# SECTION I
# GENERAL INFORMATION

## 1-1 DESCRIPTION

1-2 This power supply, Figure 1-1, is completely transistorized and is suitable for high power applications which require a dc source with a moderate degree of regulation. The supply is a constant voltage/constant current type that will furnish full rated output voltage at the maximum rated output current or can be continuously adjusted throughout most of the output range. The front panel CURRENT controls can be used to establish the output current limit (overload or short circuit) when the supply is used as a constant voltage source and the VOLTAGE controls can be used to establish the voltage limit (ceiling) when the supply is used as a constant current source. The supply will automatically cross over from constant voltage to constant current operation and vice versa if the output current or voltage exceeds these preset limits.

1-3 Many protection circuits are included in the supply to protect the regulator SCR's against excessive current or voltage and to protect the user's load. The supply also contains the front panel trouble lamps associated with some of the protection circuits.

1-4 Output voltage and current are continuously monitored on two front panel meters. Input power is connected to a four pin connector on the rear of the unit. The output terminals are heavy busbars also mounted at the rear of the unit. Terminal strips at the rear of the unit allow ease in expanding the operational capabilities of the instrument. A brief description of these capabilities is given below:

a. *Remote Programming.* The power supply output voltage or current may be programmed (controlled) from a remote location by means of an external voltage source or resistance.

b. *Remote Sensing.* The degradation in regulation which occurs at the load due to voltage drop in the load leads can be reduced by using the power supply in the remote sensing mode of operation.

c. *Auto-Series Operation.* Two power supplies may be used in series when a higher output voltage is required in the constant voltage mode of operation or when greater voltage compliance is required in the constant current mode of operation. Auto-Series operation permits one-knob control of the total output voltage from a "master" supply.

d. *Auto-Parallel Operation.* The power supply may be operated in parallel with another unit when greater output current capability is required. Auto-Parallel operation permits one-knob control of the total output current from a "master" supply.

e. *Battery Charging or Discharging.* The supply can be used in automatic battery charging or discharging applications. The automatic crossover between constant voltage and constant current permits the operation to be unattended.

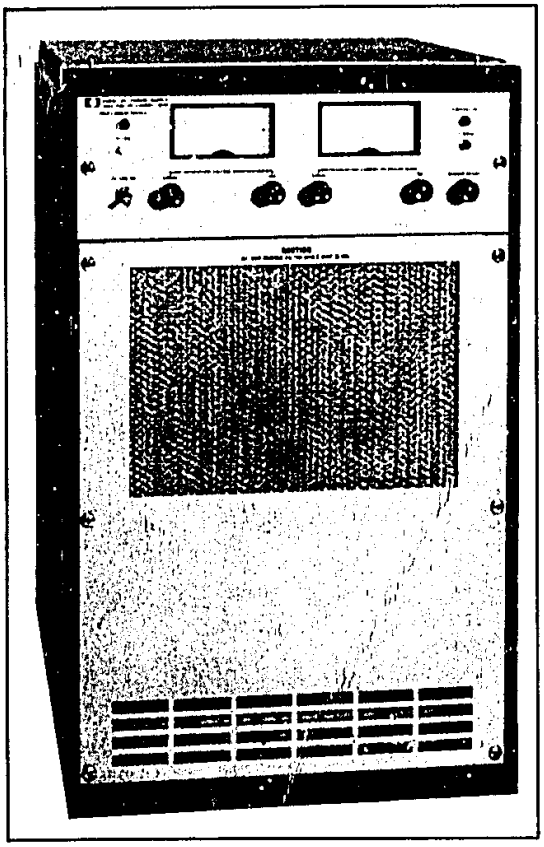

Figure 1-1. Typical 10kW Power Supply, SCR-10 Series

## 1-5 SPECIFICATIONS

1-6 Detailed specifications of the power supply are given in Table 1-1 on Page 1-3.

## 1-7 OPTIONS

1-8 Options are customer-requested factory modifications of a standard instrument. The following options are available for the instrument covered by this manual. Where necessary, detailed coverage of the options is included throughout the manual. Notice that the customer must specify one of the five input power options available for this supply when ordering a unit. These options (001, 002, 003, 031, and 032), together with the other available options, are described below.

| Option No. | Description |
|---|---|
| 001 | 208Vac ± 10%, 3-phase input, 57–63Hz. |
| 002 | 230Vac ± 10%, 3-phase input, 57–63Hz. |
| 003 | 460Vac ± 10%, 3-phase input, 57–63Hz. |
| 005 | 50Hz ac input. Standard instrument is wired for nominal 60Hz ac input. Option 005 includes realignment, and in some cases, internal rewiring. |
| 006 | Internal overvoltage protection crowbar *(Not applicable to 6464C).* Protects delicate loads against power supply failure or operator error. Monitors the output voltage and places a virtual short circuit (conducting SCR) across load within 10μs after preset trip voltage is exceeded. For complete specifications, refer to Appendix A. |
| 023 | Rack kit for mounting one supply in standard 19" rack. |
| 031 | 380Vac ± 10%, 3-phase input, 57–63Hz. |
| 032 | 400Vac ± 10%, 3-phase input, 57–63Hz. |

## 1-9 Accessories

1-10 One accessory, HP Part No. 14545A, is available with this supply. It consists of four snap-on casters and can be ordered with the power supply or separately from your local Hewlett-Packard sales office.

## 1-11 INSTRUMENT/MANUAL IDENTIFICATION

1-12 This power supply is identified by a three-part serial number tag. The first part is the power supply model number. The second part is the serial number prefix, which consists of a number-letter combination that denotes the date of a significant design change. The number designates the year, and the letter A through M designates the month, January through December, respectively, with "I" omitted. The third part is the power supply serial number; a different sequential number is assigned to each power supply.

1-13 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 or Manual Backdating Changes define the differences between your instrument and the instrument described by this manual.

## 1-14 ORDERING ADDITIONAL MANUALS

1-15 One manual is shipped with each power supply. Additional manuals may be purchased from your local Hewlett-Packard field office (see list at rear of this manual for addresses). Specify the model number, serial number prefix, and HP part number shown on the title page.

Table 1-1. Specifications

**INPUT:**
208/230/380/400/460Vac ± 10%, Three Phase, 57 to 63Hz, 50A per phase @ 230Vac.

**OUTPUT:**
0–16V @ 0–600A or 0–18V @ 0–500A (NOTES 1 and 2).

**LOAD REGULATION:**
*Constant Voltage* – Less than 0.05% plus 5mV for a load current change equal to the current rating of the supply.
*Constant Current* – Less than 0.1% plus 0.6A for a load voltage change equal to the voltage rating of the supply.

**LINE REGULATION:**
*Constant Voltage* – Less than 0.05% plus 5mV for any change within the input rating.
*Constant Current* – Less than 0.1% plus 0.6A for any change within the input rating.

**RIPPLE AND NOISE:**
*Constant Voltage* – Less than 180mVrms, 1V p-p (dc to 20MHz). (NOTE 2).

**TEMPERATURE RATINGS:**
Operating: 0 to 50°C. Storage: –40 to +75°C.

**TEMPERATURE COEFFICIENT:**
*Constant Voltage* – Less than 0.03% plus 200μV change in output per degree Centigrade change in ambient following 30 minutes warm-up.
*Constant Current* – Less than 0.06% plus 0.15A change in output per degree Centigrade change in ambient following 30 minutes warm-up.

**STABILITY:**
*Constant Voltage* – Less than 0.2% plus 1mV total drift for 8 hours following 30 minutes warm-up under constant ambient conditions.
*Constant Current* – Less than 0.5% plus 0.6A total drift for 8 hours following 30 minutes warm-up under constant ambient conditions.

**TRANSIENT RECOVERY TIME:**
Less than 50ms/100ms is required for output voltage recovery (in constant voltage operation) to within 1.5V/0.5V of the nominal output voltage following a load change from full load to half load or vice versa (NOTE 2).

**METERS:**
A front panel voltmeter (0–20V) and ammeter (0–700A) are provided. (Accuracy is 2% of full scale.)

**RESOLUTION:**
*Constant Voltage* – 18mV is the minimum output voltage change that can be obtained with the front panel controls.
*Constant Current* – 0.5A is the minimum output current change that can be obtained using the front panel controls.

**REMOTE RESISTANCE PROGRAMMING:**
*Constant Voltage* – 200 ohms/volt (Accuracy: 2%). All programming terminals are on a rear barrier strip.
*Constant Current* – 1.66 ohms/ampere (Accuracy: 2%). All programming terminals are on a rear barrier strip.

**COOLING:**
Forced air cooling is employed by means of an internal fan.

**WEIGHT:**
500 lbs. net. 555 lbs. shipping.

**SIZE:**
16-3/4" W x 26-1/4" H x 26-1/8" D. The unit can be mounted in a standard 19" rack panel.

## NOTES

1. Specifications apply only when (a) supply is delivering more than 5% of maximum rated output voltage (CV operation) or 5% of maximum rated output current (CC operation), and (b) load is drawing more than 100W. Restriction (b) is lifted when supply is delivering more than 30% of maximum rated output voltage (CV operation) or 30% of maximum rated output current (CC operation).

2. For operation with a 50Hz input (possible only with Option 05), output current is linearly derated from 100% at 40°C to 80% at 50°C. Other specifications (indicated in Table) must be increased by 50% for a 50Hz input.