up resistor on input)
<b>Digital outputs</b>	V <sub>OL</sub> = 0.72 V <sub>max</sub> at I <sub>OL</sub> = 1 mA / V <sub>OH</sub> = 4.4 V <sub>min</sub> at I <sub>OH</sub> = -20 μA	V <sub>OL</sub> = 0.72 V <sub>max</sub> at I <sub>OL</sub> = 1 mA / V <sub>OH</sub> = 4.4 V <sub>min</sub> at I <sub>OH</sub> = -20 μA

### Notes:

1. Operating temperature range is 0° to 55 °C. All specifications apply for 25 °C ± 5 °C, except as noted.
2. Maximum continuous power available is derated linearly from 40 °C to 75% of maximum at 55 °C.
3. DC current accuracy specifications apply 30 seconds after input is applied.

## Supplemental characteristics for all model numbers

**Software driver:** *VXI|plug&play*

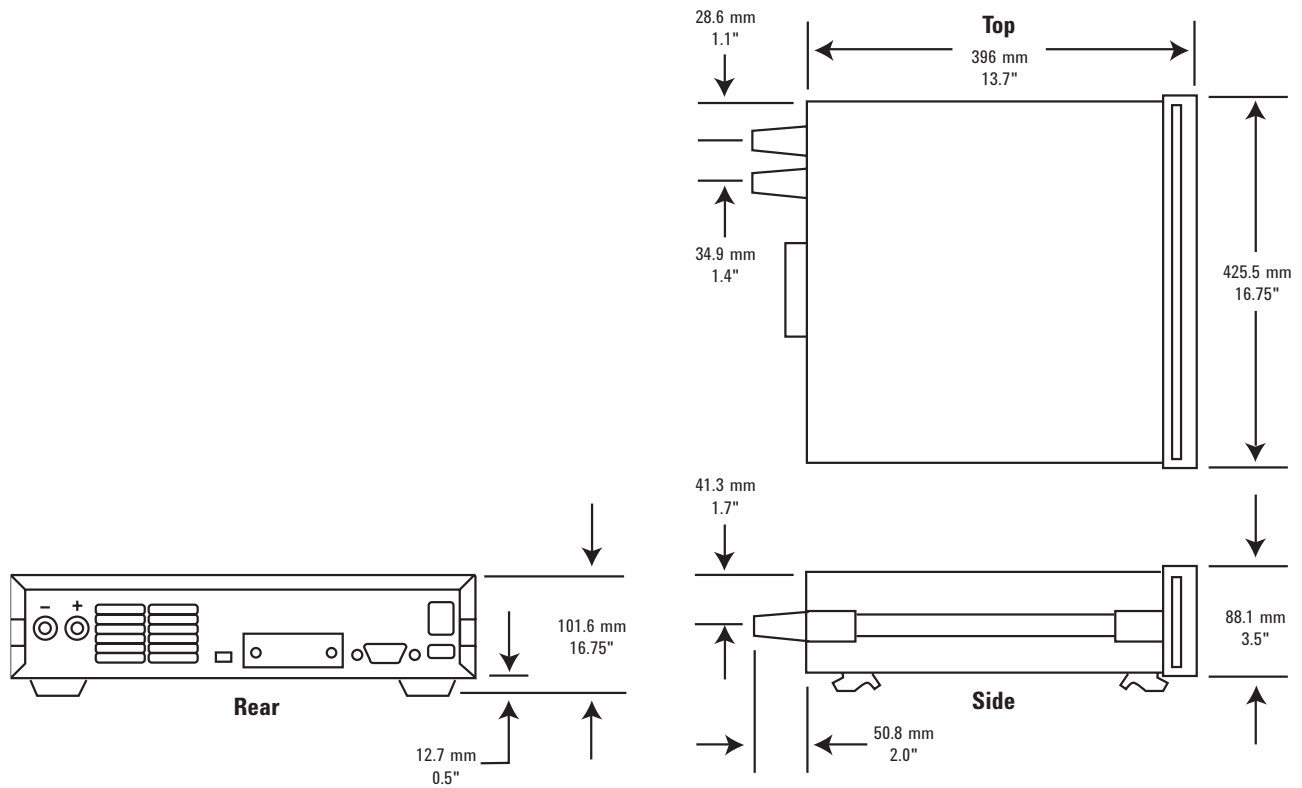
**Size:**

425.5 mm W x 88.1 mm H x 396 mm D  
(16.75 in x 3.5 in x 13.7 in)

**Weight:** 6.12 kg (13.5 lb) net; 8.16 kg  
(18 lb) shipping

**Warranty:** One year

**Agilent models:** 6060B, 6063B



## Ordering information

The 6060B and 6063B come with full documentation on CD-ROM. The CD-ROM includes operating manual, programming guide, service manual, and application notes.

- Opt 020** Front panel DC input connectors  
**Opt 100** 87 to 106 VAC, 47 to 66 Hz input (for Japan only)  
**Opt 120** 104-127 VAC, 47 to 66 Hz  
**Opt 220** 191 to 233 VAC, 47 to 66 Hz input  
**Opt 240** 209 to 250 VAC, 47 to 66 Hz input
- Opt 0L1** Printed operating manual and programming guide  
**Opt 0B3** Printed service manual

## Accessories

- 1CM002A\*** Rack mount flange kit 88.1 mm H (2U) – two flange brackets; 1.75 Inch hole spacing  
**1CP001A\*** Rack mount flange and handle kit 88.1 mm H (2U) – two brackets and front handles  
**E3663AC** Support rails for Agilent rack cabinets

## Application notes

*Agilent AN 372-1 Power Supply Testing*, 5952-4190

*Agilent AN 372-2 Battery Testing*, 5952-4191

*Pulsed Characterization of Power Semiconductors Using Electronic Loads (AN 1246)* 5091-7636E

\* Support rails required



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