

5. OPERATION INSTRUCTION

5-1. Precaution

(1) AC input

AC input should be within the range of line voltage $\pm 10\%$ (230V $+10\% \sim -6\%$) 50/60Hz.



WARNING. To avoid electrical shock, the power cord protective grounding conductor must be connected to ground.
AVERTISS: Pour éviter les chocs électriques, le fil de terre du cordon secteur doit impérativement être relié à la terre.

(2) Installation

Avoid using the supply in a place where ambient temperature exceeds 40 . The heat sink located at the rear of the supply must have sufficient air space for radiation.



CAUTION. To avoid damaging the power supply, don't use it in a place where ambient temperature exceeds 40 .

(3) Output voltage overshoot

Voltage between output terminals never exceeds the preset value when the power is turned on or off.

5-2. Setting Current Limit

- (1) Determine the maximum safe current for the device to be powered.
- (2) Temporarily short the (+) and (-) terminals of the power supply together with a test lead.
- (3) Rotate the VOLTAGE control away from zero sufficiently for the CC indicator to light.
- (4) Set the meter selection switch to "A" position to select the current metering mode.
- (5) Adjust the CURRENT control for the desired current limit. Read the current value on the Ammeter.
- (6) The current limit (overload protection) has now been preset. Do not change the CURRENT control setting after this step.
- (7) Remove the short between the (+) and (-) terminals and hook up for constant voltage operation.

5-3. Constant Voltage/Constant Current Characteristics

The working characteristic of these series Power Supplies is called a constant voltage/constant current automatic crossover type. This permits continuous transition from constant current to constant voltage modes in response to the load change. The intersection of constant voltage and constant current modes is called the crossover point. Fig. 5-1 shows the relationship between this crossover point and the load.

For example, if the load is such that the power supply is operating in the constant voltage mode, a regulated output voltage is provided. The output voltage remains constant as the load increases, up until the point where the present current limit is reached. At that point, the output current becomes constant and the output voltage drops in proportion to further increases in load. The point is indicated by the front panel LED indicators. The crossover point is reached when the CV indicator goes off and the CC indicator comes on.

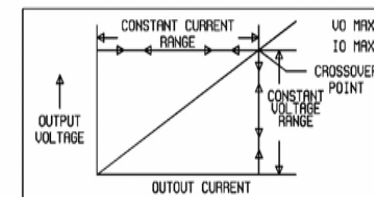


Fig. 5-1 Constant Voltage/Constant Current Characteristic

Similarly, crossover from the constant current to the constant voltage mode automatically occurs from a decrease in load. A good example of this would be seen when charging a 12 volt battery. Initially, the open circuit voltage of the power supply may be preset for 13.8 volts. A low battery will place a heavy load on the supply and it will operate in the constant current mode, which may be adjusted for a 1 amp charging rate. As the battery becomes charged, and its voltage approaches 13.8 volts, its load decreases to the point where it no longer demands the full 1 amp charging rate. This is the crossover point where the power supply goes into the constant voltage mode.

5-4. Operation Mode

(1) Independent Operation

The “CH1” and “CH2” supplies each provide a 0 to rating volts output at up to rating amps. This procedure covers the use of the CH1 and CH2 supplies only when they are used independently from each other. When used in the independent operating mode, the operation controls of the two power supplies are completely independent and either supply can be used individually or both can be used simultaneously.

- A. Disengage both Tracking mode switches (both switches out) so that the power supply is in the independent operating mode.
- B. Adjust “Voltage” control and “Current” control to the desired output voltage and current.
- C. Turn off the power supply and the equipment to be powered during hook-up.
- D. Connect the positive polarity of the device being powered to the red (+) terminal of the power supply.
- E. Connect the negative polarity of the device being powered to the black (-) terminal of the power supply.
- F. Fig.5-2 illustrates the connection procedure.

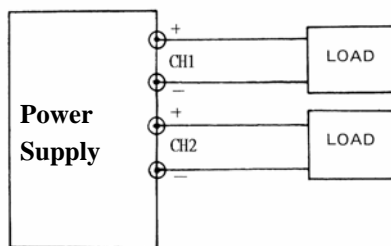


Fig. 5-2 Independent Operation

(2) Series Tracking Operation

When the series tracking mode of operation is selected, the position (Red) terminal of the CH2 supply output is internally connected to the negative (black) terminal of the CH1 supply.

In the series tracking mode, the maximum output voltage of both CH1 and CH2 supplies can be simultaneously varied with one control. The maximum CH2 supply voltage is automatically set to the same as the CH1 supply by using the CH1 VOLTAGE controls.

- A. Set the power supplies to the Tracking series mode by engaging the left Tracking switch and release the right Tracking switch.



WARNING. Voltage more than 60V DC has a lethal shock hazard to the user. Be careful when connecting power supplies in series to achieve voltages higher than 60V DC total or 60V DC between any connection and earth ground.

Note:

Simultaneously metering of both current and voltage can be obtained in the mode of operation setting one of the displays for current metering and one for voltage metering. In this case, the output voltage (across the two supplies) is actually double the displayed value. For example, if the CH1 display is set for voltage metering and the CH2 display for current metering, the output voltage across the CH1 positive (red) terminal and the CH2 negative (black) terminal would be double the reading on the CH1 LED Display (since both supplies are putting out the same voltage). The actual output current would be the value read from the CH2 LED Display (since the two supplies are wired in series, current flowing through each supply must be equal).

- B. Set the CH2 CURRENT control to the full clockwise position. The maximum current is set by using the CH1 CURREN control. Follow the instructions for “Setting current Limit” (select “CH1” or “CH2” supply independently by using the CH1 CURRENT control).

Note:

Because the supplies are being used in series, either CURRENT control can be used to set maximum current. If desired, the CH1 CURRENT control can be rotated fully clockwise and the CH2 CURRENT control can be used to

adjust the maximum current value. Because current through the two supplies must be equal when they are being used in series, the lowest CURRENT control setting will set the maximum output current.

- C. Adjust the output voltage to the desired level by using the CH1 VOLTAGE controls.
- D. Turn off the power supply and the equipment to be powered during hook-up.
- E. If “single supply” operation is desired, this allows the power supply to be used as twice the voltage and rating current simply by using the negative (black) terminal of the CH2 supply and the positive (red) terminal of the CH1 supply, the configuration as shown in Fig. 5-3.

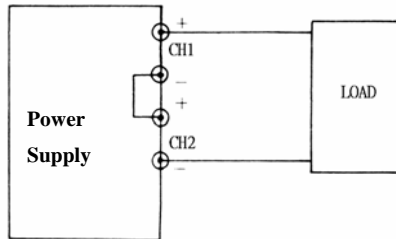


Fig. 5-3 Single Supply

- F. If the chassis or common of the equipment being powered is separated from both the positive and negative polarity power inputs, the output of the CH2 (negative) supply tracking the output of the CH1 (positive) supply, the configuration as shown in Fig. 5-4.

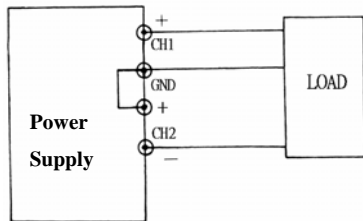


Fig. 5-4 Positive and Negative Supply

(3) Parallel Tracking Operation

In the parallel tracking mode of operation, both supplies are strapped together (in parallel). This allows for a rating voltage supply with a double rating current capability. Only the CH1 output terminals are used for parallel tracking operation. In the parallel tracking mode, the CH2 supply output voltage and current track the CH1 supply output voltage and current.

- A. Set the power supplies to the Tracking Parallel mode by engaging both Tracking switches.
- B. Output voltage will now be read from the CH1 VOLTAGE display. Output current is exactly double the value read from the CH1 CURRENT display (because each supply is providing the same amount of current).
- C. Because both voltage and current of the CH2 supply track the CH1 supply, the maximum current and voltage are set by using the CH1 controls. Using the CH1 supply output jacks, follow the instructions for “Setting Current Limit” (5-2 Section). Remember that the actual current output at the CH1 supply output jack is double the reading on the CH2 indicator meter.
- D. Adjust the output voltage to the desired level by using the CH1 VOLTAGE controls.
- E. Turn off the power supply and the equipment to be powered during hook-up.
- F. Connect the positive polarity of the device being powered to the red (+) terminal of the CH1 power supply.
- G. Connect the negative polarity of the device being powered to the black (-) terminal of the CH1 power supply. The configuration is shown as Fig. 5-5:

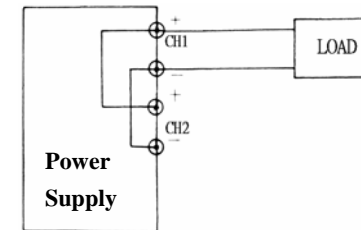


Fig. 5-5 Parallel Tracking Operation

(4) CH3 Power Supply Operation

The CH3 supply provides 2.2~5.2V(GPS-4302/4303) and 3~6V(GPS-4251) DC output with 3 amps (GPS-3303&4302), 1 amp (GPS-4303) and 2.5 amp (GPS-4251) current capacity. The supply is ideal for us with TTL circuits (GPS-3303 5V Fixed).

- A. Turn off the power supply and the equipment to be powered during hook-up.
- B. Connect the positive polarity of the device being powered to the red (+) terminal of the CH3 supply.
- C. Connect the negative polarity of the device being powered to the black (-) terminal of the CH3 supply.
- D. If the red OVERLOAD indicator lights, means exceeding load has been placed on the supply, it will cause voltage and current to drop and interfere the proper operation of the CH3 supply. To correct this situation, the load on the supply must be decreased so that no more than 3 amps (GPS-3303&4302), 1amp (GPS-4303) and 2.5 amps (GPS-4251) of current are required.

(5) CH4 Power Supply Operation

The CH4 supply provides an 8~15V(GPS-4302/4303/4251) DC output with a 1 amps current capacity.

- A. Turn off the power supply and the equipment to be powered during hook-up.
- B. Connect the positive polarity of the device being powered to the red (+) terminal of the CH4 supply.
- C. Connect the negative polarity of the device being powered to the black (-) terminal of the CH4 supply.
- D. If the red OVERLOAD indicator lights, exceeding load has been placed on the supply, it will cause voltage and current to drop and interfere proper operation of the CH4 supply. Under this situation, the load on the supply must be decreased so that no more than 1 amp of current is required.

(6) Dynamic Load Operation & Application

- A. When select to dynamic load position, the max peak current is at 1.7 times rating current. The features are only applied for audio circuit of amplifier and audio production lines. Change the position of wafer J111 of CH1 and J309 of CH2 from "OFF" to "ON". Please refer to Fig.6-1 Adjustment Location.
- B. For other application and testing (Safety or CE. etc.), must set the wafer at "OFF" position

(7) Output ON/OFF Action

The output ON/OFF action is controlled with a single control, the output switch is pushed on, a high single output is on and output LED is on, while the output switch is pushed off, or tracking switch is pressed, output will disable.



CAUTION: The output terminals are for use only with the equipment which has no accessible live parts. The output terminals should not be connected to any hazardous live parts.

(8) Fan Control

- 1) The fan of the power supply will not work upon power on until the temperature of the heat sink rises up to 32 ± 5 after adding load to output terminal. The more the temperature of the heat sink rises, the more the rolling speed of the fan gets fast. The fastest rolling speed is when the temperature reaches to 70 .
- 2) To avoid damaging the power supply, if the fan fails to work when the temperature reached to the appropriate value, turn off the instrument and check the cause.