



POWER SUPPLIES

Autoranging System Power Supplies

Models 6030A, 6031A, 6032A, 6033A, and 6038A

- HP-IB programming of voltage and current
- Readback of voltage, current and status
- Overvoltage and overcurrent protection

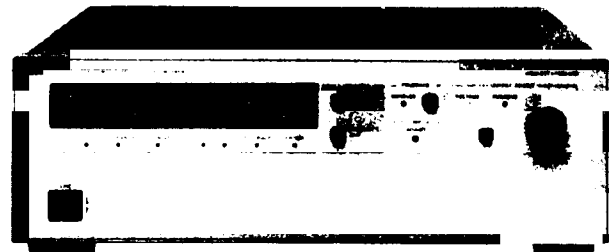
- Optional CIL programming
- Built-in self-test and diagnostics
- Up to 1200 watts output
- Full local control enable/disable



HP 6033A, 6038A



HP 6033A and 6038A
with Opt 001



HP 6030A, 6031A and 6032A



Description

These HP-IB CV/CC dc power supplies have many productivity-oriented features which make them easy to program, integrate into systems and use.

A conventional power supply subsystem capable of monitoring and controlling power supply voltage and current requires a variety of hardware in addition to the actual supply. These new power supplies, however, have built-in capabilities which eliminate the need for D/A programmers, DVMs, and associated auxiliary circuitry. Fewer instruments mean less rack space, easier calculation of system specifications, quicker configurations, higher system reliability, more rapid troubleshooting, and simpler software. 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.

Front Panel Control

Most of the extensive programmable instruction set can be simulated with front panel controls, thus facilitating design and debugging of system hardware and software. During system operation, if local control is not needed, the front panel controls can be disabled with a computer command. If operator interaction is required, a computer command can place limits on the output voltage and current available. Often, control and monitoring via the front panel is very useful during system development, but not needed afterwards. If the system is reproduced without further development, power supplies without front panel controls and meters (Option 001) can then be used. Ordering your power supplies with Option 001 significantly decreases the cost.

Protection Features

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 current will be automatically limited to the programmed values. If reaching a programmed value indicates an undesirable condition, the power supply can be instructed to automatically down-program 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 over-current protection circuit and down-program 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 also can be read back over the HP-IB, thus making adjusting the level easy. 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 down-program 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.

Specifications

		Ratings							Regulation				10% Change Transient Recovery
		Autoranging Output							Load Effect		Source Effect		
Volts	Ampere	V ₁	P ₁	V ₂	P ₂	V ₃	P ₃	HP Model	Voltage	Current	Voltage	Current	Time / Level
0-20	0-30	20V	200W	14V	242W	6.7V	200W	6033A	0.01% +2mV	0.01% +9mA	0.01% +1.1V	0.01% +6mA	1ms / 50mV
0-20	0-120	20V	1000W	14V	1064W	7V	840W	6031A	0.01% +3mV	0.01% +15mA	0.01% +2mV	0.01% +25mA	2ms / 100mV
0-60	0-10	60V	200W	40V	240W	20V	200W	6038A	0.01% +3mV	0.01% +5mA	0.01% +2mV	0.01% +2mA	1ms / 75mV
0-60	0-50	60V	1000W	40V	1200W	20V	1000W	6032A	0.01% +5mV	0.01% +10mA	0.01% +3mV	0.01% +10mA	2ms / 100mV
0-200	0-17	200V	1000W	120V	1200W	60V	1020W	6030A	0.01% +5mV	0.01% +10mA	0.01% +5mV	0.01% +5mA	2ms / 150mV

*See the generalized autoranging output characteristic curve.

Programmable Features

Below are the parameters which can be programmed on the HP 6030A — 6038A and the information which is available for readback over the HP-IB. All of these features are included with the standard user-friendly programming language.

Programmable Functions

- Output Voltage
- Output Current
- Output Disable/Enable
- Soft Voltage Limit
- Soft Current Limit
- Group Trigger
- Foldback Mode
- Device Clear
- Interrupt Mask
- Interrupt Delay
- Preset Power Supply States
- Self-Test
- Local Lockout

Readback Functions

- Programmed Voltage
- Programmed Current
- Actual Voltage
- Actual Current
- OVP Trip Level
- Soft Voltage Limit
- Soft Current Limit
- Foldback Mode
- Present Status
- Accumulated Status
- Interrupt Mask
- Programming Error Codes
- Self Test Error Codes
- Output Disable/Enable
- Device ID

For added flexibility now a CHIL programming language, Option 700, is available.

System Configuration

If your application requires more power than the output capability of a single unit, you can use an auto-series connection for greater output voltage or an auto-parallel connection for greater output current. Any combination of models is possible with two units used in auto-parallel or up to 240 volts (550 volts for the HP 6030A) total output for auto-series connections. In addition, up to four 1000 watt models may be connected in autoparallel. For example, if you need 200 amperes at 6 volts, a cost-effective solution would be to use an HP 6031A as the master power supply and an HP 6011A as the slave in an auto-parallel configuration. See page 270 for more information about the HP 6011A, a non-HP-IB dc power supply.

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

Either terminal may be grounded, or may be floated up to ± 240 (± 550 volts for the HP 6030A) volts from chassis ground.

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 0-5 volt voltage signals, or 0-4000 ohm resistance signals. The monitoring terminals present 0-5 volt buffered signals which are proportional to the output voltage and current.

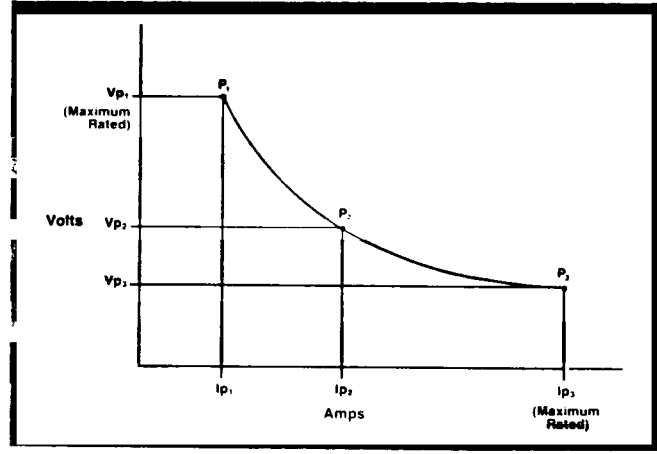
HP models 6030A, 6031A, 6032A, and 6038A are stable when operating in CC into inductive loads up to 100 mH, and the HP 6033A and 6038A can handle up to 1 H. A special modification is available for HP Models 6030A, 6031A and 6032A to ensure stable operation when operating into inductive loads up to 10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

General Specifications

HP-IB interface functions: SH1, T6, AH1, L4, SR1, RL1, PP1, DC1, DT1. For more on these codes, refer to the HP-IB section of this catalog.

Specifications cont.

PARD (rms/p-p) 20 Hz-20 MHz		Remote Control				General						Price
		Resolution		Accuracy		AC Input Current				Weight - kg (lbs)		
Voltage	Current	Voltage	Current	Voltage	Current	100 Vac	120 Vac	220 Vac	240 Vac	Net	Shipping	
3mV/30mV	15mA/-	5mV	7.5mA	0.03% +0mV	0.1% +20mA	6.0A	6.5A	3.8A	3.6A	9.6(21)	11.4(25)	\$2400
8mV/50mV	120mA/-	5mV	30mA	0.035% +15mV	0.25% +250mA	24A	24A	15A	14A	17.2(38)	22.7(50)	\$3100
3mV/30mV	5mA/-	15mV	2.5mA	0.035% +40mV	0.085% +10mA	6.0A	6.5A	3.8A	3.6A	9.6(21)	11.4(25)	\$2400
8mV/40mV	25mA/-	15mV	12.5mA	0.035% +40mV	0.2% +85mA	24A	24A	15A	14A	16.3(36)	21.8(48)	\$3100
22mV/50mV	15mA/-	50mV	4.25mA	0.035% +145mV	0.2% +25mA	24A	24A	15A	14A	16.3(36)	21.7(48)	\$3100



Generalized autoranging output characteristic curve

Dimensions: HP 6033A and 6038A: 170.6 mm H x 208.8 mm W x 453.9 mm D (6.72" x 8.22" x 17.872")
 HP 6030A, 6031A and 6032A: 132.6 mm H x 425.5 mm W x 516.4 mm D (5.2" x 16.75" x 20.33")

Option Descriptions

- 001:** Front panel which has only line switch, line indicator, and OVP adjust. less \$300
- 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. N/C
- 120:** 104-127 Vac, 48-63 Hz. N/C
- 220:** 191-233 Vac, 48-63 Hz. N/C
- 240:** 208-250 Vac, 48-63 Hz. N/C
- 700:** CHIL programming language add \$500
- 800:** Rack mount kit for two units side by side. This applies to HP 6033A and 6038A only. add \$ 75
- 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 add \$ 80
 - HP 6030A, 6031A and 6032A add \$ 30
- 910:** One extra operating and service manual shipped with each power supply. add \$ 15