SECTION I
GENERAL INFORMATION

1-1 DESCRIPTION

1-2 This laboratory type power supply employs a unique extended range technique which allows the supply to furnish maximum output power over a wide range of output voltage and current combinations. The supply can provide a full 200 Watts of output from 20V, 10A to 50V, 4A. The output is completely adjustable through the entire operating range of 0 to 50 volts and 0 to 10 amps by front panel voltage and current controls.

1-3 The supply is of the Constant Voltage/Constant Current (CV/CC) type and provides laboratory grade performance. It is fan cooled and packaged in a System II modular enclosure which is sturdy, attractive, and easily accessible for servicing.

1-4 Output voltage and current are continuously indicated on individual front panel meters. Four LED indicators on the front panel provide a convenient means of monitoring the operating status of the supply. They inform the user whether the supply is in the constant voltage or constant current mode; or whether the supply is in an overrange (operating beyond the 200 Watt boundaries) or overvoltage protection condition.

1-5 The overvoltage protection crowbar circuit protects the users load by quickly and automatically shorting the output terminals if a preset trip voltage is exceeded. A screwdriver control on the front panel sets the overvoltage trip point and can be adjusted between 2.5V and 60V. If several of these supplies are installed in the same system their crowbar circuits can be "slaved" together so that all supplies will crowbar if any one of them does.

1-6 Either the positive or negative output terminal of the supply may be grounded or the output may be floated at up to 150 volts above ground.

1-7 Remote programming, remote sensing, and several methods of operating supplies in combination of two or three are made possible by rear panel terminals that allow access to control points within the regulator circuits. These capabilities are described in Section III.

1-8 SPECIFICATIONS

1-9 Detailed specifications for this power supply are given in Table 1-1.

1-10 OPTIONS

1-11 Options are factory modifications of a standard instrument that are requested by the customer. One Option is available for this instrument as indicated below. Detailed coverage of this Option is presented in Appendix A.

OPTION NO.	DESCRIPTION
001	HP-IB Interface: Allows the supply to be digitally controlled via the HP-IB from a calculator, computer, or other controller. This modification involves the changing of internal PC board jumpers and the addition of three PC boards, two switches and an HP-IB connector. Either the output voltage or current can be programmed by the HP-IB controller

1-12 ACCESSORIES

1-13 The System-II cabinet accessories listed below may be ordered with the power supply or separately from your local Hewlett-Packard field sales office (refer to list at rear of manual for addresses). All accessories applicable to System-II modular cabinets are fully described and illustrated in the Hewlett-Packard catalog.

HP Part No.	Description
5061-0090	Two front handles that attach to each side of 7" high cabinets.
5061-0094	Kit of lock link hardware for joining together cabinets of equal depth. Units can be joined side-by-side or vertically. This kit is required whenever two (or more) sub-module units are to be rack mounted side-by-side.
1460-1345	Tilt stand snaps into standard foot supplied with instrument — must be used in pairs.
5061-0060	Rack mounting kit for one half module width unit, 7-inches high. Includes one rack flange (ear) and one half module width extention panel (adapter).
5061-0078	Rack mounting kit for two half module units,

7" high. Kit includes two rack flanges (ears). Also, lock-together kit (5061-0094) is required for joining the two supplies together. The cabinets must also be of equal depth (17").

5061-0055 Rack mounting kit for two units (one half module width and one quarter module width). Kit includes one rack flange and one quarter width extension adapter. Lock-together kit (5061-0094) is required for joining the two supplies.

5061-0098 Support shelf for mounting one or more 7" high units which are half module or quarter module width. Cabinet depths need not be equal.

5061-2027 Front filler panel (half module width) for 7" high support shelf.

1494-0015 Slide kit for support shelves mounted in HP rack enclosures.

1-14 INSTRUMENT AND MANUAL IDENTIFICATION

1-15 Hewlett-Packard power supplies are identified by a two part serial number. The first part is the serial number prefix, a number-letter combination that denotes the date of a significant design change and the country of manufacture. The first two digits indicate the year (10 = 1970, 11 = 1971, etc.), the second two digits indicate the week, and the letter "A" designates the U. S. A. as the country of manufacture. The second part is the power supply serial number; a different sequential number is assigned to each power supply, starting with 00101.

1-16 If the serial number on your instrument does not agree with those on the title page of the manual, Change Sheets supplied with the manual of Manual Backdating Changes define the difference between your instrument and the instrument described by this manual.

1-17 ORDERING ADDITIONAL MANUALS

1-18 One manual is shipped with each power supply. Additional manuals may be purchased from your local Hewlett-Packard field office (see the list at the rear of this manual for addresses). Specify the model number, serial number prefix, and the HP Part Number provided on the title page.

Table 1-1. Specifications, Model 6002A

INPUT POWER:
Unit has ac power module which is settable to: 100/120/220/240Vac (−13%, +6%), 48-63Hz. A 3-wire detachable line cord is supplied.

DC OUTPUT:
Adjustable from 0-50V and 0-10A. Maximum output power is 200W from 20-50V.

LOAD EFFECT (LOAD REGULATION):
Constant Voltage − Less than 0.01% of output plus 1mV for a load change equal to the maximum current rating of the supply.
Constant Current − Less than 0.01% of output plus 1mA for a load change equal to the maximum voltage rating of the supply.

SOURCE EFFECT (LINE REGULATION):
Constant Voltage − Less than 0.01% of output plus 1mV for any line voltage change within rating.
Constant Current − Less than 0.01% of output plus 1mA for any line voltage change within rating.

PARD (Ripple and Noise):
Constant Voltage − Less than 1mV rms and 10mV p-p (20Hz to 20MHz).
Constant Current − Less than 5mA rms.

TEMPERATURE COEFFICIENT:
Constant Voltage − Less than 0.02% plus 200μV change in output per degree Celsius change in ambient following a 30-minute warmup.
Constant Current − Less than 0.02% plus 5mA change in output per degree Celsius change in ambient following a 30-minute warmup.

DRIFT (STABILITY):
(Change in output over an 8-hour interval under constant line, load, and ambient temperature following a 30-minute warmup).
Constant Voltage − Less than 0.05% of output plus 1mV.
Constant Current − Less than 0.05% of output plus 5mA.

LOAD TRANSIENT RECOVERY TIME:
Less than 100μsec is required for output voltage recovery (in constant voltage operation) to within 15mV of the nominal output following a change in output current from 50% to 100% or 100% to 50% of maximum current rating.

REMOTE RESISTANCE CONTROL:
CV: 1KΩ/V ±7% CC: 100Ω/A±7%

REMOTE VOLTAGE CONTROL:
CV: 1V/V ±20mV (−50mV offset) CC: 50mV/A ±10%

Table 1-1. Specifications, Model 6002A (continued)

RESPONSE TIME:
Maximum time for output voltage to change between 0 to 99.9% or 100% to 0.1% of maximum rated output voltage.

UP:	No Load – 100msec	
	Full Load – 100msec	
DOWN:	No Load – 400msec	
	Full Load – 200msec	

OVERVOLTAGE PROTECTION:
Trip voltage adjustable from 2.5V to 60V. Minimum setting above output voltage to avoid false tripping is 1 volt.

DC OUTPUT ISOLATION:
150Vdc

TEMPERATURE RATINGS:
Operating: 0 to 55°C Storage: –40 to +75°C

RESOLUTION:
(Minimum output voltage or current change that can be obtained using the front panel controls.)
CV: 10mV CC: 10mA

OUTPUT IMPEDANCE:
Typical value is 0.5mΩ in series with 1μH.

OPTIONS:
001 HP-IB Interface – specifications listed in Appendix A.

DIMENSIONS:
(See Figure 2-1)

WEIGHT:
Net: 14.5kg. (32 lb) Shipping: 15.9kg. (35 lb)