

- Continuously variable voltage limit
- Output useful to micro-ampere region

- High output impedance—no output capacitor



HP 6177C, 6181C

HP 6186C

voltage to vary from zero to maximum.

Source effect (line regulation): less than 25 ppm of output + 5 ppm of range switch setting for any change in the line voltage between 104 and 127 V ac at any output current and voltage within rating.

Load effect transient recovery: less than 800 μ s for recovery to within 1% of nominal output current following a full load change in output voltage. (On HP 6186C, recovery time for 100 mA/10 mA/1 mA ranges is 1 ms/1.6 ms/4 ms, respectively.)

Temperature coefficient: output change per degree C is less than 75 ppm of output current + 5 ppm of range switch setting.

Drift (stability): less than 100 ppm of output current + 25 ppm of range switch setting. Stability is measured for eight hours after one hour warm-up under conditions of constant line, load, temperature, and output setting.

Resolution: 0.03% of range switch setting.

Temperature rating: operating 0, to 55°C; storage, -40 to +75°C.

Description

These solid-state constant-current sources are ideal for semiconductor circuit development, component testing, and precision electroplating applications.

Their high-speed remote programming characteristics make these supplies useful in testing and sorting semiconductors, resistors, relays, meters, etc. The ability to superimpose ac modulation on the dc output permits the supplies to be used for measurement of dynamic or incremental impedance of circuit components. When remotely programmed, accuracy, stability and some other specifications change to those of the programming source. The output current is continuously variable with the ten-turn front panel control.

Specifications

Load effect (load regulation): less than 25 ppm of output + 5 ppm of range switch setting for a load change which causes the output

Accessories

HP 5060-8764: rack adapter for rack mounting one or two HP 6177C or 6181C supplies

HP 5060-8762: rack adapter for rack mounting one or two HP 6186C supplies

HP 5060-8530: filler panel for HP 6177C, 6181C

HP 5060-8760: filler panel for HP 6186C

Options

028: 230 Vac \pm 10%, single-phase input.

910: one additional operating and service manual

Ordering Information

HP 6177C, 6181C Constant Current Source

HP 6186C Constant Current Source

Model		HP 6177C	HP 6181C	HP 6186C	
Output Current ††		0-500 mA	0-250 mA	0-100 mA	
Voltage Compliance Δ		0-50 V dc	0-100 V dc	0-300 V dc	
Output Ranges		A 0-5 mA	0-2.5 mA	0-1 mA	
		B 0-50 mA	0-25 mA	0-10 mA	
		C 0-500 mA	0-250 mA	0-100 mA	
AC Input		115V ac \pm 10%, 48-63 Hz; 0.6 A, 55 W at 115 V ac For 230 V ac see Option 028	115 V ac \pm 10%, 48-63 Hz; 0.6 A, 55 W at 115 V ac For 230 V ac see Option 028	115/230 V ac, 48-63 Hz; 0.9 A, 90 W at 115 V ac 115/230 V ac switch	
Constant Current	Voltage Control (accuracy: 0.5% of output current + 0.04% of range)	Range A 200 mV/mA	1 V/mA	10 V/mA	
		Range B 20 mV/mA	100 mV/mA	1 V/mA	
		Range C 2 mV/mA	10 mV/mA	100 mV/mA	
Remote Programming	Resistance Control (accuracy: 1% of output current + 0.04% of range)	Range A 400 ohms/mA	2 k Ω /mA	10 k Ω /mA	
		Range B 40 ohms/mA	200 ohms/mA	1 k Ω /mA	
		Range C 4 ohms/mA	20 ohms/mA	100 Ω /mA	
Voltage Limit Remote Programming	Voltage Control (Accuracy: 20%)	1 V/V	1 V/V	1 V/V	
		Resistance Control	870 ohms/V	435 ohms/V	820 ohms/V
		Accuracy	25%	25%	15%
Typical Output Impedance (R in parallel with C)*		Range A R = 330 Meg, C = 500 pF	R = 1330 Meg, C = 10 pF	R = 10,000 Meg, C = 900 pF	
		Range B R = 33 Meg, C = 0.005 μ F	R = 133 Meg, C = 100 pF	R = 1,000 Meg, C = 700 pF	
		Range C R = 3.3 Meg, C = 0.05 μ F	R = 13.3 Meg, C = 1000 pF	R = 100 Meg, C = 1500 pF	
PAR (Ripple and Noise): rms/p-p (20 Hz to 20 MHz) with either output terminal grounded		Range A 1.6 μ A rms/40 μ A p-p	0.8 μ A rms/20 μ A p-p	0.2 μ A rms/5 μ A p-p	
		Range B 16 μ A rms/200 μ A p-p	8 μ A rms/100 μ A p-p	2 μ A rms/50 μ A p-p	
		Range C 160 μ A rms/1 mA p-p	80 μ A rms/500 μ A p-p	20 μ A rms/500 μ A p-p	
Programming Speed: from 0 to 99% of range switch setting with a resistive load ** (Output Current Modulation)		6 ms	6 ms	10 ms	
Dimensions:		7.75" (W) x 3.44" (H) x 12.38" (D) 197 mm (W) x 88 mm (H) x 315 mm (D)	7.75" (W) x 3.44" (H) x 12.38" (D) 197 mm (W) x 88 mm (H) x 315 mm (D)	7.75" (W) x 3.44" (H) x 12.38" (D) 197 mm (W) x 158 mm (H) x 315 mm (D)	
Weight: (Net/Shipping)		4.53 kg (10 lb)/5.9 kg (13 lb)	4.53 kg (10 lb)/5.9 kg (13 lb)	5.9 kg (13 lb)/7.7 kg (17 lb)	

* This network is a simplified representation of a complex network. The formula $Z = RX_c / \sqrt{R^2 + X_c^2}$ is used for frequencies up to 1 MHz by substituting the values given for R and C. Above 1 MHz, the output impedance is greater than the formula would indicate.

** Output current can be modulated 100% up to 50 Hz; percent modulation decreases

linearly to 10% at 500 Hz.

†† For operation above 40°C the maximum output current must be reduced linearly to 80% of rating at 55°C (maximum temperature).

Δ Minimum voltage obtainable with voltage limit control is 0.5 V.