Instructions for the use of the E3630A Triple Power Supply

This pamphlet is intended to give you (the student) an overview on the use of the E3630A Triple Power Supply. This pamphlet will instruct you on how to set and adjust the 3 available output voltages.

Please visit the Agilent website http://www.home.agilent.com/agilent/home to view the complete user manual for more information.
Front-Panel Controls and Indicators

1) Power On/Off switch.
2) +6 Volt Meter switch.
3) +20 Volt Meter switch.
4) -20 Volt Meter switch.
5) +6 Voltage control \(\uparrow\) knob.
6) +20V Voltage control \(\downarrow\) knob.
7) Voltage Tracking Ratio \(\downarrow\) knob.
8) + 6 Volt output binding post.
9) Common.
10) +20 Volt output binding post.
11) -20 Volt output binding post.
12) Equipment Ground.
EQUIPMENT TURN-ON PROCEDURE

1. Turn the LINE switch on.

2. Push +6V METER switch and, with no load connected, vary +6V VOLTAGE control knob over its range and check that the voltmeter responds to the control setting and the ammeter indicates zero.

3. Push the +20V METER switch and turn Tracking Ratio knob control fully clockwise to the Fixed position. With no load connected, vary ±20V VOLTAGE control knob over its range and check that the voltmeter responds to the control setting and the ammeter indicates zero.

4. Push the -20V METER switch and turn Tracking Ratio control knob fully clockwise to the Fixed position. With no load connected, vary ±20V VOLTAGE control knob over its range and check that the voltmeter responds to the control setting and the ammeter indicates zero.

5. Push the +20V METER switch and adjust the +20V VOLTAGE control knob to output 20 volts. Then push -20V METER switch and check the effect of the Tracking Ratio control on the voltage of the -20V output. The -20V output should be adjustable from less than 0.5 volts to a maximum of 19 to 21 volts.
**OPERATION**

NOTE: All output terminals are isolated from ground.

The +6V, +20V & -20V outputs use a single common output terminal. This common **COM** terminal or any one of the other output terminals may be grounded to the chassis at the front panel ground terminal, or all outputs may be left floating.

Loads can be connected separately between each of the 0 to ±20V output terminals and the COM terminal, or between the -20V and the +20V terminals for a 0 to 40V output. Each output voltage or current can be quickly selected for monitoring with the push-button meter switches. To monitor the 0 to 40V output voltage, add the voltmeter readings of the +20V and -20V output and use either the +20V or the -20V meter to measure the current.

**Tracking Ratio Control**

With the **Tracking Ratio** control knob in the **Fixed** position, the voltage of the -20V supply tracks that of the +20V supply within 1% for convenience in varying the symmetrical voltages needed by operational amplifiers and other circuits using balanced positive and negative inputs.

Turn the **Tracking Ratio** control knob **counter clockwise** out of the **Fixed** position to set the voltage of the -20V supply lower than that of the +20V supply. The negative supply can be set from a minimum of less than 0.5 volts to a maximum within 5% of the +20V supply's output. Once this is done, the ±20V voltage control still controls both outputs and maintains a constant ratio between their voltages.
Connecting Loads

Each load should be connected to the power supply output terminals using separate pairs of connecting wires. This will minimize mutual coupling effects between loads and takes full advantage of the low output impedance of the supply. Load wires must be of adequately heavy gauge to maintain satisfactory regulation at the load.

Each pair of connecting wires should be as short as possible and twisted or shielded to reduce noise pick-up. If a shield is used, connect one end to the supply ground terminal and leave the other end unconnected.

If load considerations require locating output power distribution terminals at a distance from the power supply, then the power supply output terminals should be connected to the remote distribution terminals by a pair of twisted or shielded wires and each load should be connected to the remote distribution terminals separately.

Parallel Operation

Two or more supplies can be connected in parallel to obtain a total output current greater than that available from one supply. The total output current is the sum of the output currents of the individual supplies. The output voltage controls of one power supply should be set to the desired output voltage, and the other supply set for a slightly larger output voltage. The supply set to the lower output voltage will act as a constant voltage source, while the supply set to the higher output will act as a current-limited source, dropping its output voltage until it equals that of the other supply. The constant
voltage source will deliver only that fraction of its rated output current necessary to fulfill the total current demand.

**Series Operation**

Series operation of two or more power supplies can be accomplished up to the output isolation rating of any one supply to obtain a higher voltage than that available from a single supply. Series connected supplies can be operated with one load across both supplies or with a separate load for each supply. The power supply has a reverse polarity diode connected across the output terminals so that if operated in series with other supplies, damage will not occur if the load is short-circuited or if one supply is turned on separately from its series partners. When this connection is used, the output voltage is the sum of the voltages of the individual supplies. Each of the individual supplies must be adjusted in order to obtain the total output voltage.