

#EV-11 HIGH VOLTAGE POWER SUPPLY

INTRODUCTION

This power supply is ideal for use with vacuum tubes, scintillation counters, cloud chambers, Millikan oil drop experiments, e/m of the electron apparatus of various designs, and other experiments requiring an adjustable, high voltage output. The supply is controlled through the range of 0-1000Vdc by a high voltage transistor which is used as an emitter follower. The output current from the supply is limited to prevent short circuit damage to the components.

The power supply also contains a grid bias supply and a filament supply. The grid bias supply is similar to the HV circuit, and is adjustable from 0-50Vdc. These supplies have less than 1% ripple. The filament supply provides 1/2/3/4/5/6 Vac at 2A. All of the supplies are floating and can be connected together as positive or negative voltages. The output of the 1000Vdc supply is measured on a front panel meter.

The outputs of the high voltage and bias supplies are provided on colorcoded 4 mm banana jacks, while the filament supplies are connected to four yellow banana jacks. Connection to the line is made with a threewire grounded line cord and plug for use on 120Vac 60 Hz power and is protected by a fuse.

WARNING!

The 1000Vdc output of this power supply is very dangerous. It will deliver a painful shock that may result in serious injury. Do not turn on this power supply without adequate instruction or supervision. Every safety precaution has been taken in design, but Daedalon cannot be responsible for injury received while using this power supply.

Operation

1. Connect the power supply to a three-wire grounding outlet. Three-wire to two-wire adapters are not satisfactory, unless the ground lead is connected by a #14 AWG wire to a cold water pipe with a sturdy clamp.

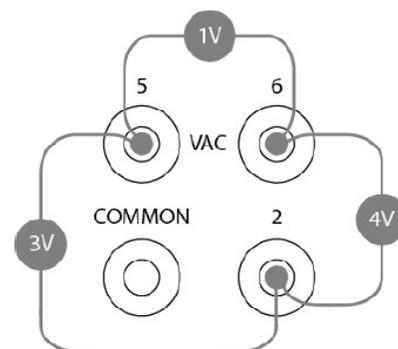
High Voltage and Bias Supplies

2. With no connection made to the jacks, turn on the power supply. The pilot lights will light. Rotate the left knob on the panel clockwise and observe the change in the output voltage. The high voltage supply can be adjusted through the range 0- 1000Vdc at up to 10mA. At low currents or high impedance loads, the voltage will go much higher than 1000Vdc. Make voltage adjustment with the load connected and return the voltage to zero before removing the load. Rotate the knob counterclockwise and the voltage will drop to zero.

3. Repeat the test using the right knob on the panel to adjust the bias voltage. The bias supply has a voltage range of 0-50Vdc. The output must be monitored on an external meter connected to the front panel banana jacks. Rotate the knob counterclockwise to return the output to zero.

Filament Supply

4. The filament voltage is selected by choosing the correct pair of jacks. Voltages between the common jack and one of the others are indicated by the number over the jack. In addition, connections can be made between the 2V and 5V jacks to give 3V, or the 2 V and 6 V jacks to give 4V, while 1V is available between the 5V and 6V jacks.



Connect the tube filament to the correct pair of jacks. This supply is not connected to any of the other supplies or ground. Best operation of a vacuum tube sometimes requires that one side of the filament be grounded. If this is required, it should be done externally with a jumper cable. The filament voltage outputs are rated at full load current. At lower currents, the output voltage will be higher than indicated on the panel. Since most vacuum tubes draw much less than the 2A rating, the filament voltage will be high. This is undesirable, for excessive filament voltage greatly reduces the life of expensive vacuum tubes. Often, running the filament at a little less than rated voltage has no effect on the experiment but increases the tube life considerably. It is suggested that the tube be connected to 1V less than its rating unless the manufacturer specifically warns against it. If in doubt at all, confirm the filament voltage with an ac voltmeter before operating the vacuum tube for extended periods. Accidental short circuits, if removed in a reasonable time, will not damage either supply. A short circuit in the filament circuit will blow the line fuse.

Specifications

High Voltage

Voltage 0-1000Vdc controlled by a pair of high voltage transistor connected as an emitter follower.

Current 10mA continuous. Supply is current limited.

Ripple <1% rms at 2mA.

Internal Impedance 99 k Ω

Bias Supply

Voltage 0-50Vdc adjusted by an emitter follower transistor.

Current 10mA continuous.

Supply is current limited at >50mA.

Ripple <1% rms at 10mA.

Internal Impedance 2,000 Ω

Filament Supply

Voltage 1 to 6 Vac in 1V steps.

Voltage selected from a tapped transformer connected to four 4 mm banana jacks.

Current 2A continuous.

General Controls Control knobs for the two adjustable power supplies.

"On-Off" switch.

Meter 1000Vdc 2% accurate.

Line Fuse 3AG-1/2 or AGC-1/2 only

Line Voltage 120Vac \pm 10% 50/60 Hz .2A

Line Regulation 5% output change for 5% Line change

Dimensions 26 W x 21 D x 9.5 H cm

Weight 2 kg net (4.6 lbs)