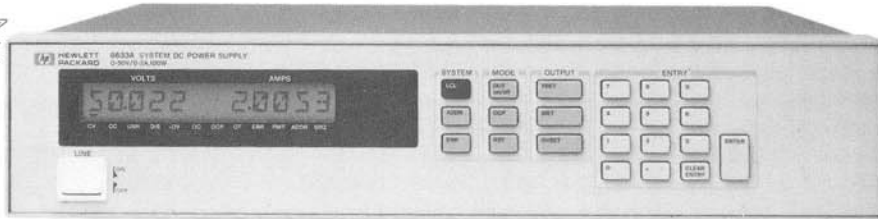


# HP-IB SYSTEM POWER SUPPLIES

## Single Output System Power Supplies

- 100 Watt Output
- Low Noise and Ripple
- Current Sinking Capability
- Built-in HP-IB Interface
- Readback Measured Voltage and Current Output Via HP-IB

- Selftest
- Software Calibration
- Overvoltage Protection with SCR Crowbar
- Overcurrent Protection
- Fast/Normal Mode Operation
- Front Panel Binding Posts (Option 020)



HP 6633A

### Description

HP Models 6632A-6634A

HP Models 6632A-6634A are 100 Watt, single output, series pass regulated power supplies optimized for systems applications. They provide a high performance output with a full set of programmable features.

The following voltage and current combinations are available:

|                   |         |
|-------------------|---------|
| HP 6632A: 0-20 V  | 0-± 5 A |
| HP 6633A: 0-50 V  | 0-± 2 A |
| HP 6634A: 0-100 V | 0-± 1 A |

Most importantly, these models are one-box solutions for system power supply requirements. Both the voltage and current output can be programmed for either CV or CC operation. A built-in DVM and precision current shunt measure (readback) the actual power supply output. The internal H-IB interface allows for complete programmability, including status reporting and interrupt generation with user designated fault conditions. In addition, programming commands (such as VSET for voltage programming) are easy-to-use and self-documenting.

#### Current Sinking

HP Models 6632A-6634A sink as well as source current. This provides very fast down programming times and speeds throughput in production test applications. The negative current limit tracks the user-programmed positive current limit.

#### Remote Sensing

Remote sense terminals allow for precise voltage regulation at the load. This feature will compensate for load lead IR drops of up to 2 volts per lead.

#### Protection Features

HP Models 6632A-6634A have Overvoltage and Overcurrent protection. Both features are programmable via the front panel keypad and HP-IB. The Overvoltage protection includes an SCR crowbar.

#### Selftest

HP Models 6632A-6634A have a built-in selftest capability. This feature verifies the function of all HP-IB circuitry, D/A's, and A/D's at power on and on HP-IB command.

#### Software Calibration

Software calibration eliminates shock sensitive potentiometers normally used for calibration of power supplies and programmers. This feature

enables calibration of these models via the HP-IB while mounted in the rack. An internal jumper is provided which, when removed, prevents recalibration of the power supply.

#### Fast/Normal Mode Operation

A rear panel switch designates one of two operating modes. In Fast Mode, the output capacitors are disabled to speed up the output response time. Normal Mode is optimized for minimal output PARD. See the specifications on page 20 for more information.

#### Front Panel Binding Posts (Option 020)

Option 020 adds a front panel output in parallel with the rear panel output terminal strip. These front panel binding posts provide flexibility in accessing the power supply output, and are very useful in bench applications and system development. A slight degradation in load effect and voltage programming accuracy may occur at the front panel.

#### HP-IB Functions

The following functions can be programmed via the HP-IB:

##### Programmable Functions

- Voltage Output
- Current Output
- Overvoltage Protection
- Overcurrent Protection
- Output Enable/Disable
- Fault Interrupt
- Software Calibration
- Selftest

##### Readback Functions

- Actual Measured Voltage Output
- Actual Measured Current Output
- Present Status
- Accumulated Status
- Programming Error Codes
- Fault Codes
- Service Request

#### Specifications *(Data Subject to Change)*

**HP-IB Interface Functions:** The following HP-IB functions are implemented:

SH1, AH1 T6, L4, SR1, RL1, PP1, DC1, DT0 and E1.

**Safety Agency Compliance:** HP Models 6632A-6634A power supplies are, designed to comply with the following regulatory standards:

IEC 348, VDE 0411, UL 1244 and CSA Electrical Bulletin 556B.

**Weight kg (lb) (all models):** Net 10.5 (23), Shipping 12.3 (27)

**Input Current:** 100 VAC 120 VAC 220 VAC 240 VAC  
 (Max. rms all models) 3.3 A 2.9 A 1.4 A 1.6 A

**Input requirements:** 350 VA max.  
 250 watts max.

# HP-IB SYSTEM POWER SUPPLIES

## Single Output Linear System Power Supplies Cont'd.

### Specifications *(Data Subject to Change)*

|  | Volts           | 0-20 V               | 0-50 V               | 0-100 V             |                  |
|--|-----------------|----------------------|----------------------|---------------------|------------------|
|  | Amps            | 0-5 A                | 0-2 A                | 0-1 A               |                  |
|  | Watts           | 100 W                | 100 W                | 100 W               |                  |
| <b>Hewlett-Packard Model</b> Specified over an operating/temperature range of 0-55°C.  |                 | <b>6632A</b>         | <b>6633A</b>         | <b>6634A</b>        |                  |
| <b>Load Effect (Load Regulation):</b> For a load change from zero to maximum rated voltage or current of the supply.   | Voltage         | 2 mV                 | 4 mV                 | 5 mV                |                  |
|  | Current         | 1 mA                 | 1 mA                 | 1 mA                |                  |
| <b>Source Effect (Line Regulation):</b> Given for any change within the rated line voltage for any output within the rated output voltage, current, and power of the supply.                         | Voltage         | 0.5 mV               | 1 mV                 | 1 mV                |                  |
|  | Current         | 0.5 mA               | 0.25 mA              | 0.25 mA             |                  |
| <b>PARD (Ripple and Noise):</b> rms/peak-peak (20 Hz - 20 MHz).  | Voltage(Normal) | 0.3 mV/3 mV          | 0.5 mV/3 mV          | 0.5 mV/3 mV         |                  |
|  | Voltage(Fast)   | 1 mV/10 mV           | 1 mV/15 mV           | 2 mV/25 mV          |                  |
|  | Current(rms)    | 2 mA                 | 2 mA                 | 2 mA                |                  |
| <b>Drift (Stability):</b> Change in output over 8-hour interval under constant line, load, and ambient temperature following 30-minute warm-up.  | Voltage         | 0.01% + 0.5 mV       | 0.01% + 1 mV         | 0.01% + 1 mV        |                  |
|  | Current         | 0.01% + 1 mA         | 0.01% + 0.5 mA       | 0.01% + 0.3 mA      |                  |
| <b>Load Effect Transient Recovery:</b> Maximum time required for output voltage to recover within a band of 0.1% of rated voltage around the nominal voltage following a 50% change in load current. | Normal          | 100 $\mu$ s          | 100 $\mu$ s          | 100 $\mu$ s         |                  |
|  | Fast            | 50 $\mu$ s           | 50 $\mu$ s           | 50 $\mu$ s          |                  |
| <b>Programming:</b> (25 $\pm$ 5°C) Given for control of the output over the HP-IB or with front panel controls.  | Voltage         | Resolution           | 5 mV                 | 12.5 mV             | 25 mV            |
|  |                 | Accuracy             | 0.05% + 10 mV        | 0.06% + 20 mV       | 0.05% + 50 mV    |
|  | Current         | Resolution           | 1.25 mA              | 0.5 mA              | 0.25 mA          |
|  |                 | Accuracy             | 0.15% + 7 mA         | 0.15% + 2 mA        | 0.15% $\pm$ 1 mA |
| <b>Idle Current:</b> Minimum CC programming current.   |                 | 20 mA                | 8 mA                 | 4 mA                |                  |
| <b>Temperature Coefficient:</b> Output change per degree Celsius change in ambient following 30-minute warm-up.  | Voltage         | 70ppm + 0.25 mV      | 70ppm + 0.5 mV       | 70ppm + 1 mV        |                  |
|  | Current         | 150ppm + 500 $\mu$ A | 150ppm + 150 $\mu$ A | 150ppm + 75 $\mu$ A |                  |
| <b>Output Response:</b> Maximum time for output voltage to change within $\pm$ 0.025% of final value (LSB), and from 10% to 90%, or 90% to 10% of voltage excursion (Tr/Tf).                         | Normal          | Tr/Tf                | 15 ms                | 15 ms               | 15 ms            |
|  |                 | LSB                  | 60 ms                | 60 ms               | 60 ms            |
|  | Fast            | Tr/Tf                | 400 $\mu$ s          | 400 $\mu$ s         | 400 $\mu$ s      |
|  |                 | LSB                  | 2 ms                 | 2 ms                | 2 ms             |
| <b>HP-IB Programming Command Processing Time:</b> (Display disabled)   | Typical         | 10 ms                | 10 ms                | 10 ms               |                  |
| <b>Voltmeter:</b> (25 $\pm$ 5°C) Refers to data read back to the controller from the HP-IB and as viewed via the front panel display.  | Resolution      | 5 mV                 | 12.5 mV              | 25 mV               |                  |
|  | Accuracy        | 0.07% + 15 mV        | 0.07% + 30 mV        | 0.06% + 70 mV       |                  |
| <b>Ammeter:</b> (25 $\pm$ 5°C) Refers to data read back to the controller from the HP-IB and as viewed via the front panel display.  | Resolution      | 1.25 mA              | 0.5 mA               | 0.25 mA             |                  |
|  | Accuracy        | 0.18% + 9 mA         | 0.17% + 3 mA         | 0.15% + 2 mA        |                  |
| <b>DC Output Isolation:</b> Maximum voltage either output terminal ( $\pm$ ) may be from chassis ground.   |                 | $\pm$ 240 VDC        | $\pm$ 240 VDC        | $\pm$ 240 VDC       |                  |
| <b>Remote Sensing:</b> Maximum allowable voltage drop per load lead.   |                 | 2 VDC                | 2 VDC                | 2 VDC               |                  |

### Ordering Information

|   | PRICE*   |
|---|----------|
| 6632A: 20 volts, 5 amperes  | \$1500   |
| 6633A: 50 volts, 2 amperes  | \$1500   |
| 6634A: 100 volts, 1 amperes   | \$1500   |
| <b>(NOTE: Line voltage Option (100, 120, 220 or 240) must be specified)</b>                               |          |
| 100: 87-106 Vac, 47-66 Hz, (for Japan only)   | N/C      |
| 120: 104-127 Vac, 47-66 Hz.   | N/C      |
| 220: 191-233 Vac, 47-66 Hz.   | N/C      |
| 240: 209-250 Vac, 47-66 Hz.   | N/C      |
| 020: Front Output Binding Posts   | \$75     |
| 908: Rack Mount Kit for one unit. (HP P/N 5061-9674)  | add \$30 |
| 909: Rack Mount Kit with Handles (HP P/N 5061-9675)   | \$72.50  |
| 010: Rack Sides   | \$100    |
| 910: One each extra operating and service manuals. (Operating manual only is shipped with standard unit.) | add \$30 |
| W30: 2 Year Additional Return-to-HP Service   | \$50     |

\* Prices apply for domestic U.S.A. customers only.

### Dimensions

