



POWER SUPPLIES

Special Purpose; Precision Voltage Sources

Models 6114A and 6115A

- 0.025% output voltage accuracy
- Pushbutton voltage control
- Five minute warm-up



HP 6114A & 6115A

Description

HP Models 6114A and 6115A

These 40-watt precision power supplies are high-accuracy instruments designed for use as low-cost calibrators, working voltage standards, systems reference supplies, or high-performance lab supplies. They are ideal for applications where an accurate, highly stable, and easy-to-use source of dc voltage is required.

Output Ratings

Both models feature automatic dual-range operation. For example, the HP 6114A can supply 0-20V at 0-2A, and 20-40V at 0-1A, without manual range switching. Automatic output current range cross-over occurs when the supply is providing greater than one-half of the maximum rated output voltage.

Output Voltage Controls

Pushbutton voltage controls allow the output voltage to be set rapidly and accurately. The setting is displayed in large, easy-to-read numerals. A four-digit pushbutton switch increases or decreases the output voltage in unit steps, and the switches go directly from "9" to "0" without backing down. A fifth digit, set via a separate front-panel control, provides output voltage resolution of 200 μ V.

The output voltage accuracy is 0.025% (250 ppm) plus 1 mV — for example, at 40 volts output, the output voltage of Model 6114A is accurate within ± 11 mV. This accuracy is attained after only five minutes' warmup, thus making these supplies especially suitable as portable calibrators.

Output Current Controls

A front-panel current control allows the maximum output current of these supplies to be set to any desired value within the maximum rating. Using this control, the supplies can be operated as constant-current sources with 0.01% current regulation. A current mode indicator (a light-emitting diode) immediately lights when the supply is operated in the gross current limit region or when the output current level established by the setting of the front-panel control is reached. When the indicator is lighted, the output voltage is uncalibrated, but the front panel voltmeter continues to indicate the output voltage with an accuracy of 2%. A ten-turn current control with a three-digit graduated dial provides 2 mA current resolution.

Remote Programming

Models 6114A and 6115A are designed to be programmed with either the HP Multiprogrammer or the HP-IB Isolated D/A Power Supply Programmer. Interfacing for Multiprogrammer operation is included as a standard feature in these models; therefore, the addition of Option 040 is not required. See pages 277 and 172 for additional information on digital programming interfaces for power supplies. Both supplies can also be remotely programmed by means of an external voltage or resistance.

The output capacitor can be disconnected to reduce current surges, thereby improving the performance of the supply as a constant-current source; this also increases the programming speed by approximately an order of magnitude. Note, however, that some capacitance

- May be used with HP-IB Power Supply Programmer
- Overvoltage and overcurrent indicators
- Built-in overvoltage crowbar

at the load may be required to maintain power supply stability under all loading conditions when the output capacitor is disconnected.

Overvoltage Protection

A built-in overvoltage protection circuit (an SCR crowbar) monitors the output and reduces the output voltage and current to zero whenever a preset voltage limit (adjustable from the front panel) is exceeded. This feature provides a convenient method of limiting the maximum output voltage supplied to voltage-sensitive loads.

Specifications

DC Output: voltage and current output can be adjusted over the range indicated by front-panel controls or analog programming.

HP 6114A: 0-20 volts, 0-2 amperes
20-40 volts, 0-1 amperes

HP 6115A: 0- 50 volts, 0-0.8 amperes
50-100 volts, 0-0.4 amperes

Both models feature automatic dual-range operation, which eliminates manual range switching.

Load effect: constant-voltage deviation, 0.0005% + 100 μ V, constant-current deviation, 0.01% + 500 μ A.

Source effect: over the rated input voltage range: constant-voltage, 0.0005% + 100 μ V; constant-current, 0.005% + 40 μ A.

PARD (ripple and noise): rms/p-p, 20 Hz to 20 MHz: CV 40 μ V/200 μ V, CC 200 μ A/1 mA.

Temperature coefficient: CV, 0.0001% + 15 μ V/ $^{\circ}$ C; CC, 0.02% + 50 μ A/ $^{\circ}$ C.

Drift: CV, 0.0015% + 15 μ V per 8 hours; 0.0075% + 30 μ V per 90 days.

Output voltage accuracy: output voltage accuracy obtained from front-panel controls at $23 \pm 3^{\circ}$ C at any ac line voltage and load current within rating and following a five-minute warm-up: 0.025% + 1.0 mV.

Resolution: front-panel voltage control, 200 μ V; front-panel current control, 2 mA.

Output impedance: typical value is approximated by 0.05 m Ω in series with 3 mH.

Load transient recovery time: less than 50 μ s is required for output voltage (constant voltage operation) to recover within 50 mV of the nominal output level following a change in output current equal to the current rating of the supply.

Remote programming speed: up programming of voltage at full load: HP 6114A, 1.75s; HP 6115A, 4.5s. Down programming, no load: HP 6114A, 350 ms; HP 6115A, 500 ms.

Overvoltage protection crowbar: adjustable front-panel screwdriver control from 0.5 to 45 volts on the HP 6114A and 0.5 to 110 volts on the HP 6115A.

Power: 104-127 or 208-254 Vac (switchable), 48-440Hz, 150 VA max.

Temperature rating: operating, 0 to 50 $^{\circ}$ C; storage, -40 to +75 $^{\circ}$ C.

Size: 197 mm W x 165 mm H x 337mm D (7.75" x 6.5" x 13.25")

Weight: 7.7 kg (17 lb) net, 9.5 kg (21 lb) shipping.

Accessories

5060-8762: adapter frame for rack mounting one or two $\frac{1}{2}$ rack width units. This frame applies to HP 6114A, 6115A

5060-8760: blank filler panel. This $\frac{1}{2}$ rack width panel applies to HP 6114A, 6115A

Ordering Information

HP 6114A Precision Power Supply

HP 6115A Precision Power Supply

Price

\$115

\$36

\$1650

\$1650