

POWER SUPPLIES

Single-Output System: 200 to 1000 W Autoranging

HP 6030A, 6031A, 6032A, 6033A, 6035A, 6038A

- Autoranging output
- "One-Box" Solution: includes V and I readback
- SCPI (Standard Commands for Programmable Instruments)

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HP 6033A, and 6038A



HP 6033A and 6038A
with Opt 001.



HP 6030A, 6031A, 6032A, and 6035A

Specifications (at 0° C to 50° C unless otherwise specified)

Hewlett-Packard Model			6033A	6031A	6038A	6032A	6030A	6035A
Output ratings	Output voltage		0 to 20 V	0 to 20 V	0 to 60 V	0 to 60 V	0 to 200 V	0 to 500 V
	Output current		0 to 30 A	0 to 120 A	0 to 10 A	0 to 50 A	0 to 17 A	0 to 5 A
Autoranging Output*	V1		20 V	20 V	60 V	60 V	200 V	500 V
	P1		200 W	1000 W	200 W	1000 W	1000 W	1000 W
	V2		14 V	14 V	40 V	40 V	120 V	350 V
	P2		242 W	1064 W	240 W	1200 W	1200 W	1200 W
	V3		6.7 V	7 V	20 V	20 V	60 V	200 V
	P3		200 W	840 W	200 W	1000 W	1020 W	1000 W
Programming accuracy at 25° C ± 5° C	Voltage		0.035% +9 mV	0.035% +15 mV	0.035% +40 mV	0.035% +40 mV	0.035% +145 mV	0.25% +400 mV
	Current		0.15% +20 mA	0.25% +250 mA	0.085% +10 mA	0.2% +85 mA	0.2% +25 mA	0.3% + mA
Ripple and noise from 20 Hz to 20 MHz	Constant voltage	rms	3 mV	8 mV	3 mV	8 mV	22 mV	50 mV
		peak-to-peak	30 mV	50 mV	30 mV	40 mV	50 mV	160 mV
	Constant current	rms	15 mA	120 mA	5 mA	25 mA	15 mA	50 mA
Readback accuracy at 25° C ± 5° C	Voltage		0.07% +6 mV	0.08% +7 mV	0.07% +50 mV	0.08% +20 mV	0.08% +80 mV	0.5% +200 mV
	Current		0.3% +25 mA	0.4% +100 mA	0.2% +11 mA	0.36% +35 mA	0.36% +15 mA	0.5% +50 mA
Load regulation	Voltage		0.01% +2 mV	0.01% +3 mV	0.01% +3 mV	0.01% +5 mV	0.01% +5 mV	0.01% +13 mV
	Current		0.01% +9 mA	0.01% +15 mA	0.01% +5 mA	0.01% +10 mA	0.01% +10 mA	0.03% +34 mA
Line regulation	Voltage		0.01% +1 mV	0.01% +2 mV	0.01% +2 mV	0.01% +3 mV	0.01% +5 mV	0.01% +13 mV
	Current		0.01% +6 mA	0.01% +25 mA	0.01% +2 mA	0.01% +10 mA	0.01% +5 mA	0.03% +17 mA
Transient Response Time 10% step change	Time		1 ms	2 ms	1 ms	2 ms	2 ms	5 ms
	Level		50 mV	100 mV	75 mV	100 mV	150 mV	200 mV

*See the generalized autoranging output characteristic curve.

Isolation: Either terminal may be grounded, or may be floated up to $\pm 240V$ ($\pm 550V$ for the HP 6030A and 6035A) from chassis ground.

Supplemental Characteristics

Hewlett-Packard Model		6033A	6031A	6038A	6032A	6030A	6035A
Average Programming Resolution	Voltage	5 mV	5 mV	15 mV	15 mV	50 mV	125 mV
	Current	7.5 mA	30 mA	2.5 mA	12.5 mA	4.25 mA	1.25 mA
	OVP	100 mV	100 mV	100 mV	200 mV	600 mV	1 V
AC Input Current:	100 Vac	6.0 A	24 A	6.0 A	24 A	24 A	24 A
	120 Vac	6.5 A	24 A	6.5 A	24 A	24 A	24 A
	220 Vac	3.8 A	15 A	3.8 A	15 A	15 A	15 A
	240 Vac	3.6 A	14 A	3.6 A	14 A	14 A	14 A
Weight (kg(lb)):	Net	9.6(21)	17.2(38)	9.6(21)	16.3(36)	16.3(36)	16.3(36)
	Shipping	11.4(25)	22.7(50)	11.4(25)	21.8(48)	21.8(48)	21.8(48)

Remote sensing: Remote sensing can be used to maintain the CV load effect specification at the load with up to 0.5 V drop per load lead, and sense wires that are less than 0.2 Ω per lead. Operation is possible with up to 2.0 V drop per lead; however, the load effect specification may be degraded.

Modulation (analog programming of output voltage and current): Analog programming inputs and monitoring terminals are provided on the rear panel in addition to the HP-IB programming capabilities. Zero to full-scale voltage or current can be programmed with either 0 to 5 V voltage signals, or 0 to 4000 Ω resistance signals. The monitoring terminals present 0 to 5 V buffered signals, which are proportional to the output voltage and current.

Inductive load: HP models 6030A, 6031A, 6032A, 6035A, and 6038A are stable when operating in CC into inductive loads up to 100 mH, and the HP 6033A and 6038A can handle up to 1 H. A special modification is available for HP Models 6030A, 6031A, and 6032A to ensure stable operation when operating into inductive loads up to 10 H.

HP-IB interface capabilities: SH1, T6, AH1, L4, SR1, RL1, PP1, DC1, DT1, IEEE 488.2 and SCPI compatible command set.

RFI suppression: Meets VDE 0871/6.78 Level B and FCC class B.

Supplemental Characteristics (continued)

Safety agency compliance: Designed to comply with IEC 348 and VDE 0411, CSA 556B, ANSI C39.5 Part 0, Draft 8.

Size: HP 6033A and 6038A: 177.0 mm H × 212.3 mm W × 443.6 mm D (6.97 in × 8.36 in × 17.872 in) HP 6030A, 6031A, 6032A, and 6035A: 132.6 mm H × 425.5 mm W × 503.7mm D (5.2 in × 16.75 in × 19.83 in)

Warranty period: Three years

Key Features

- HP-IB programming of voltage and current
- Measured voltage and current readback over the HP-IB
- SCPI (Standard Commands for Programmable Instruments)*
- Serial link connects up to 16 outputs to one HP-IB address*
- Auto-parallel up to 2 units
- Outputs can be connected in series
- Overtemperature protection
- Discrete Fault Indicator/Remote Inhibit (DFI/RI)*
- Selftest at power-on or from an HP-IB command
- 16 store/recall states
- Digital I/O controls external relay accessories*

* For more information on these features, see page 525.

Autoranging Output

As autoranging power supplies, these models can provide a wide and continuous range of voltage and current combinations at the maximum rated power. This often allows both present and future requirements to be satisfied with fewer supplies, also reducing the number of instruments in the system.

Optional Blank Front Panel

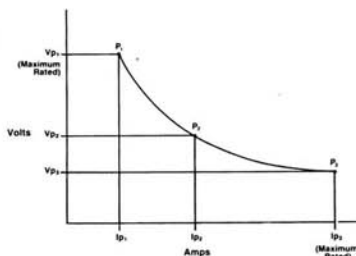
Often, control and monitoring via the front panel is very useful during system development, but is not needed afterwards. If the system is reproduced without further development, power supplies without front-panel controls and meters (Option 001) can be used (except with the HP 6035A). Ordering your power supplies with Option 001 significantly decreases the cost.

Overvoltage and Overcurrent Protection

Because of the delicate nature of most loads, these system power supplies provide several different types of protection. Since they are CV/CC supplies, both the output voltage and the current will be automatically limited to the programmed values. If reaching programmed value indicates an undesirable condition, the power supply can be instructed to automatically downprogram to zero output. For example, if the programmed current limit is reached while testing a PC board assembly, it may indicate a shorted component. In this case, the FOLDBACK feature, if enabled, would be able to serve as an overcurrent protection circuit and downprogram the power supply automatically. FOLDBACK can be enabled and reset over the HP-IB. The built-in overvoltage protection circuit is adjustable with a front-panel control. The set trip level can be displayed on the front-panel meter and can also be read back over the HP-IB, thus making it easy to adjust the level. The OVP circuit, once tripped, can be reset over the HP-IB.

Production procedures sometimes require the operator to adjust the output voltage or current of a power supply locally with the front-panel controls. If this is done, programmed levels can be set to limit the available adjustment range to a safe margin.

Potentially harmful conditions, such as overtemperature and high or low ac input, will trigger the power supply to automatically downprogram to zero output. When these conditions occur, or the FOLDBACK or OVP circuits trip, LEDs on the front panel light to indicate the failure. This status can also be read back to the computer over the HP-IB and can be used to generate interrupts.



Generalized autoranging output characteristic curve

Ordering Information

HP Model	Output ratings	Price
HP 6030A	200 volts, 17 amperes, 1000 watts	\$3,850
HP 6031A	20 volts, 120 amperes, 1000 watts	\$3,850
HP 6032A	60 volts, 50 amperes, 1000 watts	\$3,850
HP 6033A	20 volts, 30 amperes, 200 watts	\$2,750
HP 6035A	500 volts, 5 amperes, 1000 watts	\$4,100
HP 6038A	60 volts, 10 amperes, 200 watts	\$2,750

Option Descriptions:

Opt 001 Front panel which has only line switch, line indicator, and OVP adjust - \$300

Standard unit is configured to operate at 104 to 127 Vac, 48 to 63 Hz. To operate at other input voltages, order one of the following line voltage options.

- Opt 100** 87-106 Vac, 48-63 Hz. This option is for use in Japan only. The power supply output power is 75% of the output power available with the other line voltage options. \$0
- Opt 220** 191-233 Vac, 48-63 Hz \$0
- Opt 240** 208-250 Vac, 48-63 Hz \$0

For HP models 6030A, 6031A, 6032A, and 6035A, one of the following line cord options must be specified when ordering. Order according to local electrical codes. All line cords are 2.5 meters long.

- Opt 831** 12 AWG wire size; UL listed, CSA certified; unterminated line cord (200-240 Vac connections) \$0
- Opt 833** 1.5 mm² wire size; Harmonized cordage; unterminated line cord (200-240 Vac connections) \$0
- Opt 834** 10 AWG wire size; UL listed, CSA certified; unterminated line cord (100-120 Vac connections) \$0
- Opt 841** Line cord with NEMA 6-20P, 20A/250V plug (suggested for use in North and South America) \$15
- Opt 843** Line cord with JIS C8303 appended fig 6(2), 20A/250V plug (suggested for use in Japan) \$35
- Opt 845** Line cord with IEC 309, 16A/220V plug (suggested for use in Denmark, Switzerland, Austria, China and other countries not listed) \$35
- Opt 846** Line cord with NEMA L5-30P, 30A/120V locking plug (suggested for use in North America) \$55
- Opt 847** Line cord with CEE 7/7, 16A/220V plug (suggested for use in continental Europe) \$35
- Opt 848** Line cord with BS 546, 15A/240V plug (suggested for use in India and South Africa) \$35

- Opt 800** Rack mount kit for two units side by side. This applies to HP 6033A and 6038A only. \$79
- Opt 908** Rack mount kit for a single unit. A blank filler panel is supplied when this option is ordered with HP 6033A and 6038A.
 - HP 6033A and 6038A \$84
 - HP 6030A, 6031A, 6032A and 6035A \$35
- Opt 909** Rack mount kit with handles for HP Models 6030A, 6031A, 6032A, 6035A \$85
- Opt 910** One extra operating and service manual shipped with each power supply. \$32

Accessory

HP 5080-2148 serial link cable, 2m (6.6') \$6

Up to 16 power supplies can share one HP-IB address, while still providing full independent control. This feature requires programming in SCPI mode. To use this feature you will need to order one HP 5080-2148 serial link cable for each unit to be added to the chain, with the first unit connected directly to HP-IB.

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