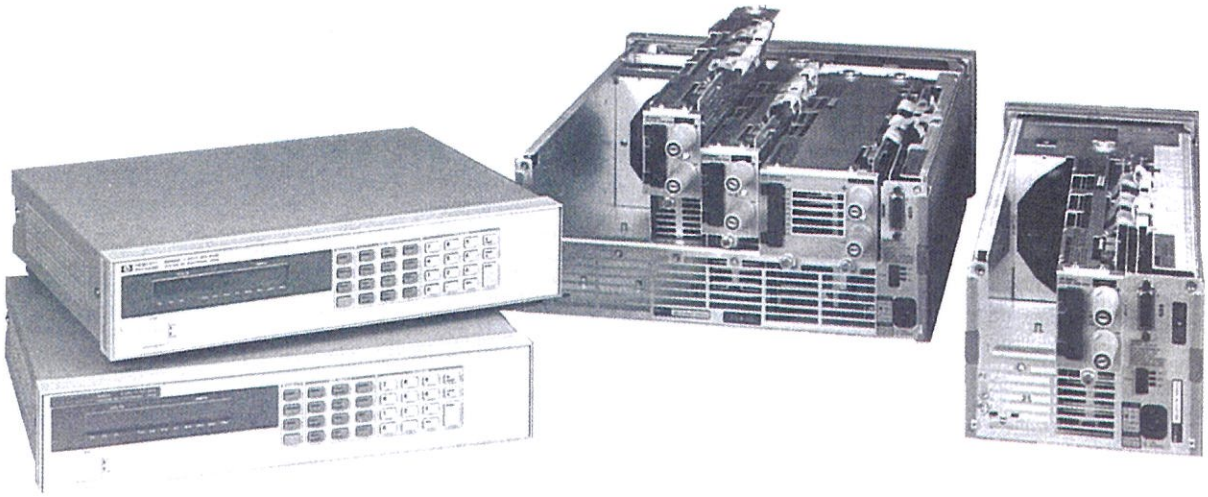
DC Electronic Loads

Electronic Load Family

HP 6050A
to 6063B
HP 60501B
to 60507B

- HP-IB control of current, voltage, and resistance
- HP-IB readback of current, voltage, and power
- Built-in pulse waveform generation with programmable amplitude, frequency, duty cycle, and slew rate
- Continuous and pulse modes
- Full protection from over-current, over-voltage, over-power, over-temperature, and reverse polarity
- Electronic calibration
- Trigger for external synchronization
- Analog voltage control in constant current mode
- Parallel units in constant voltage mode
- Parallel units in constant current mode for higher power
- Remote voltage sense in constant voltage mode
- Loads available for up to 240 V



HP 6060B and 6063B

HP 6050A with
HP 60500 Series Modules

HP 6051A with
HP 60500 Series Module

HP DC Electronic Loads

HP dc electronic loads are ideal for the test and evaluation of dc power sources and power components and are well-suited for applications in areas such as research and development, production, and incoming inspection.

The Hewlett-Packard One-Box Solution

HP single-input loads and load mainframes are equipped with standard HP-IB interfaces. This built-in IEEE-488 interface allows complete control of all load functions as well as readback of input voltage, current, power, and detailed operating status. Each HP standalone load or load module also includes programming inputs that allow control of load current via an analog voltage. Other system features contributing to the one-box solution concept are internal voltage and current monitors and an internal transient generator with programmable amplitudes, frequency, duty cycle, and slew rate. The HP one-box solution saves space, cost, and time while making HP dc electronic loads easy to integrate into automated test systems.

HP dc electronic loads are optimized to address a broad range of dynamic loading applications. They are specifically designed for stability in applications where fast transients are applied to the load inputs, such as during dc power supply startup characterization or transient response testing. Dynamic load performance can be further tailored to specific application needs with the programmable slew rate feature.

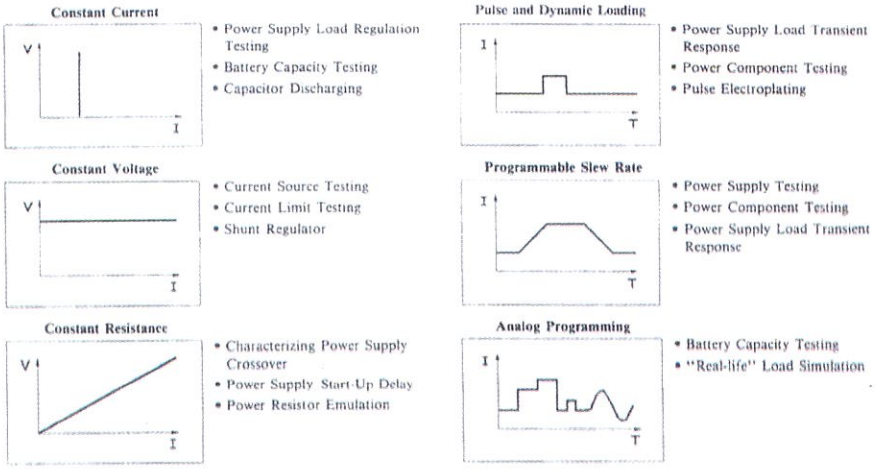
Fully-Compatible Operation

All HP dc electronic loads respond to instructions from the industry-standard SCPI command set. Moreover, the features of all HP dc electronic loads are fully compatible with one another. For example, test programs developed for an HP 6060B 300 W single-input electronic load or an HP 60502B 300 W single-input load module are interchangeable.

The HP dc electronic load family is also fully compatible with the HP 59510A relay accessory (see page 180). The HP 59510A provides physical isolation of the HP dc electronic load from the device under test or any other test instrument by switching power and sense leads. Capable of switching up to 60 A and 200 Vdc, the HP 59510A can be controlled by rear-panel signals on the HP electronic load.

Battery Testing

The HP 6050A Option J10, HP 6051A Option J10 and HP 6060B Option J10 electronic loads are modified for battery testing. These products provide tri-level pulse loading, to simulate accurate conditions on batteries. They also feature a programmable minimum battery voltage threshold. If the voltage of the battery under test falls below this threshold, the load will automatically turn off.



DC Electronic Load Applications

System or Manual Applications

HP dc electronic loads are equally suitable for manual use on the bench. The front-panel LCD meters indicate voltage, current, and power readings. The full-function front-panel keypad allows easy, repeatable, and reliable control of the load when it is used manually. Six volatile user-definable states allow you to easily save settings for later recall. An additional user-definable power-up state allows you to define settings that are remembered when the unit is switched off and then recalled when it is switched on again.

Specifying System Performance

Because Hewlett-Packard electronic loads feature an integrated HP-IB programmer, pulse generator, current shunt, DMM, and cabling, their performance is specified as a system. Specifications cover all the integrated functions as one unit, which eliminates the need to calculate the actual performance of the automated test system based on each component's specification. The HP one-box solution makes the integration and documentation of your test system fast and easy.

Single-Input Products

The HP 6060B and HP 6063B are single-input loads with standard rear-panel inputs. They are also available with optional front-panel inputs in addition to the rear-panel inputs. Front-panel inputs (Option 020) make input connections to the HP electronic load convenient for bench applications. These front-panel terminals are capable of handling the entire current rating of the load and can accept wire gauges up to AWG#4 (22 mm^2). They require no tools to tighten, making the connections quick and easy.

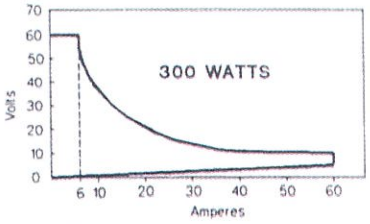
Mainframe Products

The HP 6050A 1,800-W and HP 6051A 600-W electronic load mainframes accept the user-installable HP load modules for easy system configuration and future reconfiguration, if desired. The HP 6050A holds up to six HP 60501B, 60502B, and 60503B load modules, or three HP 60504B and HP 60507B load modules, allowing up to 1,800 W of total maximum power. The HP 6051A holds up to two HP 60501B, 60502B, 60503B modules, or one HP 60504B or HP 60507B module allowing up to 600 W of total maximum power. One HP-IB address is all you need for complete control and readback of all load modules within a single mainframe.

Operating HP Loads Below the Minimum Input Voltage Specification

HP electronic loads meet all specifications when operated above 3.0 V; however, the dc operating characteristics also extend below this minimum-input voltage for static tests. Because of the FET technology used in the power input circuits, HP electronic loads have a low minimum input resistance allowing them to sink high currents even at low voltages.

The figure below shows the operating range of a typical HP dc electronic load. Notice that low-voltage operation, down to zero volts, is possible at correspondingly-reduced current levels, depending on the minimum resistance of the load. HP electronic loads, therefore, can be used in many applications that previously required zero-volt loads.



HP 60502B Input Characteristics

Why Not Make Your Own Load?

Many load users have resorted to building their loads in-house when a commercially-available electronic load with the right combination of features, power rating, performance, and purchase price could not be found. By making these loads in-house, users incur many hidden costs that can easily be overlooked. There are cost components associated with product development, parts procurement, manufacturing, product documentation, training, and product failure, maintenance, or replacement. In addition, the cost components increase as the design complexity changes from simply using resistors and relays to more sophisticated designs addressing application needs for HP-IB programming, readback, and triggering schemes for measurement synchronization.

Equipment buyers with electronic load needs have realized that the purchase price of commercially-available electronic loads can be relatively insignificant when compared to the overall cost of designing, manufacturing, and maintaining them in-house.

The HP electronic load family reduces your total cost of ownership by providing superior performance, features, reliability, and complete product documentation at a reasonable purchase price. These loads allow you to use fewer resources for your electronic load test system development, and more resources to remain successful and competitive in your particular industry. The standard three-year warranty can further reduce your maintenance costs.

The quality, performance, price, and Hewlett-Packard support will help you make an intelligent and economical purchase decision.

Special Modifications

HP offers a special modification service that entails modifying standard models. Special models available are:

HP 6050A J05 (disables the short key)	+$110
HP 6060B J08 (increases the input voltage to 70 V)	+$258
HP 6050A J10 Tri-Level Transient Mode	+$1,000

If you don't find a model that fits your exact needs, contact HP about its modification service.

DC Electronic Loads

Specifications

Specifications

Hewlett-Packard Model	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	24 to 10,000 Ω	2 to 2,000 Ω	0.5 to 500 Ω	2.5 to 2,500 Ω
	10 to 10,000 Ω	240 to 50,000 Ω	20 to 10,000 Ω	5 to 5,000 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)	± (0.05% +150 mV)	± (0.05% +45 mV)	± (0.05% +45 mV)	± (0.05% +90 mV)
Power readback accuracy	± (0.2% +4 W)	± (0.2% +3 W)	± (0.2 +2 W)	± (0.2 +8 W)	± (0.2% +8 W)
Resolution					
Front panel/HP-IB	20 mV/17 mV	100 mV/67 mV	20 mV/17 mV	20 mV/17 mV	100 mV/40 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

Hewlett-Packard Model	HP 6060B, 6050B	HP 6063B, 60503B	HP 60501B	HP 60504B	HP 60507B
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	5 Ω: 0.14 mΩ	2.5 Ω: 0.67 mΩ
Resolution	1 KΩ: 0.27 mS	10 KΩ: 0.011 mS	2 KΩ: 0.14 mS	500 Ω: 0.54 mS	2.5 KΩ: 0.10 mS
	10 KΩ: 0.027 mS	50 KΩ: 0.001 mS	10 KΩ: 0.014 mS	5 KΩ: 0.054 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	64 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
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)

Hewlett-Packard Model	HP 6060B, 6052B	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 se	se 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 W x 7 in H x 24.6 in D)
HP 6051A: 213 mm W x 177 mm H x 624.7 mm D
(8.4 in W x 7 in H x 24.6 in D)
HP 6060B, 6063B: 425.5 mm W x 88.1 mm H x 396 mm D
(16.75 in W x 3.5 in H x 13.7 in D)

Ordering Information

		Options							
			AC input			Rackmount Kit			
HP model	Price	Front-panel inputs	100 Vac Japan only	220 Vac	240 Vac			With handles	Extra manuals
		020	100	220	240	800	908	909	910
6050A	$2,080	—	$0*	$0*	$0*	—	+$421†	+$104†	+$57*
6051A	$1,770	—	$0*	$0*	$0*	+$891	+$841	—	+$57*
6060B	$2,340	+$89*	$0*	$0*	$0*	—	+$37*	+$84*	+$37*
6063B	$2,650	+$89*	$0*	$0*	$0*	—	+$37*	+$84*	+$37*
60501B	$1,460	—	—	—	—	—	—	—	+$37*
60502B	$1,800	—	—	—	—	—	—	—	+$37*
60503B	$2,070	—	—	—	—	—	—	—	+$37*
60504B	$2,550	—	—	—	—	—	—	—	+$37*
60507B	$2,650	—	—	—	—	—	—	—	+$37*

†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.
*This feature is available as an option.
—This feature is not available.

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 CSA 556B; conform to IEC 348; standalone models carry the CE mark
RFI Suppression: Standalone models comply with CISPR-11, Group 1, Class B

Option Descriptions

Opt 020 Front-Panel Inputs (for HP 6060B and 6063B only)
Opt 100 87 to 106 Vac, 47 to 66 Hz (for Japan only)
Opt 220 191 to 233 Vac, 47 to 66 Hz
Opt 240 209 to 250 Vac, 47 to 66 Hz
Opt 800 Rackmount Kit for two units (for HP 6051A) mounted side-by-side (HP p/n 5061-9694 and 5062-3978)
Opt 908 Rackmount 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 Rackmount 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 (Standard unit is shipped with operating and programming manuals only).

Key Literature

1997/98 *HP Power Products Catalog*, p/n 5965-5284E