Specifications

	HP 6060B, 60502B	HP 6063B, 60503B	HP 60501B	HP 60504B	HP 60507B
Amperes	0 to 60 A	0 to 10 A	0 to 30 A	0 to 120 A	0 to 60 A
Volts	3 to 60 V	3 to 240 V	3 to 60 V	3 to 60 V	3 to 150 V
Maximum power (at 40˚ C)	300 W	250 W	150 W	600 W	500 W
Constant current mode					
Ranges	0 to 6 A, 0 to 60 A	0 to 1 A, 0 to 10 A	0 to 3 A, 0 to 30 A	0 to 12 A, 0 to 120 A	0 to 6 A, 0 to 60 A
Accuracy	0.1% ±75 mA	0.15% ±10 mA	0.1% ±40 mA	0.12% ±130 mA	0.1% ±80 mA
Regulation	10 mA	8 mA	10 mA	10 mA	10 mA (w/ ≥3 V at the point)
Constant voltage mode					
Accuracy	0.1% ±50 mV	0.12% ±120 mV	0.1% ±50 mV	0.1% ±50 mV	0.1% ±125 mV
Regulation (w/remote sense)	10 mV	10 mV	5 mV	20 mV	10 mV
Constant resistance mode	0.033 to 1.0 Ω	0.20 to 24.0 Ω	0.067 to 2 Ω	0.017 to 0.5 Ω	0.033 to 2.5 Ω
Ranges	1 to 1,000 Ω 10 to 10,000 Ω	24 to 10,000 Ω 240 to 50,000 Ω	2 to 2,000 Ω 20 to 10,000 Ω	0.5 to 500 Ω 5 to 5,000 Ω	2.5 to 2,500 Ω 25 to 10,000 Ω
Accuracy	1 Ω: 0.8% ±8 mΩ (with ≥6 A at input) 1 KΩ: 0.3% ±8 mS (with ≥6 V at input) 10 KΩ: 0.3% ±8 mS (with ≥6 V at input)	24 Ω: 0.8% ±200 mΩ (with ≥1 A at input) 10 KΩ: 0.3% ±0.3 mS (with ≥24 V at input) 50 KΩ: 0.3% ±0.3 mS (with ≥24 V at input)	2 Ω: 0.8%, ±16 mΩ (with ≥3 A at input) 2 KΩ: 0.3% ±5 mS (with ≥6 V at input) 10 KΩ: 0.3% ±5 mS (with ≥6 V at input)	0.5 Ω: 0.8% ±5 mΩ (with ≥12 A at input) 500 Ω: 0.3% ±18 mS (with ≥6 V at input) 5 KΩ: 0.3% ±18 mS (with ≥6 V at input)	2.5 Ω: 0.8% ±16 mΩ (with ≥6 A at input) 2.5 KΩ: 0.3% ±5 mS (with ≥15 V at input) 10 KΩ: 0.3% ±5 mS (with ≥15 V at input)
Transient generator					
Frequency range	0.25 Hz to 10 kHz	0.25 Hz to 10 kHz	0.25 Hz to 10 kHz	0.25 Hz to 10 kHz	0.25 Hz to 10 kHz
Accuracy	3%	3%	3%	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)	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)	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%	6% of setting ±2%	6% of setting ±2%	6% of setting ±2%
Current level high range	60-A range:	10-A range:	30-A range:	120-A range:	60-A range:
Accuracy	0.1% ±350 mA	0.18% ±50 mA	0.1% ±200 mA	0.15% ±700 mA	0.1% ±350 mA
Current level low range	6-A range:	1-A range:	3-A range:	12-A range:	6-A range:
Accuracy	0.1% ±80 mA	0.18% ±13 mA	0.1% ±40 mA	0.15% ±160 mA	0.1% ±85 mA
Voltage level	3 to 60 V	3 to 240 V	3 to 60 V	3 to 60 V	3 to 150 V
Voltage level accuracy	0.1% ±300 mV	0.15% ±1.1 V	0.1% ±300 mV	0.15% ±300 mV	0.15% ±750 mV
Readback specifications					
Current readback accuracy	0.05% ±65 mA	0.12% ±10 mA	0.06% ±40 mA	0.1% ±110 mA	0.1% ±65 mA
Voltage readback accuracy	±(0.05% + 45 mV)	±(0.1% + 150 mV)	±(0.5% + 45 mV)	±(0.1% + 45 mV)	±(0.17% + 90 mV)
Front panel/HP-IB	20mV/17 mV	100mV/67 mV	20mV/17 mV	20mV/17 mV	20mV/17 mV
Ripple and noise					
(20-Hz to 10-MHz noise)	4 mA rms	1 mA rms	2 mA rms	6 mA rms	4 mA rms
Current	40 mA peak-to-peak	10 mA peak-to-peak	20 mA peak-to-peak	60 mA peak-to-peak	40 mA peak-to-peak
Voltage	6 mV rms	6 mV rms	5 mV rms	8 mV rms	10 mV rms

Supplemental Characteristics

(Non-warranted characteristics determined by design that are useful in applying the product)

Constant current mode	60-A range: 16 mA	10-A range: 2.6 mA	30-A range: 8 mA	120-A range: 32 mA	60-A range: 16 mA
Resolution	6-A range: 1.6 mA	1-A range: 0.26 mA	3-A range: 0.8 mA	12-A range: 3.2 mA	6-A range: 1.6 mA
Temperature coefficient	100 ppm/˚C ±5 mA/˚C	150 ppm/˚C ±1 mA/˚C	100 ppm/˚C ±3 mA/˚C	120 ppm/˚C ±8 mA/˚C	120 ppm/˚C ±5 mA/˚C
Constant voltage mode					
Resolution	16 mV	64 mV	16 mV	16 mV	40 mV
Temperature coefficient	100 ppm/˚C ±5 mV/˚C	120 ppm/˚C ±10 mV/˚C	100 ppm/˚C ±5 mV/˚C	100 ppm/˚C ±5 mV/˚C	100 ppm/˚C ±5 mV/˚C
Constant resistance mode	1 Ω: 0.27 mΩ	24 Ω: 6 mΩ	2 Ω: 0.54 mΩ	0.5 Ω: 0.14 mΩ	2.5 Ω: 0.67 mΩ
Resolution	1 KΩ: 0.27 mS 10 KΩ: 0.027 mS	10 KΩ: 0.011 mS 50 KΩ: 0.001 mS	2 KΩ: 0.14 mS 10 KΩ: 0.014 mS	500 Ω: 0.54 mS 5 KΩ: 0.054 mS	2.5 KΩ: 0.10 mS 10 KΩ: 0.01 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	2 Ω: 800 ppm/˚C ±0.8 mΩ/˚C 2 KΩ: 300 ppm/˚C ±0.5 mS/˚C 10 KΩ: 300 ppm/˚C ±0.5 mS/˚C	0.5 Ω: 800 ppm/˚C ±0.2 mΩ/˚C 500 Ω: 300 ppm/˚C ±1.2 mS/˚C 5 KΩ: 300 ppm/˚C ±1.2 mS/˚C	2.5 Ω: 800 ppm/˚C ±0.8 mΩ/˚C 2.5 KΩ: 300 ppm/˚C ±0.3 mS/˚C 10 KΩ: 300 ppm/˚C ±0.3 mS/˚C
Transient generator					
Frequency range	0.25 Hz to 10 kHz	0.25 Hz to 10 kHz	0.25 Hz to 10 kHz	0.25 Hz to 10 kHz	0.25 Hz to 10 kHz
Resolution	4% or less	4% or less	4% or less	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)	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)	3 to 97% (0.25 Hz to 1 kHz) 6 to 94% (1 to 10 kHz)
Resolution	4%	4%	4%	4%	4%
Current level high range	60-A range:	10-A range:	30-A range:	120-A range:	60-A range:
Resolution	260 mA	43 mA	130 mA	520 mA	260 mA
Current level low range	6-A range:	1-A range:	3-A range:	12-A range:	6-A range:
Resolution	26 mA	4 mA	13 mA	52 mA	26 mA
Current temperature coefficient	100 ppm/˚C ±7 mA/˚C	180 ppm/˚C ±1.2 mA/˚C	100 ppm/˚C ±5 mA/˚C	150 ppm/˚C ±10 mA/˚C	150 ppm/˚C ±5 mA/˚C
Voltage level resolution	260 mV	1 mV	260 mV	260 mV	650 mV
Voltage temperature coefficient	150 ppm/˚C ±5 mV/˚C	120 ppm/˚C ±10 mV/˚C	150 ppm/˚C ±5 mV/˚C	150 ppm/˚C ±5 mV/˚C	150 ppm/˚C ±5 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	30-A range: 0.5 A/ms to 2.5 A/µs 3-A range: 0.2 A/ms to 0.25 A/µs	120-A range: 2 A/ms to 10 A/µs 12-A range: 0.2 A/ms to 1 A/µs	60-A range: 1 A/ms to 5 A/µs 6-A range: 0.1 A/ms to 0.5 A/µs
Rise/fall time	12 µs to 8 ms	16 µs to 8 ms	12 µs to 8 ms	12 µs to 8 ms	18 µs to 8 ms

Supplemental Characteristics (cont'd)

	HP 6060B, 60502B	HP 6063B, 60503B	HP 60501B	HP 60504B	HP 60507B
Analog programming bandwidth	10 kHz (–3 dB frequency)	10 kHz (–3 dB frequency)	10 kHz (–3 dB frequency)	10 kHz (–3 dB frequency)	10 kHz (–3 dB frequency)
Analog programming accuracy					
Current (low range)	4.5% ±75 mA	3% ±8 mA	4.5% ±40 mA	4% ±200 mA	4.5% ±75 mA
Current (high range)	4.5% ±250 mA	3% ±20 mA	4.5% ±130 mA	4% ±400 mA	4.5% ±200 mA
Temperature coefficient	100 ppm/°C ±6 mA/°C	150 ppm/°C ±1 mA/°C	100 ppm/°C ±3 mA/°C	100 ppm/°C ±12 mA/°C	150 ppm/°C ±6 mA/°C
Voltage	0.8% ±200 mV	0.5% ±150 mV	0.8% ±200 mV	0.8% ±200 mV	0.8% ±375 mV
Temperature coefficient	100 ppm/°C ±1 mV/°C	120 ppm/°C ±10 mV/°C	100 ppm/°C ±1 mV/°C	100 ppm/°C ±1 mV/°C	120 ppm/°C ±12.5 mV/°C
Analog programming voltage	0 to 10 V	0 to 10 V	0 to 10 V	0 to 10 V	0 to 10 V
Readback specifications	17 mA (via HP-IB)	2.7 mA (via HP-IB)	9 mA (via HP-IB)	34 mA (via HP-IB)	17 mA (via HP-IB)
Current readback resolution	20 mA (front panel)	10 mA (front panel)	10 mA (front panel)	100 mA (front panel)	20 mA (front panel)
Temperature coefficient	50 ppm/°C ±5 mA/°C	100 ppm/°C ±1 mA/°C	65 ppm/°C ±3 mA/°C	100 ppm/°C ±8 mA/°C	100 ppm/°C ±5 mA/°C
Voltage readback resolution	17 mV (via HP-IB) 20 mV (front panel)	67 mV (via HP-IB) 100 mV (front panel)	17 mV (via HP-IB) 20 mV (front panel)	20 mV (via HP-IB) 20 mV (front panel)	40 mV (via HP-IB) 100 mV (front panel)
Voltage readback accuracy	0.05% ±45 mV	0.1% ±150 mV	0.05% ±45 mV	0.1% ±45 mV	0.1% ±90 mV
Temperature coefficient	50 ppm/°C ±1.2 mV/°C	100 ppm/°C ±8 mV/°C	50 ppm/°C ±1.2 mV/°C	100 ppm/°C ±2 mV/°C	100 ppm/°C ±5 mV/°C
Analog monitor accuracy					
Current monitor (0 to 10 V out)	4% ±85 mA	3% ±10 mA	4% ±40 mA	4% ±170 mA	3% ±85 mA
Temperature coefficient	50 ppm/°C ±6 mA/°C	100 ppm/°C ±1 mA/°C	60 ppm/°C ±3 mA/°C	100 ppm/°C ±10 mA/°C	100 ppm/°C ±6 mA/°C
Voltage monitor (0 to 10 V out)	0.25% ±40 mV	0.4% ±240 mV	0.25% ±40 mV	0.4% ±60 mV	0.4% ±120 mV
Temperature coefficient	50 ppm/°C ±0.2 mV/°C	70 ppm/°C ±1.2 mV/°C	50 ppm/°C ±0.2 mV/°C	100 ppm/°C ±2 mV/°C	100 ppm/°C ±5 mV/°C
Remote sensing	5-Vdc maximum between sense and load input				
Minimum operating voltage	2 volts (1.2 V typical)	2 volts (1.2 V typical)	2 volts (1.2 V typical)	2 volts (1.4 V typical)	2 volts (1.4 V typical)
Programmable short	0.033 Ω (0.020 Ω typical)	0.20 Ω (0.10 Ω typical)	0.066 Ω (0.040 Ω typical)	0.017 Ω (0.012 Ω typical)	0.033 Ω (0.025 Ω typical)
Programmable open (typical)	20 kΩ	80 kΩ	20 kΩ	20 kΩ	20 kΩ
Drift (over 8-hour interval)					
Current	0.03% ±10 mA	0.03% ±15 mA	0.03% ±5 mA	0.03% ±20 mA	0.03% ±10 mA
Voltage	0.01% ±10 mV	0.01% ±20 mV	0.01% ±10 mV	0.01% ±10 mV	0.01% ±25 mV
dc isolation voltage	±240 Vdc, between any input and chassis ground				
Digital inputs	V_{IL} = 0.9 V max at I_{IL} = –1 mA / V_{IH} = 3.15 V min (pull-up resistor on input)				
Digital outputs	V_{OL} = 0.72 V max at I_{OL} = 1 mA / V_{OH} = 4.4 V min at I_{OH} = –20 µA				
Net weight (approx.)	6060B: 6.12 kg (13.5 lb) 60502B: 3.2 kg (7 lb)	6063B: 6.12 kg (13.5 lb) 60503B: 3.2 kg (7 lb)	3.2 kg (7 lb)	5.4 kg (13 lb)	5.4 kg (13 lb)
Shipping weight	6060B: 8.16 kg (18 lb) 60502B: 4.5 kg (10 lb)	6063B: 8.16 kg (18 lb) 60503B: 4.5 kg (10 lb)	4.5 kg (10 lb)	7.3 kg (16 lb)	7.3 kg (16 lb)

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.

HP 6050A, 6051A Weight

Net Weight: HP 6050A: 9.5 kg (21 lb); HP 6051A: 5.5 kg (12 lb)

Shipping Weight: HP 6050A: 13.6 kg (30 lb); HP 6051A: 7.5 kg (17 lb)

Size:

HP 6050A: 425.5 mm W x 177 mm H x 624.7 mm D (16.75 in x 7 in x 24.6 in)

HP 6051A: 213 mm W x 177 mm H x 624.7 mm D (8.4 in x 7 in x 24.6 in)

HP 6060B, 6063B: 425.5 mm W x 88.1 mm H x 396 mm D (16.75 in x 3.5 in x 13.7 in).

See pages 41 and 42 for dimension drawings

HP-IB Interface Capabilities

The following HP-IB functions are implemented: SH1, AH1, L4, SR1, DC1, DT1, and RL1

Regulatory Compliance: Listed to UL 1244; certified to CSA556B; conforms to IEC1010. See page 69 for more information.

Option Descriptions

Opt 020 Front-Panel Inputs (for HP 6060B and 6063B only)

Opt 100 87 to 106 Vac, 47 to 66 Hz input (for Japan only)

Opt 220 191 to 233 Vac, 47 to 66 Hz input

Opt 240 209 to 250 Vac, 47 to 66 Hz input

Opt 800 Rack-mount Kit for two units (for HP 6051A) mounted side-by-side (HP p/n 5061-9694 and 5062-3978)

Opt 908 Rack-mount Kit (HP p/n 5062-3978 with an HP 6050A, HP p/n 5062-3960 with HP 6051A, and HP p/n 5062-3974 with an HP 6060B and 6063B)

Opt 909 Rack-mount Kit with Handles (HP p/n 5062-3984 when mounting an HP 6050A and HP p/n 5062-3975 when mounting an HP 6060B and 6063B)

Opt 910 Extra manual set, including one each of the operating manual, programming reference manual, and service manual. The programming manual is available with the mainframe, and therefore not with individual modules.

Options 908 and 909 for the HP 6050A, and Options 800 and 908 for the HP 6051A, require either the slide kit (p/n 1494-0059) or slide rails to support the weight of the load mainframe. Slide kits can be purchased using the above part number.